DR. K. M. NADKARNI'S

INDIAN MATERIA MEDICA

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INDIAN MATERIA MEDICA

With Ayurvedic, Unani-Tibbi, Siddha, Allopathic,
Homeopathic, Naturopathic & Home Remedies,
Appendices & Indexes

VOLUME ONE

Originally edited by

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This Work

is Most Filially Dedicated
to the Revered Memory
of
my affectionate Father
Late Dr. K. M. Nadkarni

PUBLISHER'S NOTE

This is the reprint of the third revised and enlarged edition of the "INDIAN MATERIA MEDICA" The first edition was published by Dr K M Nadkarni in 1908 after an immense amount of labour in its preparation It was entitled 'THE INDIAN PLANTS AND DRUGS' The second edition was brought out under the present title in 1927 From the very beginning the book has been enjoying increasing popularity and usefulness in the medical world and has continued to be regarded as an authoritative publication in the field of Indian systems of medicine The book was out of print for a long time The revision of the book was undertaken by Mr A K Nadkarni, son of Late Dr K M Nadkarni in 1950 Having collaborated with his father on the revision of the previous edition, he was eminently suited for this task This edition was published in 1954 jointly by Popular Book Depot and Dhootapapeshwar Prakashan This edition is not available for almost a decade now While the revision of the work in the light of researches in the third quarter of this century will take quite a while, it was considered imperative to bring out the reprint to fill the need of numerous libraries and individuals for whom this book is a must

Mr A K Nadkarni has kindly transferred copyright in this work and the responsibility of keeping it uptodate to us as publishers We appeal to our readers for suggestions to make this work even more useful and authoritative

Bombay, 9th September 1976

FOREWORD

Dr K M Nadkarni's well known book 'The Indian Materia Medica' does not need any introduction It has been revised, enlarged and brought up to date by his distinguished son Shri A K Nadkarni who deserves the gratitude of the lovers of Ayurveda all over the country The 3rd edition of this admirable book which is now being presented has been anxiously awaited by students and practitioners of Ayurvedic medicine

The Indian systems of medicine both Ayurvedic and Tibbi even now give medical relief to a very large section of the population in our vast country especially in the rural areas These are also believed to be effective by a large section of the urban population and even by the intelligentsia These systems have continued to be useful and popular in spite of the fact that during the British regime Western Medicine was chiefly the system of medical relief and Indian Medicine was not encouraged

Since the dawn of Independence the Governments of various States have appreciated the importance of these systems in medical relief and have taken measures to encourage their use and even give them a scientific foundation by stimulating research on modern scientific lines

The Indian Materia Medica contains about 2 000 drugs, the majority of which are of vegetable origin During the time of the great Ashoka the Hindu materia medica contained about 700 vegetable drugs which were used by the Vaidyas They were mostly cultivated in gardens all over the country and time of collection, the parts used, methods of curing and preserving were well known Since the number of drugs commonly used in those days was not large no elaborate descriptions were given with regard to their identification The student of medicine used to live with his Guru in the Gurukulas and received practical training in connection with the identification and proper time of collection

In the course of time more and more vegetable herbs growing in different parts of India were gradually included in the indigenous materia medica but unfortunately the standards of purity and their correct identification did not keep pace with expansion From a perusal of the pages in the two volumes of this book readers would get the feeling that the author has tried to supply missing information

The author has dealt with the section of herbs and their use in medicine in a very informative and at the same time lucid manner which will appeal even to practitioners of western medicine

It is needless to emphasize the rich herbal resources of the vast sub continent and its varying climatic zones with variety of vegetation ranging from the alpine to the tropical regions. Their exploitation in the interest of the suffering humanity is very important This book will have served its purpose if the attention of all interested in the art of healing is attracted to this aspect

The setting up of the National and Regional Laboratories by the Government of India especially the Central Drug Research Institute at Lucknow for the specific purpose of making scientific investigations on indigenous drugs is a testimony of the interest in this subject taken by the public Even in some of the western countries great deal of interest has been evoked in this subject

The revision of the original book and bringing it up to date must indeed have been a very laborious task which has been done in a very commendable manner For this, the author deserves gratitude and congratulations of all concerned I am sure the book will be welcomed by all interested in the subject of Indigenous medicine

R N Chopra,
Col, Kt, CIE, IMS (R)

Srinagar,
6th June 1954

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PREFACE TO THE THIRD EDITION

This is a revised and enlarged edition of my revered father's "Indian Materia Medica" This work which was first published in 1927, under the new title had grown out of his previous publication, 'The Indian Plants and Drugs" (1908) In this latter compilation I had the good fortune to collaborate with my father to a large extent I have now put the old wine into a new bottle as it were, but new wine too has been judiciously added My sincere object in this undertaking was to make the present edition the best possible Materia Medica for comparative studies and if discerning readers find it so, I shall feel amply compensated for the heavy labours involved.

From the original prefaces reprinted in this edition, the reader will be able to judge to what extent and in what manner this volume will be helpful to the various medical and scientific professions and also to the English-knowing public in general.

The never-ending enquiries and orders for a revised and enlarged edition of the "Indian Materia Medica' coupled with my own eagerness to keep alive my father's name through his monumental work prompted me to undertake this huge task single-handed and 'single-eyed' as it were (ailing as I am with high myopia in my right eye and amblyopia in my left eye!), necessitating the sitting up for days and nights for years together

I have included in this edition an 'Index List of Indian Plants and Drugs from which Mother-Tinctures and Extracts etc are prepared according to Homeopathic System of Medicine" in the hope that practitioners of Allopathic as well as Ayurvedic and other systems of Medicine including Naturopathy, will give a trial to Indian made Homeopathic tinctures, extracts etc., and communicate their comparative case-reports to Medical Journals for the benefit of suffering humanity and for the enlightenment of their own professional brethren

In the revised Introduction to this book the Tables of Weights and Measures have been treated on a new basis by

by by son, particularly my younger (A K Nadkarni) who volunteered his whole time clerical service as well as the out-door work of collecting literature from places like Libraries, Colleges, Scientific Institutions, etc, and also from eminent Scientists, Scholars and Doctors, local and mofussil, for my consultation in preparing Mss for the Press, I took upon me the work of this Treatise and titled it as "*Indian Materia Medica*" with the hope that it may go side by side with a British Materia Medica, as a companion volume among the Medical students and members of the Indian Medical Profession

The fact of the great cheapness and efficacy of Indian Drugs has been repeatedly admitted by eminent British Medical Authorities For instance, Col G T Birdwood, M A, M D, I M S, speaking of Indian drugs in his book "Practical Bazaar Medicines" says—"There is no question that bazaar medicines are much cheaper A bottle of European medicine costs As 8 to Rs 2 while a bazaar medicine costs a few pice District Board Dispensaries can give a vast amount of medical relief at very little cost if bazaar medicines are intelligently and largely used Even in such epidemics as influenza, plague, cholera, and relapsing fever, bazaar drugs can give much relief" Continuing he seems to complain and says —"At the big Medical Schools attached to our big hospitals in the course on Materia Medica Indian Plants and drugs receive attention, but In the wards of the big hospitals, which Institutions have an ample supply of European drugs, bazaar medicines are practically never prescribed, so that men leave the medical schools with little practical knowledge of prescribing bazaar medicines" In another part in connection with the same subject he says —"If a medical man has a good knowledge of these (bazar medicines) he can treat many minor maladies and relieve much sufferings at a very little cost It must be remembered that a great many of the maladies of every-day life, for which people come as out patients to dispensaries, are of a minor nature, as coughs colds, indigestion, ulcers, sore eyes, sore throats, worms Bazar medicines intelligently used have a sufficiently practical and wide enough range to meet most of the maladies" Lt Col Harold Brown I M S,

(Retd) stated that "there are a great many indigenous drugs of extreme utility, but little known to students of Western Medicine" In the course of a review of my book "Indian Plant and Drugs" the *Indian Medical Gazette* said many years ago "As regards the greater uses of Indigenous drugs we think the tendency of Indian practitioners is quite the other way. They are too much inclined to run after the latest drug or new poison cleverly advertised by pushing German and American (I would add here "and other foreign") firms of drug manufacturers and if this book will help to drag the Indian practitioner from seeking out and using new synthetical preparations with fancy names and persuade him to go back to the numerous useful drugs of his own country it will be of great use and value"

Under the circumstances what a boon the Medical Practitioners can confer on their patients, especially of the poor and middle classes if they will only intelligently employ simple and efficacious bazaar medicines, in other words, Indian remedies (hundreds of which are to be met with in the pages of this book) in place of costly foreign medicines! And what a saving an intelligent house-holder will make in his expense, time, trouble and anxiety, if he will have a little more of self-reliance and a little less of the feeling of helplessness in cases of minor complaints of everyday occurence and with discretion, will make use of the numerous, simple, harmless, home-remedies given in this book! It is a well known fact that pure fresh vegetable drugs are more powerful in their efficacy than those which have undergone various Laboratory processes for their preservation and preparation according to Western methods Moreover the extraction of alkaloids by the use of alcohol, etc, is said by Ayurvedists to destroy the actual and intrinsic therapeutic activities of the drugs

These were the considerations that strongly animated me throughout during the preparation of this manual Besides the two crores of rupess which cost to our country year after year for the purpose of importing foreign drugs and preparations, five to six times that amount is being exacted as compounding charges from poor and middle classes who, though

Turner of Bombay" Also he is reported to have stated thus—"The longer I live in India, the more intimate my connection with Indians, the greater will be my appreciation of the wisdom of the ancients and the more I will learn that the West has still much to learn from the East"—(*British Medical Journal*, Oct. 1918) On another occasion he is stated to have said —"The longer I remain in India and the more I see the country and the people, the more convinced I am that many of the empirical methods of treatment adopted by the Vaids and Hakims are of the greatest value and there is no doubt whatever that their ancestors knew ages ago many things which are now-a-days being brought forward as new discoveries". He has also said on another occasion that "those trained in the western system should learn to unravel the mysteries of the Indigenous system and unearth its hidden treasures. The truths contained in them should be studied" The *Indian Medical Gazette* Nov 1924 says —"It (Ayurvedic) and not Western Medicine is the medicine of the (Indian) people", and the *British Medical Journal*, Sept 15th 1924 stated—"the native practitioners perform a useful service in the villages more especially in the medical side of practice". Dr Geo E Clarke, M A , M D , Philadelphia, writes — "I would rather trust ancient Hindu practice than the allopathic practice of what we are wont to learn in this enlightened age. If the physicians of the present day would drop from the Pharmacopoeia all the modern drugs and chemicals, and treat their patients according to the method of Charaka, there would be less work for the undertakers and few chronic invalids in the world'. Such is the efficacy of Ayurveda acknowledged even by the western eminent and experienced physicians. As regards its popularity even among wealthy classes, Sir Patrick Hehir admits it (*Times Educational Supplement*) and states that "some of the leaders of pure Ayurvedic practice make considerable fortunes out of their calling and when consulted in up-country cases from the large towns charge heavy fees" Leading Ayurvedic Physicians in urban areas "command princely fees in attending Princes, noblemen and rich people in cases where Allopathy fails"

Any number of such recommendations and opinions in

favour of the Ayurvedic treatment from famous European and American doctors may be quoted, but the above is enough to convince even the hardened sceptic about the popularity and efficacy of the Ayurvedic system of medicine Ayurvedic or indigenous form of treatment is resorted to by the mass of Indian population Progressive Indian States have given an impetus to the Indigenous Systems of Medicine If only the Medical practitioners in India who are well-trained in the Western Science of Medicine, take some interest in the use of reputed indigenous remedies or medication in their practice, they will do a world of good to the poor suffering millions in India. To give them all the facilities of knowledge and information in this matter I have spared no endeavour, as will be evident from the contents of this book

Many Indian fruits, grains and vegetables employed as useful dietetic articles have been treated in order to facilitate the study of Indian dietetics, which forms a chief factor in the cure of diseases, as well as the preservation of health and good nutrition Indian dieto-therapy is as valuable as its medico-therapy and both combined are preferable to Foreign Drug-therapy, in case of Indian Patients.

To awaken and sustain an interest among the Medical students of the Western System in the indigenous drugs and remedies, I have set apart 101 copies out of this edition for presentation to those who top the list of successful students in the examinations in the Materia Medica subject in the various Medical Colleges and Schools in India

In the preparation of this book I have consulted many Works on Ayurvedic or Hindu Medicine and those treating of the properties and uses of the Indian drugs or Bazaar medicines and medicinal plants of India, in the shape of books, brochures, periodicals, Govt Reports, Rsearches, Theses, etc, which are too numerous to mention here, to the authors of all these I acknowledge my indebtedness I have also to express my grateful thanks to several local and mofussil Doctors and Scientific Scholars who had so kindly lent to my younger son (A K. Nadkarni) books, magazines, theses etc., for my reference

The botanical description of drugs is omitted, as the Indian

drugs are distinguished in India not by referring to their complicated distinguishing characteristics but by their well-known names in important vernaculars, ther general appearance, smell and taste. I have, however, given a separate Chapter (Appendix VIII) in which are mentioned the distinguishing general characters of the drugs belonging to important Genera or Natural Orders, together with a few typical examples of well-known drugs in order that the reader might become familiar with their distinguishing features.

Before concluding I have to seek the generous indulgence of the reader to overlook the printer's devils or typo-graphical blunders that must have crept into this book, in spite of my careful scrutiny.

Bombay,
December 1926.

K M. Nadkarni.

INTRODUCTION

In order to understand fully the description and uses of drugs, it is necessary to know the meanings of the words repeatedly occurring in their connection such as those explained in some details under different captions herebelow:—

TRIDOSHA THEORY

The Doshas viz., *Vayu, Pitta* and *Kapha* constitute the tripod on which Ayurveda stands. To understand their theory perfectly and correctly is by itself a long and arduous study. The subject being a very complicated one, it cannot be explained within the compass of a few pages. Also it has been defined by different experts in different ways, but the basic principles to which they all point to, are the same. They, as expounded by one of the foremost Ayurvedists are as follows: —Late lamented Mahamahopadhyaya Kaviraj Dr. Gananathsen Saraswati, M.A., L.M.S., of Calcutta, said "the theory of *Vayu, Pitta* and *Kapha* begins where modern Physiology ends; for, it endeavours to explain all the physiological processes as also the principles which guide them. It is too elaborate a subject to be described here fully. I may refer you to the following concise statement contained in my Benaras Hindu University address on 'Hindu Medicine,' to give you a rough idea of the theory."

"The theory of *Vayu, Pitta* and *Kapha* was also a great discovery, which unfortunately has been much misunder-

the physiological processes pertaining to them naturally, and (2) A crude or visible form, the products (as secretions or excretions) of those processes induced by these essential terms"

"The relation between the two forms is very close, so that the derangement of the essential form of one principle gives rise at once to increased or morbid secretions and excretions of that principle The failure to recognize the difference between these two forms of the principles has given rise to the erroneous rendering of Pitta as '*Bile*' and Kapha as 'Phlegm'. The rendering of *Vayu* as 'Wind' is preposterous and has brought unmerited obloquy on the theory (vide my Sanskrit work 'Siddhanta Nidanam' Chapter I for a full exposition of this subject.)"—*Report on the Indigenous Systems of Medicine, Part II, Madras*

INDIAN WEIGHTS & MEASURES AND THEIR EQUIVALENTS

In ancient times (nay even at present times) the scale of weights and measures differed in different parts of India Four separate scales were mentioned by old compilers. Those were Charaka, Susruta, Magadhi or Magadha and Kalinga In all the scales, *Gunja* or a seed of *Arbus precatorius* was generally the lowest weight It was sometimes subdivided Thus eighteen mustard seeds, four grains of paddy, three grains of barley and two grains of wheat were respectively, said to be equal to one *Gunja*

The scale in use in the Bengal Province is as follows —

6 *Gunjas*	..	*make one*	*A'na*
2 *A'nas or* 12 *Gunjas*	..		*Masha*
8 *Mashas or* 16 *A'nas*	..	,	*Tola*
2 *Tolas* .	..	,	*Karsha*
4 *Karshas or* 8 *Tolas*	..	,	*Pala*
4 *Palas*	..	„	*Kurava*
8 *Palas or* 64 Tolas	..	,	*Seer or Sarava*
2 *Seers*	..	,	*Prastha*
8 *Seers*	..	,	*Adhaka or Patra*
32 *Seers or* 4 *Adhakas*	.	„	*Drona*
100 *Palas or* 12½ *Seers*	..	„	*Tula*

It should be noted that liquids, like solids, are measured by weights.

There is one peculiarity about liquid measures which should be noticed. When one *Prastha* or more of a liquid is directed to be used in the preparation of a medicine double the quantity is actually taken. Thus if it is stated in any text that of solid drugs take one seer, of oil take two seers, of milk take three seers, and of water take four seers, the measures to be actually taken are one seer of solids, four seers of oil, six seers of milk, and eight seers of water For measures below a *Prastha* or two seers, the quantities of liquid are not

doubled—(N. N. Sen Gupta's Ayurvedic System of Medicine).

Measures current in Bombay Province

1 Gunj	..	=1 Ratti
6 Gunj	..	=1 Anna
8 Gunj	..	=1 Masa
12 Masas	..	=1 Tola=180 Grains
5 *Tolas*	..	=*1 Chataka=2 ounces*
16 Chataka	..	=1 seer=32 ounces=80 tolas

Out of the different kinds of Ayurvedic measures in India, in Kalinga mana Masha is 6 gunjas and in Maghada Mana masha is 12 Gunjas Charaka adopts the higher mana of 8 Tolas for Pala. Kalinga mana applies to Andhra Province where 1 pala=4 Tolas Locally in Bazaars, however, one pala is= 3 tolas only!

6 Sharshapa (Mustard seeds)		1 Yava
3 Yavas	..	1 Gunja (2 grains)
12 Gunjas (6 gunjas in Kalingamana)		1 Masha (weight of 1/8 Tola)
4 Mashas	..	1 Shana (½ tola), Tanks, Nishka
2 Shanas	..	1 Kola (1 Tola)
2 Kolas ..	..	1 Karsha (2 Tolas)
2 Karshas ..	..	1 Sukthi
2 Sukthis	..	1 Palam (8 Tolas) Bilva
2 Palams .	..	1 Prasriti
2 Prasritis (4 Palas)	..	1 Kudava (32 tolas)
2 Kudavas ..	..	1 Sarava (or seer or 64 tolas)
2 Saravas ..	..	1 Prastham (1 Viss)
4 Prasthams .	..	1 Adakam
4 Adakams ..	..	1 Dronam
2 Dronams ..	..	1 Kumbham
2 Kumbhams ..	..	1 Goni
4 Gonis ..	..	1 Khari
100 Palams ..	..	1 Tula
2000 Palams ..	..	1 Bhara

Table of Weights and Measures as per Charaka & Varahamihira

Vanshi	1 Atom
6 Vanshi	1 Marichi
6 Marichi	1 Sarsapa
8 Sarsapa or 8 white mustards	1 Tandula (grain of paddy) or 1 Yava
2 Tandula	1 Dhanyamasha
4 Tandulas	1 Gunja (Abrus precatorious seed)
2 Dhanyamasha ..	1 Yava
5 Gunjas	1 Masha
4 Yava	1 Andika or 1 Ratti or Gunj
10 Gunjas weight about 18 grains.	
4 Andika	1 Mashaka, hema dhanaka
6 Ratti	1 Masha
3 Mashaka or 4 Mashas ..	1 Shana; Dharana; Tank; Nishka
2 Shana	1 Drankshana; Kola; badara
2 Drankshana or 2 kola or 16 Mashas ..	1 Karsha; suvarna or tolaka; aksha; bidalalapadaka; richu; panitala; kavalagraha = one tola in practice.
2 Karsha	1 Palardha; shukti; astamika; ardhapala.
4 Kurshas	1 Pala.
2 Palardha or 2 Shukti ..	1 Pala (4 tolas in practice) musti; prakuncha; chaturthika; bilva; shodasika; Amra.
2 Pala	1 Prasrita or Prasriti; asthmana.

2 Prasriti	1 Anjali, kudava, Ardha-sharava=16 tolas
4 Pala	1 Kudava, anjali
2 Kudava 2 Anjali	1 Manika or 1 Sharava } =32 tolas
4 Kudava or 2 Sharava	1 Prastha=64 tolas
4 Prastha	1 Adhaka (256 tolas), ghata, astasharava, patri, patra, kansa
4 Adhaka	1 Drona (1024 tolas), kalasa, ghata, unmana, armana
2 Drona	1 Shoorpa (2048 tolas), kumbha
4 Droni	1 Khari
2 Shoorpa	1 Goni, Droni, khari, bhara
32 Shoorpa	1 Vaha
100 Pala	1 Tula=400 tolas or 800 tolas?
2000 Pala	1 Bhara
3½ Mashak*	5 Ama
7½ Mashak*	10 Amar
15 Mashak*	1¼ Tola

* Not in Charka

N B —The standard of weight has always varied in different parts of India The seeds often vary in size

Varieties of Weights & Measures for Medicines, Raw Drugs, Produce etc, in India

"The Unit of weight in the Indian Union is the Tola, which is equivalent to 180 grains Troy of the British Pharmacopoeia

Gold Sovereign weighs	..	123 Grains.	
Silver Rupee	" ..	180 "	= 1 Tola
" 8 annas bit	" ..	90 "	= ½ "
" 4 "	" " ..	45 "	
" 2 "	" " ..	22.5 "	
Nickel 8 "	" " ..	126 "	
" 4 "	" " ..	104 "	

„ 2 „ „ „ .. 88 „
„ 1 anna „ „ .. 50 „
Copper pice „ .. 76 to 100 Grains
1 Bronze piece „ .. 100 Grains
1 „ ½ pice „ . 50 „
1 „ 1/3 „ (a pie) 30 „
70 Copper pice (approx) or 40 Tolas=1 Pound (Avoirdupois)

1 Sikki or Sakki=4 Tola=45 grains=the weight of a quarter silver rupee of the present currency in the Indian Union

1 Dhan=1 grain of paddy=Avoirdupois 3/175 drachm

4 Dhans=16 annas=1 Tola=1 "Rati" or "Ratti" (the weight of a "Gunchi" or "Gunja" which is the seed of Abrus precatorius), and is used by Indian Jewellers for precious stones, weighs about 10% less than the Carat (3 17 grains Troy) and varies slightly in weight in the different parts of India It is in Bombay about 1 3/32 Ratti=1 Carat, 100 Carats (109½ Rattis)=12/175 drachms Avoirdupois

1 Gunja=1 7/8 grain
3 Gunjas=1 Val
6 Gunjas)
or 6 Ratis)=1 Anna=1/16 Tola

8 Ratis=8 Gunjas=a Masha=15 Grains=96/175 drachms Avoirdupois

96 Ratis=12 to 13 Mashas=1 Tola=180 Grains=11 6638 grammes=6 102/175 drachms Avoirdupois

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1 Tola=11 414/6250 Grammes 175 Ounce
1½ Tolas=5 Sikkis=1 Kancha
2½ Tolas=1 Ounce
2/3 Tolas=1 Troy ounce
3 Tolas=1 Navatangu=1 Pallam Madras=1/8 Seer=1¾ oz. Avoirdupois

1

5 Tolas=1Chittak or Chattack=4 Kanchas=¼ Poa=16 Seer About 2 fluid ounces (2.0571 ozs)=2 2/35 oz. Avoirdupois

6 Tolas=1 poa or pavu=¼ seer=About 8 fluid ounces
10 Tolas=4 Chattacks=1 Pawah or Paw
40 Tolas=1 lb.
1 Seer (of capacity)=64 Kanchas=16 Chattacks or Chittacks=4 poas=About 32 to 33 fluid ounces=80 Tolas =1.760 or 1.962 pints=2.0571 lbs. (2 2/35 lbs. Avoir.) =1 Kilogramme or 0.9331 kiligramme=8 pallams Madras=2 kudthas=1 litre or 1.114 litres)
4 2/3 Seers= 9 1/3 Kudthas=1 Kuthy
5 Seers=1 Pasri or 1 Dhari
40 Seers=8 Pasris=1 Indian or Bengal maund=82.286 lbs.= 37.324 kilogrammes
80 Seers=1 Battam
.00 Seers=1 Palla
40 Pallams Madras=1 viss=3 lbs. 2 ozs.
½ Chattack=1/8 poa=1/32 Seer=About 1 fluid ounce=2 kanchas=about 2½ tolas.
½ Kancha=1/8 Chattack=1/128 Seer=about 2 fluid drachms.
1 Kancha or Kuncha=¼ Chattack=about 4 fluid drachms= 1/64 seer=218.75 grains of distilled water.
1 Kudtha weighs about 12 Tolas.
10 Kuthis=1 Maund=8 visses Madras=25 lbs.
1 Bazaar Maund (weight)=82.125 lbs.=37.251 kilogrammes (Metric).
1 Bengal Maund (Liquid)=40 seers=9.81 gallons 44.596 litres (Metric).
1 Bombay Maund (weight)=27.864 lbs. or 28 lbs.=40 seers= 12.70 kilogrammes.
1 Factory Maund (weight)=74.668 lbs.=33.869 kilogrammes.
1 Karachi (now Pakistani) Maund (weight)=40 seers=80 lbs.=36.287 kilogrammes (Metric).
1 Madras Maund (weight)=24.08 lbs. or 24.686 lbs. or 25 lbs. =40 seers=11.197 kilogrammes (Metric).
1 Railway Maund or Bengali or Bengal Maund or 1 Imperial Maund=40 seers=82 2/7 Avoirdupois lbs.=82.284 lbs. =82 lbs. 2 ozs.=3 drachms=40 kilogrammes.
10 Maunds=1 Khandy.

20 Maunds Madras (weight)=1 "Baram" or 1 Candy Madras
=493 714 lbs =223 945 kilogrammes
25 Bombay Maunds=23 Madras Maunds
27 2 Maunds=1 Ton
49 Bazaar Maunds=144 Bombay Maunds
100 Bazaar Maunds=100 Factory Maunds
3½ lbs =1 Pancheru
2 Pancheru=1 Dhade
4 Dhade=1 Maund=8 Pasris=40 seers

For Liquors

8 Tolas=1 Dram or Drachm
8 Drachms=1 Bottle
6 Nominal Quart Bottles=1 Imperial Gallon

English & Indian Domestic Measures (Approximate) with Equivalents

A teacupful of sugar weighs ½ lb and 3 tablespoonfuls of sugar weigh ¼ lb
1 headed-up teaspoonful of powder=approx 3 gm
1 levelled off teaspoonful of powder=approx 1 5 gm
A cup-ful of loaf sugar weighs 7 ozs
A cup-ful of flour weighs quarter of a pound
2 cup-fuls of granulated sugar weigh one pound
2 cup-fuls of meal weigh one pound
4 cup-fuls of sifted flour weigh one pound
One Tea-spoonful is about one fluid drachm (80 minims) or a little more (4 to 5 C C)
3 Tea-spoonfuls=nearly 1 Tablespoonful
2 cup-fuls of liquid or dry material=one pint
4 cup-fuls of liquid or dry material=one quart
One Dessert-spoonful (2 tea-spoonfuls) is about two fluid drachms (8 to 10 C C) 120 to 160 minims
2 Dessert-spoonfuls=One Table-spoonful=about 4 fluid drachms or half fluid ounce (15 to 16 C C) (240 minims.)
One Table-spoonful=4 fluid drachms or about ½ oz =15 C C
2 Table-spoonfuls=1 ounce

4 Table-spoonfuls is a quarter of a pint
Sixteen Table-spoonfuls=one-eight ounces cup
One heaping table-spoonful of sugar weighs one ounce
7 heaping table-spoonfuls of sugar =One cup-ful
5 heaping table-spoonfuls of flour=One cup-ful
One Tea-cupful is about 4 to 6 or 5 to 8 fluid ounces=(150 C C)=1 Gill
A Breakfast-cupful is half a pint or about 6 to 8 fluid ounces =240 C C =2 Teacups or 2 Gills
2 Round Table-spoonfuls of flour weigh one ounce
One Wine-glassful is about one and a half to two fluid ounces or is an eighth of a pint (75 C C)=1 jigger
One Gill=4 fluid ounces or a little more=2 Wine-glasses= 120 C C
One Glass-ful=12 fluid ounces
One Glass (tumbler)=1 Measuring Cup=8 fluid ounces= 240 C C
One Tumbler-ful is about ten to eleven fluid ounces or even 15 to 20 fluid ounces or is generally half a pint (300 C C)
Two Tumblers=1 Pint or 20 fluid ounces=2 cups=480 C C
One pint of oatmeal, cracked wheat, or other coarse grains, weighs about one pound
One pint of liquid weighs one pound
1 ollock=7/8 cup
1 palam=1 2 ounces or 35 gms
N B —The above are only average measurements, for, no cup or spoon is of the same size'

CAUTION —The spoon must be of the measure of 1 fluid drachm
Spoons fluctuating in size should be avoided
1 Drop's equivalent weight is 9493 grams

"Although roughly a *'Drop'* is generally taken to represent one *minim*, drops differ very much in size and vary according to the area of the surface from which they drop and also as to the nature of the fluid itself, they should never be used for children or as a measure of powerful drugs Because, e g, a fluid drachm of water may be 60 drops, but a fluid

drachm of syrup is only 44 drops; a fluid drachm of alcohol is 146 drops and of chloroform is 250 drops. A drop of acid hydrocyanic dilute is certainly more than a minim as a drachm of it contains only 44 drops. One drachm of Tr. Opii or Tr. Digitalis contains 120 drops. It is therefore a safe rule "never to order any drugs in terms of "drops" but only in terms of minims. *The minims should always be measured in graduated minim measure*".

N.B.:—In all dispensing in the British Empire the custom is—Solids by weights and Liquids by measure.

Measures, Weights and Equivalents adopted in Western Pharmacopoeias

(Apothecaries', Avoirdupois, Imperial, Metric etc., comprising of Measures and Weights of Mass, Capacity etc.)

Measures

Imperial					Metric
1 Minim is approximately equal to					
15 Minims are		„	„	„	
20 Minims	„	„	„		
30	„ „	„	„	„	
40	„ „	„		„	
50	„ „			„	
60	„ „			„	
1 Fluid ounce is					
1 Pint is					
1 Gallon		„			

½d piece = 85
1d „ = 144
3d „ = 22
6d „ = 44
sh. 1/- „ = 87
sh. 2/- „ = 175
sh. 2/6 „ = ¼

1 C.C. 1 Milliliter—about 16 to 17 minims (16.9 minims)= nearly 20 drops of water—.282 fluid dram=.00176 Pint =.0352 fluid ounce=0.00211 pint=0.000264 gallon.

1 Scruple (rarely used nowadays) Apothecaries Imperial weight=Troy 20 grains=0.73 drachms Avoirdupois= 42 2/3 dhan Imperial=1.2959 grammes nearly.

Apothecaries' 1 Dram or Drachm weight, Imperial (this also is not Official)=3 scruples=2 dwt. 12 grains=60 grains *Troy=2.19 Avoirdupois drams=60 minims=3.8879* Avoirdupois grammes nearly (3838 grammes)=32 Ratis Imperial=1 Teaspoon.

Imperial (Apotheearies)=1 Fluid drachm (of Capacity)—60 minims=54.6875 grains of water at 16.7°C. or 62°F. —3.5515 millilitres=3.6 C.C. (3.552) C.C.)—2 Drams Avoir.—1 *Teaspoonful=0.003552 litre.*

Apothecaries' 8 Fluid *Drams*—24 *scruples*—*180 grains* (also U.S. Standard or Wine Measure) weight=1 Avoirdupois fluid ounce & 1.55 drachms—437.5 Avoirdupois grains — 28.35 grams (28.34953 grammes)= *Troy* 18 dwt. 5½ *grains.*

or

Apothecaries' 1 Ounce (weight)

or

Apothecaries 1 fluid ounce=28.41 ml. 31.1 gm.

12 Ounces Imperial Apothecaries' Weight=1 pound—96 drachms—288 scruples=Avoirdupois 13 ozs. & 2.65 drachm=5760 Grains.

16 Fluid ounces (U.S. Standard or Wine Measure)=1 Pint.

Apotheearies' 1 lb.—Avoirdupois 13 *Ozs.* 2.65 *drams.*

Apothecaries' 2 fluid Pints—40 fluid ounces Apothecaries' (also U.S. Standard or Wine Measure) =1 quarter—17,500 grains of water at 16.7°=1136.4908 Millilitres — 1.1364 litres= 69 1/3 cubic inches nearly— 2 lbs. 8 *ozs.*

Apothecaries' 4 Fluid Quarts (also U.S. Standard, or Wine Measure)

—1 Imperial Standard Gallon —8 Pints Imperial (of capacity)=4.545963 litres—10 lbs. Avoirdupois—70,000 *grains* of water at 16.7°=4.5460

litres=4545 9631 millilitres =277.274 cubic inches—(1 cubic foot holds 6 232 gallons)

Imperial (Apothecaries' & Avoirdupois) — 1 grain weight=0 0648 gram (0 064798918 gramme)—64 7989 Avoirdupois in milligrams=$\frac{1}{180}$ Tola

Imperial 100 fluid grains (of capacity)=109 714 minims.

Imperial or Metric (weight) 1 Gramme or Gram (Grm)= 0 7716 scruple=(0 564 drachm or 0.2572 drachm)= 15 432348 grains nearly=$\frac{2000}{56698}$ ounce=0 03215 ounce Troy=Mass (or weight) of a cubic centimetre of distilled water at 4°C=$\frac{6250}{72991}$ tola=0 03527 ounce Avoirdupois—About 1 Masha= 002204 lb

28.350 Grams (28 34954 grammes)=437 5 grains of water at 16 7°C=16 drachms=1 ounce Avoirdupois—=28 4 cubic centimetres

60 to 64 8 milligrams (Metric)=1 grain (Imperial)=0 064 gram

1 Pint (pt) Imperial (Apothecaries') weight (of capacity)= 473 C C =568 2454 millilitres=20 ozs fluid Apothecaries' (of capacity) (Oz Volume)=4 gills=0 568 litre=34 2/3 cubic inches nearly=1¼ lbs Avoirdupois =8750 grains of water at 16 7° (7291 1107 grains=1 lb 3 ozs 9 11 grs) expressed in Avoirdupois 1 lb equals 1 041587 lbs. Being nearly equivalent to a pound in weight, it is an old popular saying that a pint is a pound the world over

Avoirdupois 1 dram (weight)=27 34375 grains=(27 $\frac{11}{32}$ grains Troy=1 77185 gramme—Troy 1 dwt 311,32 grains=Apothecaries' 1 scruple & 711 32 grains

16 drams Avoirdupois weight=1 Avoirdupois ounce

Avoirdupois 1 ounce weight=16 Avoirdupois drams=Troy 18 dwt. 5½ grains=437 5 Avoirdupois grains=Apothecaries' 7 drams & 171¼ grains=28 35 grammes.

1 fluid Imperial ounce) (Standard Measure) =1 Avourdupois ounce (of capacity)=28 396 *C C* or 29 57 to 30 0 *C C* =28.4123 millilitres=28 3485 grammes or 30 grams (30 gm)=8 fluid drachms=437 5 grains of water=2 teaspoonfuls=0 028413 litre=Apothecaries' 8 fluid drams=480 Apothecaries' minims.

16 Avoirdupois ounces (weight) or 1 lb Avoirdupois weight =1 Imperial lb weight=7000 grains=453 59243 grammes Avoirdupois=0 4536 kilogramme=16 ounces=258 drams=Troy 1 lb 2 ozs 11 dwt 16 grains=7000 grains =Apothecaries' 1 lb 2 ozs 4 drams 2 scruples=About 38 tolas

2 lbs 3½ ozs Imperial=1 kilogram (Metric)

14 lbs Avoirdupois (weight)=1 stone (st.)=6.3503 kilogrammes or kilograms

28 lbs Avoirdupois (weight)=1 quarter (qr)=12 7006 kilogrames=Troy 34 lbs.6 dwt & 16 grains

1 Quarter weight Avoirdupois=28 lbs.=448 ozs.=7 168 drams=Troy 346 dwt & 16 grains

4 Quarters weight Avoirdupois=112 lbs =1 Hundred weight (cwt.)=50 8024 kilogrammes =Troy 146 lbs 1 oz. 13 dwt. and 8 grains.

1 Cwt. (Hunderweight) Avoirdupois weight=4 Quarters=112 lbs =1792 ozs.=28,672 drams=Troy 146 lbs 1 oz. 6 dwt. & 16 grains=50.8 kilograms

20 Cwts. (weight) Avoirdupois=1 Ton=2240 lbs =1016 kilogrammes=80 quarters=2420 lbs.=35 840 ounces=

Troy 2922 lbs 2 ozs 13 dwt & 8 grains=5,73,440 drachms

Avoirdupois 1 Ton (weight)=Troy 2922 lbs 2 ozs 13 dwt 8 grains=1016 kilogrammes

1 Troy ounce=1 Apothecaries' ounce weight =480 Grains =32 Mashas Imperial =28 35 grams or 31 1035 grammes nearly ?=28 41 C C =8 drams Imperial Apothecaries' weight (this is also not Official, but is sometimes used in America).

$2\frac{17}{79}$ tolas=28 $\frac{968}{2000}$

Imperial 1 minim (M.) (capacity) (0 9114583 grain of water at 16 7°C C or 62°F)=About 1 to 2 drops=0 0592 millilitre (ml)=0 059 C C or 0 06 C C=0 000059 litre

1 Gutta (gtt) (Imperial liquid measure)=1 drop, supposed erroneously to represent one minim

Imperial Standard 1 fluid or liquid dram measure=60 minims

Imperial Standard 1 fluid or liquid ounce measure=8 fluid drams=480 minims

Imperial Standard measure 1 Pint=20 fluid ounces=160 fluid drams=9600 minims=567 919 C C=56972 litre

1 Pint measure (of capacity)=16 fluid ounces=128 fluid drams=7680 minims=4 gills=0 568 litres

8 Pints (British Imperial Standard liquid measure)=1 gallon (C I) i e, about ten pounds of distilled water

Imperial Standard measure 1 quart (of capacity)=2 Pints=40 fluid ounces=320 fluid drams=19,200 minims=1 136 litres=64 tablespoons=4 breakfast cups or 4 tumblers=256 teaspoons

1 Litre=1 75980 pints=1 pint 15 fluid ounces 1 fluid drachm 34 minims nearly=35 196 fluid ounces=035216 cubic foot=1000 C C

1 Millilitre (Metric)=16 89 Minim (Imperial) ?

1 Standard or Imperial gallon (of capacity)=277¼ cubic inches (i e, 277 274 C in)=4 quarts=8 pints=128 fluid ounces=1024 or 1280 fluid drams?=61,440

minims or 76,800 minims?=160 fluid ounces=4.537 litres or 4.546 litres=10 lbs. of distilled water.

1 American gallon=3.785 litres.

9 gallons=1 *Firkin*=¼ barrel.

36 gallons=1 barrel.

Troy Weights

3.17 grains=1 carat.

24 grains=1 pennyweight (dwt.)=0.877 Avoirdupois dram=1 scruple and 4 grains.

20 pennyweights=1 ounce=1 oz. 1.55 drachms (Avoirdupois) =480 grains.

12 ounces=1 pound (lb.)=13 ozs. 2.65 drachms (Avoirdupois)=5760 grains.

100 pounds=1 hundredweight (cwt.)

N.B.:—The Carat is not a measure of weight, but the proportion of gold in the alloy composing the article. Articles of gold are reckoned as consisting of 24 carats, of which so many (usually 9, 15, 18 or 22) are of pure gold, and the rest alloy. An article stamped 9 carats is 9 parts of gold and 15 parts alloy. A sovereign is 22 carat gold.

United States Apothecaries	British Imperial. Pt.	fl.oz.	fl.dr.	Drs.
1 Gallon=.83311 Imperial gallon or	6	13	2	22.85
1 Pint=.83311 Imperial pint or	0	16	5	17.86
1 Fl. oz.=1.04139 Imperial fluid ounce or	0	1	0	40.76
1 Fl. dr.=1.04139 Imperial fluid dram or	0	0	1	2.48
1 minim=1.04139 Imperial *minim or*	0	0	0	1.04

Solid Measures

Comparative Value of Metric to Apothecaries Weights

1 *Dram* ..	= 4 *Grams.*	5 *Drams* ..	= 19.50	Grams.
2 Drams ..	= 7.9 „	6 „ ..	= 23.4	„
3 „ ..	= 11.70 „	7 „ ..	= 27.5	„
4 „ ..	= 15.5 „	8 „ ..	= 31.10	„

Fluid Measures

Comparative Value of "Apothecaries," to "Metric'

Apothecaries.	Metric Cubic Centimeter	Apothecaries.	Metric Cubic centimeter
1 Dram	3 75	5 Drams	18 5
2 Drams	7 5	6	22 5
3 "	11 25	7	26
4 "	15 5	8 or 1 oz	30

Relation between Avoirdupois and Troyweights

(i) 1 lb Troy=12 × 20 × 24=5760 grains Troy
1 lb Avoirdupois=7000 grains Troy
therefore 175 lbs Troy×144 lbs Avoir

(ii) 1 oz. Troy=5760—12=480 grains Troy
1 oz Av=7000—16=437½ grains Troy

From these relations it is clear that (i) a pound of feathers is heavier than a pound of gold ! (ii) an ounce of feathers is lighter than an ounce of gold ! (iii) an ounce of gold or silver is heavier than an ounce of tea!

To Reduce Avoirdupois Weight to Troyweight

Reduce given Avoirdupois weight to lbs Avoir and multiply the result by 7000 The product will be the weight in grains Troy

To Reduce the Troyweight to Avoirdupois Weight.

Reduce the given Troyweight to grains and divide the result by 7000 The quotient will be the weight in lbs Avoir

To Reduce Indian Weight to Troyweight.

Multiply the weight in tolas by 180 the result will be the weight in grains Troy

To Reduce Troyweight to Indian Weight.

Reduce the Troyweight to grains then divide by 180, the result will be the weight in tolas

To Reduce Avoirdupois Weight to Indian Weight and Vice Versa

1 lb.=7000 grains. 1 tola=180 grains. i.e., Multiply the weight in cwt. by 7 and divide by 5; the result will be the weight in maunds.

To Convert Indian Weights to Avoirdupois.

Multiply the weight in minims by 5 and divide by 7, the result will be weight in cwt.

Weights & Measures of Water & Other Liquids etc., showing Relation of Capacity to Mass (Imperial)

1 Minim=0.9114583 gr. of Water at 62°F.
1 Litre of Water weighs 1 kg. (kilogramme) i.e., 2.2046 pounds (Avoir.)=1.76 nearly.
1 fluid drachm=54.6875 grain of Water at 62°F.
1 cubic foot of Water weighs 62.321 lbs. or 62¼ lbs. nearly= 6.2321 gallons.
1 fluid ounce=437.5 grains (Avoir.) of Water at 62°F. or approximately 6¼ gallons=7.48 U.S. gallons or 1000 Avoirdupois fluid oz.
1 cubic inch of Water weighs .0361 lbs.
1 gallon (8 pints) distilled Water at 62°F. (contains 277 .274 cubic inches) weighs 10 lbs. (70,000 grains).
35.943 cubic feet (224 gallons) of Water weigh 1 Ton.
1 Pint distilled Water weighs 1 to 1¼ lb.
100 grains of Water at 62°F. measure 110 minims or more correctly 109.7143 minims at 60 to 62°F.
*This is taken as 110 minims throughout the British Pharmacopoeia.
1 U.S. gallon=231 cub. in=0.1337 cub. ft. at 62°F.
1 lb. of water at 62°F. 0.016 cub. ft.
1 B. J. gallon=277.418 cub. in.

20 fl. oz. (1 pint) weigh 8750 grains.

British gallon=1.2009 U.S. gallon.
1 cwt. of water=1.8 cub ft.=11.2 gallons

1 ton of water—35.9 cub. ft.=224 gallons.

(70,000 grs.)

1 inch of Rainfall—22.622 gals. per acre=100 tons (approx.)

A Gallon of Milk weighs approximately 10½ lbs.

"	Mercury	"	135.9	"
"	Sperm oil	"	8.8	"
"	Sulphuric acid	"	18.5	"
"	Hydrochloric acid	"	12.1	"
"	Turpentine	"	8.7	"
"	Alcobol	"	8	"
"	Petrol	"	7½	"
"	Nitric acid	"	15.3	"
"	Acetic acid	"	10.4	"

Clues & Hints

For detailed Tables of Conversion Factors for Imperial and Metric Weights and Measures amongst many, refer to the Annual Diaries published by the following few eminent Mfg. Chemists:—

1. May & Baker.
2. Burroughs Wellcome.
3. Bengal Chemical & Pharmaceutical Works, Ltd.,
4. Bengal Immunity Co., Ltd.,
5. Amrit Laboratories Ltd., Bangalore 2
6. Hoffmann-La Roche, Inc., Nutley N.J. (U.S.A.'s) Calendar Quick Reference conversion Tables booklet.

For exhaustive Foreign Tables of Weights & Measures, a reference to the following publlcations will enlighten minutely:

1. Pharmaceutical Pocket Book.
2. Martindale's Extra Pharmacopoeia.
3. British Pharmacopoeia.

N.B.:—Millilitre (ml.) is the new standard used, for measuring liquids, in place of the older term cubic centimeter (C.C.)=16.9 Minims nearly.

Care should be taken to distinguish between fluid drachms and drachms and also between fluid ounces and ounces, which are by no means identical.

The Troy ounce is greater than the Avoirdupois ounce in the proportion of 79 to 72 nearly.

The Troy ounce equals 480 grains and the Avoirdupois ounce 437.5 grains.

The Grain Avoirdupois is the same as the Grain in Troy weight.

In Apothecaries weights, the Grain, Ounce and Pound are the same as in the Troy Weight

In Continental prescribing a smaller quantity than ½ a cubic centimetre is usually expressed in drops.

In all dispensing in the British Empire the custom is:— Solids by weight, Liquids by measure.

To convert Centigrade Thermometer scale to Fahrenheit Thermometer scale, multiply by 9/5 and add 32.

To convert Fahrenheit Thermometer scale to Centigrade scale, substract 32 and multiply by 5/9.

Liquids are also usually reckoned by weights.

Baths

The immersion of the whole or a part of the body in some liquid is called "A Bath" It is said to be *general* when the whole body is brought under its influence, and *local* when a part only *Strictly speaking, only medicated baths come under therapy* Following are the different kinds of medicated as well as non-medicated baths, adopted in the Ayurvedic and Western Systems of medicine, classified according to Temperatures —

1 Cold Bath 40 or 45 to 65 F
2 Cool Bath 65 to 75 F
3 Tepid Bath 75 or 85 to 90 or 95 F
4 Warm Bath 90 or 95 to 100 F
5 Hot Bath 100 to 110 F
6 Very Hot Bath 110 to 120 F

Vapour Bath

7 Warm 100 or 110 to 120 or 150 F
8 Hot Air, 115 to 140 or 150 F

'A vapour bath may be improvised by placing in bed a few strong bottles filled with nearly boiling water, tightly corked down, and wrapped in pieces of flannel wrung out of hot water The patient should be well covered and the bottles should be placed all round the patient"

Varieties of Bath —1 Continuous 2 Turkish 3 Medicated —(a) Sea bath (b) Salt bath (c) Alkaline bath (d) Acid boric bath (e) Sulphur bath (f) Mustard bath (g) Bran bath (h)Neem bath

For descriptive details see—'A Hand Book of Ayurvedic Materia Medica, Vol I by Dr H V Savnur"

The different times and periods for the administration of Ayurvedic medicines with their indications —

1 Fasting —In *Kapha* diseases when both the patient, and the *Dosha* are strong

2 Before food when *Apana Vata* is vitiated
3 During middle part of food when *Samana Vata* is vitiated
4 After food when *Vyana Vayu* is disordered
5 At the end of each morsel of food or with each morsel of food when *Prana Vata* is vitiated
6 Very often in *Visa, Chardi, Hidma, Trt, Swasa* and *Kasa.*
7 Along with the whole food with various varieties of food in *Arocaka*
8 Both before and after light food in *Kampa, Aksepaka* and *Hidma*
9 At bed time, in diseases of regions above the clavicles

(Page 50 of "Fundamental Principles of Ayurvedic Medicine", published by —Government of Madras)

"Ayurvedic medicines may be administered during four periods of the day, viz., Sunrise, Mid-day, Evening and Night Sometimes they are administered frequently Morning is regarded as the best time for administering such medicines as purgatives, emetics, decoctions and pills which are generally given once daily When no specific direction is given regarding the time of administration, morning must be taken for granted Very often one sort of medicine is given in the morning and another in the afternoon Some medicines for dyspepsia are given before, along with, and after meals" —*U C Dutt's* 'Materia Medica of the Hindus')

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The immersion of the whole or a part of the body in some liquid is called "A Bath". It is said to be *general* when the whole body is brought under its influence, and *local* when a part only. Strictly speaking, only medicated baths come under *therapy*. Following are the different kinds of medicated as well as non-medicated baths, adopted in the Ayurvedic and Western Systems of medicine, classified according to Temperatures:—

1. Cold Bath 40 or 45 to 65 F.
2. Cool Bath 65 to 75 F.
3. Tepid Bath 75 or 85 to 90 or 95 F.
4. Warm Bath 90 or 95 to 100 F.
5. Hot Bath 100 to 110 F.
6. Very Hot Bath 110 to 120 F.

Vapour Bath

7. Warm 100 or 110 to 120 or 150 F.
8. Hot Air, 115 to 140 or 150 F.

'A vapour bath may be improvised by placing in bed a few strong bottles filled with nearly boiling water, tightly corked down, and wrapped in pieces of flannel wrung out of hot water. The patient should be well covered and the bottles should be placed all round the patient."

Varieties of Bath:—1. Continuous. 2. Turkish. 3. Medicated:—(a) Sea bath. (b) Salt bath. (c) Alkaline bath. (d) Acid boric bath. (e) Sulphur bath. (f) Mustard bath. (g) Bran bath. (h)Neem bath.

For descriptive details see—"A Hand Book of Ayurvedic Materia Medica, Vol. I by Dr. H. V. Savnur".

The different times and periods for the administration of Ayurvedic medicines with their indications:—

1. Fasting:—In *Kapha* diseases when both the patient, and the *Dosha* are strong.

A few different Modes and Processes of Application of Ayurvedic Medicines are:—

1 *Vastikarma* or Injections into rectum, urethra, vagina etc
2. *Phala Varthi* or Suppositories
3 *Siro Vasti* or Applications to the head
4 *Netrakarma* or Applications to the eyes
5 *Nasyam or Nasya* or Application of medicated substances to the nose
6 *Kavala* or Gargles
7 *Praleps* or Plasters.
8 *Pradeha* or Poultices
9 *Swedana* or Application of heat to the skin for inducing perspiration
10 *Dhumapana* or Inhalations
11. *Dhupana* or Fumigations
12 *Ksarakarma* or Caustic Applications
*13 *Vamana* or Treatment by emetics
*14 *Virechana* or Treatment by purgatives
*15 *Anuvasana* or Administration of oily enemata
*16 *Niruhana* or Administration of dry enemata
*17 *Shirovirechana* or Purgation of the nasal organ and other secreting organs in the region of the head through errhines, massage etc

* Pancha-Karma of Ayurveda

P S —The patient has to undergo certain preliminary treatment consisting of two processes viz, *Snehana* and *Swedana* *Snehana* consists of the administration of medicated ghees, oils, and fats, serves to lubricate the body *Swedana* consists in perspiring the body of the patient, and *Sweda*, however, is also used to signify the application of heat or fomentation even when perspiration is not meant to be produced. It also includes steam-baths, warm water-baths, and hot catapiasma of medicinal plants, before being subjected to

the above *Pancha-Karma or the 5 Processes

(Page 49 of "Fundamental Principles of Ayurvedic Medicine" published by Government of Madras and Pages 253 to 254 of "System of Ayurveda" by Shiva Sharma, Ayurvedacharya)

N B —Refer also to Appendix VI of this book, for more information

Ayurvedic Classification of Drugs

In Ayurveda, drugs, (Vegetable, Mineral and Animal) are broadly described and classified under five properties, viz.,

(1) Rasa, (2) Guna, (3) Veerya (4) Vipaka and (5) Prabhava

(1) *Rasa*, or the taste, is of six kinds, namely, 1 Sweet, 2 Sour, 3 Salt, 4 Pungent, 5 Bitter and 6 Astringent The Sweet increases the activity of *Kapha* in the body, the Sour and Salt of *Pitta* and *Kapha*, the Pungent of *Pitta* and *Vayu* and the Bitter and the Astringent of *Vayu* only The *Rasas* other than those which increase the activity of a particular *Dosha* would prove detrimental to the activity of that *Dosha* Thus Sweet, Bitter, or Astringent would reduce *Pitta* as Pungent, Bitter, and Astringent would reduce *Kapha*

(2) *Gunas* or the attributes of various substances are divided into five classes, namely, Heavy, Unctuous, Keen and Sharp, Dry and Light, each representing the attributes of the Earth,—Water,—Fire,—Air,—and Ether,—substances respectively These are further sub-divided into a large number of attributes like Sharp, Hard, Thick, Cold, Mild, Soft etc The drugs carrying the attributes of Water and Earth-substances increase the activity of *Kapha*, Fire substances of *Pitta* and Air and Ether-substances of *Vayu*

(3) *Veerya* is the potency of the drug It is either heating or cooling The first is dominant in *Pitta*, the second is a common factor in *Vayu* and *Kapha*

(4) *Vipaka* is the consequence of change or action which the drug undergoes in he human organism and is of three kinds, namely —1 Sweet, 2 Sour, and 3 Pungent As a general rule the Sweet and Salt *rasas* are changed in the course of *Vipaka* into Sweet, the Sour remains Sour, and the Pungent Bitte and Astringent, are transformed into Pungent The

Sweet strengthens *Kapha*, the Sour *Puta*, and the Pungent *Vayu*

(5) *Prabhava* is the dominating influence or the active force of a drug. *Amalaki* (Emblica Officinalis), for instance, is very mild in *rasa*, *guna*, *veerya* and *vipaka*, yet it has the potency of reducing the three *Doshas* when taken internally. Similarly we find that the root of *Vernonia Cineria* tied with the hair of the head destroys the quartan fever. A few drops of the juice of *Leucus cephalotes* poured into the eye of the patient, remove the quartan fever. There may be two herbs similar in all the other four properties, but might show different results owing to their fifth quality of *Prabhava*.

In Ayurvedic System also the drug according to the exigencies of each case should be administered singly or in combination But there are factors which are beneficial in their separate capacities but grow harmful when brought together. Even this branch of the knowledge of harmful combinations of drugs and diet (*refer to the modern subjects of Compatibility and Incompatibility of medicines and drugs in Western Pharmacopoeias*) was reduced from empirical knowledge in general principles Substances, suitable in themselves to the body, were found to grow unsuitable under the considerations of their place, time, measure, mixture and nature, etc. Fish for example, especially of Chilchima variety should not be taken with milk; the meat of domesticated animals, of those that live in marshy region, and of those that are acquatic, should not be taken in conjunction with such things as honey, sesame oil, molasses, milk, garden radish, lotus-stalks, paddy (when sprouting) etc, etc.,—(Charaka, Sutra, XXVI 86)

From —"System of Ayurveda" (pages 268-272) (1929 edition) by Shiv Sharma, Ayurvedacharya

N B —Readers desiring some useful knowledge re manufacture and use of special Siddha preparations, and re Unani-Tibbi preparations, may read (1) "The Hand Book of Indian Medicine or the Gems of Siddha System" (In English) by Dr T G Ramamurthi, and "Unani Pharmacopoeia" (In English) published by the Madras Provincial Indian Medical Practitioners' Co-Operative Pharmacy & Stores, Ltd, Madras 20, respectively

Dosage or Posology

"By dosage is meant the quantity of a drug required to produce action either immediately or after repetition. The largest quantity which can be given without untoward effects is called the *maximum dose* The dose of drug usually bears a direct relation to body weight and it is rational to calculate it per unit of body weight when full response, specially in case of powerful remedies, is being aimed at However, in case of certain drugs there is no relation between the body-weight and the dose required In case of insulin, for instance, the dose is directly related to the severity of the disease and not the weight of the patient Again in case of anti-toxic sera their dose is governed by the amount of toxin requiring neutralization Young persons require smaller doses than older ones, since younger tissues react more readily and also because weight is less. In children the dose is usually given according to age".—("A Treatise on Tropical Therapeutics" Vol. I (1950) by R N. Chopra and others)

Supposing the full dose of an *Ayurvedic medicine* for adults to be two tolas, the doses for children of different ages would be as follows —For infants a *month old*, 1 *gunja*, an additional *gunja* for each additional *month* For children, a year old, the dose would be one *masha* or twelve *gunjas*, and an additional *mash for every year, till the dose of sixteen mashas* or two tolas is reached at the sixteenth year From sixteen to sixty the full dose should be used, after which it should again be gradually reduced. When infants are unable to take decoctions and other bulky medicines, their wet-nurses are made to take them Sometimes small quantities of medicines are applied to the nipples, and the infants made to suck them

Observations regarding Allopathic Medicines in particular and other Medicines in general

In almost every system of medicine, the doses of medicines are not fixed They are regulated for their action, by the age, sex, strength, habits of life, body-weight, mental emotions and impressions (temperament and idiosyncrasies), race, and diges-

tive power of the patient, the nature of the illness, the state of the viscera and humours, diathesis, and lastly by the properties of individual drugs

"Medicines should be freshly prepared and bottles should be well shaken before measuring out the doses"

"Women rarely require the same doses as men, reduce the doses about one-third. This, however, varies greatly" Avoid aloes during pregnancy, sulphuric acid during lactation, and mercury in anaemic chlorosis

"Persons whose general health is good bear stronger doses than the debilitated and those who have suffered for a long time"

Old age and children do not bear doses proportionately to manhood and youth *Excepting under urgent circumstances an opiate should never be administered to an infant* Blisters and leeches produce more decided effects on children than on adults—all things being equal—and the former are especially apt to induce ulceration and gangrene in the young Per contra, mercury is better borne proportionately in childhood (and old age) than in middle life—it is all but impossible to salivate a child under ten years of age The following is the scale of doses (Allopathic) employed at Guy's Hospital, London, based on Gaubius' dose table, the adult dose being represented as 1 —

Age	Dose	Age	Dose
Under 1 year	1/12	Under 7 years	1/3
„ 2 years	1/8	„ 14 „	1/2
„ 3 „	1/6	„ 20 „	2/3
„ 4 „	1/4	„ 21 to 60	1

Above 60 years, the adult dose is reduced to 4/5 or 2/3 and in extreme senility to one-half

"Children tolerate Arsenic, Calomel, Squill, Belladonna, Hyocyamus, Ipecacuanha, Rhubarb, Jalap Sulphonamides, etc, in fairly large doses, *while opium in very small doses causes fatal results Therefore, opium and its preparations should be used with great caution in children* Yet, in some parts of India infants are habituated to the use of opium It is given with a view to keep them quiet while their mothers are at

work Many wet-nurses secretly administer it to their wards!'

Sanguine and sanguino-nervous temperaments will bear antiphlogistics, as well as loss of blood, but the reverse is true as to stimulants Antispasmodics are strikingly beneficial to nervous temperaments Persons of a phlegmatic temperament bear stimulants and purgatives better than those of a sanguine temperament, therefore the latter require smaller doses

Always enquire as to idiosyncrasies, especially towards mercury and opium.

Idiosyncrasy to drugs

Indians as a rule require smaller doses than Europeans except in case of purgatives, of which they require larger doses Besides such difference due to race, climate, or age, the susceptibility to drugs varies very much, and there is hardly a drug to which some persons are either remarkably indifferent or very susceptible At times there are found certain individual peculiarities to certain drugs This is called an idiosyncrasy In other words idiosyncrasy is a peculiar temperament or disposition *not common to people generally* No rule can be laid down for the discovery of idiosyncrasy in any given case, except that persons of the *neurotic or hysterical type, especially women* have a more marked tendency The condition is a frequent cause of disappointment in treatment to both patient and doctor and an equally frequent cause of alarm to the practitioner, from the excessive action of a dose, which was thought to be quite moderate Such idiosyncrasy is illustrated by some persons who cannot take calomel in the smallest dose without being salivated or rhubarb without having convulsions, others cannot take "squills, opium, senna, quinine etc, by the smallest particle of mercury sometimes producing salivation, by iodide of potassium occasionally exciting symptoms of *Coryza*, and by pollen exciting hay asthma in some people It is not, however, medicines only which produce extraordinary effects on peculiar constitutions There are persons who cannot eat celery, shellfish, oatmeal cakes, strawberries, apples, mushrooms, or cucumber without suffering from nettlerash or colic, and this hypersensibility called allergy is also a type of idiosyncrasy, and applies both to drugs and

foods, e g —some who are allergic to white of egg become ill if they eat even a very small amount of it Allergy may also be produced in some people by breathing in a substance, e g, —horse-hairs or pollen of certain plants and even by insect bites!

These peculiarities, however, are very much the exception although certain neurotic people are inclined to imagine they possess them when they really do not This is not infrequently the case when the medicine suggested is unpleasant in taste or in immediate effect Nevertheless, it is wrong to insist upon their taking these medicines or foods

('Moore s Manual of Family Medicine & Hygiene for India (1935) & O Meara's 'Medical Guide for India & Book of Prescriptions (1924) & 'Enquire Within Upon Everything' 118th Edition)

Town dwellers, particularly in overcrowded quarters, cannot bear doses which are quite suitable for those of rural or outdoor life—this applies especially in the case of children A degree of active treatment necessary to relieve acute diseases in the latter will probably tend to death among the former

"Purgatives never act so well upon persons accustomed to take them as upon those who are not, therefore it is better to change the form of purgatives from pill to potion, powder to draught, or aromatic to saline Purgatives should never be given when there is an irritable state of the Bowels"

Habit inculcates tolerance even of poisons

Blondes require larger doses than brunettes

Indians, Negroes, Malayans and the dark and yellow races are for the most part amenable to half the doses customary for Anglo Saxons

Passions and affections of the mind markedly influence the action of remedies, especially narcotics Faith in the prescriber may remove mountains of difficulties Every means should be used to implant confidence and stimulate hope

Judicious combinations of medicines are often more effective than remedies employed singly, but combinations are to be avoided except when great advantage seems probable Digitalis frequently fails to act as a diuretic until combined

with squill or carbonate of ammonia, and diaphoresis is more certainly induced by opium and Ipecacuanha combined than by either singly

Chemical incompatibilities are usually to be avoided, yet because of such incompatibilities the resulting compound is not necessarily inert Of all unscientific combinations perhaps the most signally useful is that of *opium* and acetate of lead, which react and produce acetate of morphine and meconate of lead

Regulation of dose—Almost every drug operates differently when given in large and small doses Tartaremetic, for example, in doses of one-twelfth to one-sixth of a grain, acts as a diaphoretic and expectorant, but two or three grains are powerfully emetic Opium is stimulant in small and narcotic in large doses and oil of turpentine in doses of one or two drachms acts as an acrid irritant of the kidneys and genito-urinary organs while in doses of one or two ounces it operates freely upon the bowels without renal or vesical irritation There is a source of error in the difference between the drop and the minim Drops vary in volume according to the density of the fluid and the character of the vessel from which it is poured Patients should be instructed to use a drop measure

The dose of any given medicine, particularly a narcotic or purgative should be regulated in accordance with the effect produced in each individual rather than with published tables

The character, period and form of disease influence the operations of medicines in no slight degree In epidemics it is worthy of note that a remedy which is highly beneficial at one period appears to possess no efficacy at another Usually, while the onset and climax of an epidemic are marked by numerous deaths, with its wane recoveries are the rule hence the period of an epidemic influences the action of medicines

Certain morbid conditions of body or intensity of disease also modify the action of remedies Note the tolerance of opium in spasmodic affections and of mercury in yellow fever or suppurative hepatitis

The same is true of *deranged conditions or functions* especially where the digestive organs are involved Perhaps quinine may cease to act as an antiperiodic or digitalis as a

diuretic, and tonics may prove distressing irritants

Diet exercises a marked influence *Antiphlogistics* refuse to act in the presence of an excess of animal foods along with stimulants, and the latter notoriously interfere with the action of mercurials *Amylaceous foods* neutralise iodine preparations, and iron *salts* are inoperative when confronted with vegetable acids during febrile conditions

The time of administration affects the action of medicines Narcotics, emetics and diaphoretics operate most favourably when administered an hour or two before bedtime But stimulants and narcotics never act so quickly upon persons accustomed to use spirits freely as upon those who live abstemiously *Diuretics* are best given during the day, when the body may be kept cool, *resinous cathartics* are best at bedtime, other catharties, such as neutral salts oil, and those which are speedy in operation, early in the morning *Quinine* acts best on an empty stomach *arsenic* on a full one 'Iodine or the iodides should be given on an empty stomach If given during digestion the acids and starch alter and weaken their action Acids, as a rule should be given between meals Acids given before meals check the excessive secretion of the acids of the gastric juice Irritating and poisonous drugs such as salts, arsenic, copper, zinc, and iron should be given after the process of digestion is ended if given during or close after meals, the chemicals destroy or impair their action Potassium permanganate, also should not be given until the process of digestion has ended, inasmuch as organic matter decomposes it and renders it inert The active principle of the gastric juice is impaired and rendered inert by corrosive sublimate, tannin and pure alcohol hence they should be given at the close of digestion Malt extracts Cod liver Oil, phosphates etc , should be given with or directly after food"

Light, air and exercise possess great therapeutic power, and are essential adjuvants to drugs *Confinement in close, dark, ill ventilated apartments* counteract any benefit that otherwise might be had from tonics, *violent physical action retards the effects of diuretics*

Climate and *Season* are modifying agents Some diseases, independent of remedial measures, improve at certain seasons

and relapse at others, tuberculous patients almost invariably improve in summer, remain stationary in winter, and decline in spring "Action of medicines is also modified by climate and seasons In summer certain medicines act more powerfully than in winter, and the same person cannot bear the dose in July that he could in December"

The form in which the remedy is administered may modify its action Where a speedy effect is desired a liquid form is usually preferable, especially is this the case with quinine and morphine *Digitalis* in tincture is a direct heart sedative, in infusion, a diuretic Insoluble remedies, such as *rhubarb* and *reduced iron*, are best given as a powder or pill, and the pill form usually is improved by the addition of soap, which agent hastens disintegration in the intestines and renders the action of purgatives milder and at the same time more certain Powders may be given in syrup, honey, cachets, or gelatin capsules

Disguising the taste of medicines is often a matter for consideration *Castor and cod liver-oils* are better tolerated if orange-peel or aromatics are well masticated for a few moments before the oil is taken, *senna* may be drunk at tea with milk and sugar *tannin* covers the taste of *quinine* liquorice, that of *aloes, cascara sagrada quinine* and other bitters, and infusion of roses that of *Epsom salt*

By the rectum drugs may be administered in doses double those customary by the mouth

For hypodermic use, drugs should be given in about one third to one half of the dose ordinarily administered by the mouth A marked exception to this rule is found in strophanthone the hypodermic dose of which is not more than one-seventh of the oral dose

Caution —It will be well to remember that extra care is necessary in administering atropine to flaxen haired, light complexioned, nervous females ('Index of Therapeutics & Materia Medica' (1936-1938) published by Parke Davis & Co. Bombay)

Personal eating habits and racial and religious restrictions and economic and geographic availability of foods and medicines are also important factors which affect the prescrip-

tions of diets to patients When preparing food-diets for patients, always make the servings attractive to sight, taste and smell, and serve at the proper temperature *The best planned diet is useless unless eaten by the patient*" ("Hand Book of Medical Management" (1951))

As Homoeopathy is also gaining popularity in India, a few lines about it seem necessary (Refer to Pages 623 to 637 of Index section of this book) "Allopathic treatment is said to be experimental, while Homoeopathic treatment is based on certainty, resulting from experience The allopathist tries various drugs, and if one medicine or one combination of drugs fails, tries another, but the homoeopathist administers only such medicaments as may be indicated *by the symptoms of* the patient

Diet in Homoeopathy —'Homoeopathic diet is throughout in accordance with the laws of nature, and as such requires of the patient nothing more than the *avoidance of all influences* which can be injurious to the living organism as well as a *suitable moderation* in the use of all things which conduce to the nutrition of the body Though "great stress was laid by homoeopathists on diet, when the system was first introduced, but not so much so in the present day, articles of food that are chiefly recommended now in the West are —stale bread beef, mutton, poultry, fresh game, fish—chiefly cod and flat fish (avoiding mackerel) etc, eggs and oysters Rice, sago, tapioca and arrowroot are permitted, as are also potatoes, carrots, turnips, broccoli, cauliflower asparagus, French beans and broad beans Water, milk, cocoa and chocolate may be drunk. *It is desirable to avoid all things, that are not specified in the foregoing list* Ripe fruit may be eaten, but unripe fruit, unless cooked, should be scrupulously avoided"

Doses in Homoeopathy —"Average doses for adults are from half a drop to one drop of the tincture given in a tablespoonful of water, from two to four pilules, or from three to six globules. In using the tincture it is usual to measure out a few tablespoonfuls of water and to add to it a certain number of drops regulated by the quantity of water that is used For children medicine is mixed at the same strength but a less quantity is given" ("Enquire Within Upon Everything" 118th ditson).

ABBREVIATIONS FOR LANGUAGES ETC.

Afg or *Afghan* — Afghanistan
Ajmere,
Arab —Arabic,
Assam —Assamese,
Bazaar,
Beas,
Ben —Bengali,
Berar,
Bhutia or Butan —Butanese,
Bokh —Bokhara,
Bom —Bombay,
Burm or Burma —Burmese,
Can —(See —Kan) Canarese,
Cash —Cashmiri, (See —Kash)
Chanda —
Chin or China —Chinese,
Chittgong,
Chota Nagpur,
Cing —Cingalese, (See —Sinh)
Concan,—See —Koncan
Coorg,
C P —Central Province,
Cutch —Cutchi,
Duk—Dukhini or Dukni,
East Indian.,
Eastern Terai,
Eng —English,
Fr —French,
Garo,
Garhwali —Gharwali or Garhwalese—See —Gharwal
Ger —German,
Gharwal, (See —Garhwali)
Goa —Goanese,
Gond —Gandal, or Gondalese,
Gr —Greek,
Kon —Konkani,
Konean,—See —Conean
Kumaon —Kumaonese,
Lat —Latin,
L Burma —Lower Burma,
Lepcha,
Madras —Madras City or Province,
Mah —Mahrathi,
Mahableshwar,
Mal —Malayalam,
Malay —Malayese,
Manipur,
Merwara,
Monghyr,
Moor,
Mysore,
Nepal —Nepalese,
N W P —North-West Province,
Oudh,
Paharia,
Pangi,
Patna.,
Pers —Persian,
Porbunder,
Port —Portuguese,
Punj —Punjabi,
Pustu or Pushtoo (language of Afghanistan),
Raj or Rajput —Rajputani,
Ravi,
Sans —Sanskrit,
Sant or Santal —Santalese,
Seoni,
Sikkim
Sind —Sindhi,
Singbhum,
Sinh —Sinhalese —See —Cing,
South Ind —South Indian,
Sudan —Sudanese,
Guj or Guz.—Gujarathi,
Gwalior,

Himalayas,
Hind—Hindi or Hindustani,
Ind or Ind Bazaar—Indian Bazaar,
Ind Lang—Indian Languages,
Ital—Italian,
Jap or Japan—Japanese,
Jaspur,
Java—Javanese,
Jhelum (basin),
Kan (See—Can)—Kanarese or Canarese
Kash—Kashmiri or Cashmiri,
Sunderbans,
Sutlej,
Syria—Syrian,
Tam—Tamil,
Tel—Telugu,
Thana Dt—Thana District
Thibet or Tibet—Tibetan,
Tirhut,
Tulu—Tulu,
U Burma—Upper Burma,
Udaipur,
U P—United Province (Uttar Pradesh),
Urdu—Urdu
Uriya—Uriya,

N B.—(a) In the above words in italics invariably stand for the District or the names of the province or the country

(b) As the word Vernaculars is said to be a synonym for Slave languages (vide Autobiography of Pandit Jawaharlal Nehru) it has been substituted by the words of abbreviation 'Ind Lang' i e Indian languages in this edition

THE
INDIAN MATERIA MEDICA
(VEGETABLE KINGDOM)

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1. ABELMOSCHUS ESCULENTUS, W. & A., or HIBISCUS ESCULENTUS, Linn.

(N. O.—Malvaceae.)

Sans.—Tindisha, Pitali Gandhamula *Eng.*—Edible Hibiscus Ladies' fingers, Okra, Ockro *Hind.*—Bendi, Bhindi, Ramturai *Duk. and Punj.*—Bhindi *Ben.*—Dheras *Mah.* & *Sind.*—Bhendi *Bom.*—Bhenda *Guj.*—Bhinda, Bhindu *Pers.*—Babniyi *Arab.* & *Pers.*—Bamiyah *Tel.*—Bendakaya, Vendakaya *Tam.*—Vendaikkay, Vendi *Mal.*—Venda *Can.*—Bhendekayi *Kon.*—Bhendan *Sinh.*—Bhandaka *Burm.*—Youn padi si *Malay.*—J Kachang lindir, Ventik Kaya

Habitat.—Naturalised in all tropical countries, and grows abundantly throughout India. This is a large herb cultivated as a garden crop for its fruit. The plant grows to a height of about 6 to 10 feet.' [a]

Parts Used.—Immature capsules and ripe seeds or unripe fruit.

Constituents.— The fresh vegetable contains 89.80 p. c. moisture, and the completely dried matter contains Ether extract 1.76 p. c., Albuminoids 20.18 p. c. (contg. Nitrogen 3.23 p. c.), soluble carbohydrates 62.77 p. c., woody fibre 7.55 p. c. and Ash 7.74 p. c. (contg. Sand 0.19 p. c.) respectively.' [b] Fresh capsules abound in a copious bland viscid mucilage which consists of pectin and starch. Dried fruits yield 2 to 2.4 per cent. nitrogen and also salts of potash, lime and magnesia.

Action.—Emollient, demulcent, diuretic, cooling and aphrodisiac. ' The bland viscid mucilage has emollient and demulcent properties.' [c]

(a), (b), (c)—Bombay Govt. Agri. Dept. Bulletins and Annual Reports.

Preparations—Decoction prepared by boiling three ounces of the fresh unripe capsules cut traversely in a pint and a half of water for twenty minutes, straining and sweetening to taste, Mucilage and Poultice of bruised seeds which contain phosphoric acid

Uses—Most serviceable in fevers catarrhal attacks, irritable states of the genito-urinary organs such as dysuria gonorrhoea leucorrhoea and in all cases attended with scalding pain and difficulty in passing urine In dysentery especially in the chronic form the bland mucilage is often most beneficial Generally given in the form of soup Mucilage is considered to have aphrodisiac effect Tender pods are eaten in cases of spermatorrhoea Mucilage from the fruit and seeds or the fresh bruised capsules form an efficient emollient poultice The unripe mucilaginous fruit is prepared in various ways as food though occasionally it is eaten raw It is cooked either separately or in the form of curry with meat and seasoned with various spices The young green pods make a good pickle The ripe seeds are also used in curry and chutnies The capsules and seeds are also used medicinally as a demulcent [a*] A decoction of the fresh unripe capsules is administered in gonorrhoeal cystitis and urethritis and in other conditions where there is difficulty in micturition The vapour from the hot decoction is used as an inhalation in irritable condition of the throat and in troublesome cough of phthisis [b*]

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2 ABELMOSCHUS MOSCHATUS, Moench

(See—HIBISCUS ABELMOSCHUS, Linn)

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3 ABIES EXCELSA, DC.

(N O—Coniferae)

Constituents.—Essential oil 0 56%, bitter substance, glucoside coniferin

Action.—Stimulant rubefacient

(Chopra s I D of I pp 456)

(a*) Bom Govt Agri Dept Bulletins and Annual Reports
(b*) Chopra s I D of I pp 560

Abrin is that, when it is injected into animals in ifinitesimal doses, the animal rapidly acquires immunity to the action of the poison [1] The action of the seeds resembles that of the bacterial toxin The temperature is lowered by the injection of their infusion into the circulation of the lower animals and death takes place from cardiac depression and the blood remains fluid after death This poisonous property has been utilized by ophthalmologists for exciting an artificial purulent ophthalmia for the cure of pannus, granular lids or trachoma Hakims state that the seeds are hot, dry, tonic and aphrodisiac [1]

Preparations — Infusion, Medicated Oil, Paste of seeds and Juice of fresh leaves Infusion for *external* application *Medicated oil* prepared by boiling together two parts of *Ginja* and 4 parts of juice of *Bhrangraj* in 4 parts of Gingelly oil, syrup from roots

Uses — Leaves steeped in warm mustard oil are applied over the seat of pain or they are warmed over the fire and applied after smearing the part with warm castor oil *Juice of fresh leaves* mixed with some bland oil is applied to painful swellings Juice rubbed daily with plumbago root (*chitraka*) to leucodermatic spots for about a month will remove them to a large extent *Leaves of the white seeded variety are sometimes chewed separately or with cubeb and sugar and their juice swallowed in cases of hoarseness and aphthous stomatitis* *Root* is made into a syrup by boiling 2 ounces of fresh roots with 1 ounce of Abelmoschus capsules sliced, in 10 ounces of water for half an hour, straining then adding 8 ounces of sugar or honey and boiling down to the consistence of a syrup Dose — 1 to 4 drachms to be given frequently in the coughs of children. This syrup must be made fresh as required as it does not keep well *Seeds* when powdered and boiled with milk have a powerful tonic and aphrodisiac action on the nervous system Dose of the powder is 1 to 3 grains If administered uncooked they act as strong purgative and emetic, in large doses they are acrid poison, giving rise to symptoms like those of cholera Seeds are poisonous and are used by sweepers and other lower class people for criminally poisoning cattle to obtain their skins Seeds are ground into a paste and made into needles which are inserted under the skin of the animal Similar needles have also been used to produce criminal abortion [1a] Seeds

(1) Chopra s I D of I pp 263 & 456
(1a) Chopra s I D of I pp 263 & 264

are rubbed with a little water into a *paste* and applied to contusions to reduce pain and swelling It is also applied to the bare skin in alopecia, in sciatica, stiffness of the shoulder joint, paralysis and other nervous diseases. Mixed with the paste made of plumbago root it is applied as a stimulant dressing in white leprosy. When decorticated and finely ground they are used for pannus cornea (vascularisation of the cornea, usually due to the irritation of the granulations in conjunctivitis, the cornea is normally non vascular) and granular lids They cause a true purulent ophthalmia In olden days *Abrin* or a three per cent solution (or an infusion) prepared by steeping the decorticated and powdered seeds in cold water for 24 hours was brushed over the reversed lids two or three times a day to cause purulent ophthalmia "This acute inflammation gradually ceases and improves the condition of pannus and granulations in some cases, but it must be regarded as an extremely dangerous remedy as the inflammation is entirely beyond control In animals the eye is often completely destroyed by the application of *Abrin* In modern medicine, *abrin* is no longer used " (Chopra)[1] The following formula is beneficial in cases of paraplegia —Take of Abrus root 6, black sulphide of Mercury 12, fruit of Margosa tree (*neem*), Cannabis Indica and Croton seed each two parts Rub them together and make a paste in lime juice Dose —3 to 6 grs Diet —Rock salt (*Saindhava*) and Asafœtida are to be used *Root* is sometimes used as substitute for liquorice

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7 ABSINTHIUM OFFICINALIS, or A vulgaris

See—ARTEMESIA ABSINTHIUM.

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8 ABUTILON ASIATICUM, G. Don. See Abutilon Indicum.

(*N O—Malvaceæ*)

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9 ABUTILON AVICENNAE, Gaertn

(N O—Malvaceae)

Sans—Jaya *Bom*—Nahani Khapat.

Parts Used—Bark.

Action.—Bark is astringent

(Chopra's *I D of I* pp 456)

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(1) Chopra's I D of I pp 263 & 264

10 ABUTILON GRAVEOLENS, W & A.

(N O —Malvaceae)

Hind & *Ben* —Barkanghi *Mal* —Tutti

Constituents —Asparagin

Action—Diuretic mucilaginous

(Chopra s I D of I pp 456)

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11 ABUTILON INDICUM, G Don or A Asiaticum

(N O —Malvaceae)

Sans —Atibala Kankatika *Hind* —Kangahi , Kanghi , Kan jhani *Eng* —Country mallow *Punj* & *Sind* —Peelee bootee , Ati khirate Khapate *Ben* —Potaree Petari , Potari , Jhumka *Bom* — Madmi Chakrabhenda Kangori Kangoi *Goa* & *Kon* —Tupkadi *Lam* —Tutti Thuththi Peruntutti *Mal* —Pettaka , Uram *Tel* — Tutiri chettu Thuteribenda *Guj* —Dabali *Goa*—Petari *Malay* — Tutta *Can* —Shrimudrigida *Burm* —Bon khoye *Arab* —Masht ul ghoul *Pers* —Darakhte shanah *Sinh* —Anona , Anoda gaha *Bom* & *Cutch* —(seeds) Balbij

Habitat —Throughout tropical India and Ceylon

Parts Used —Root bark leaves seeds and fruits

Constituents —Leaves contain mucilage tannin organic acid nd traces of *Asparagin* and ash containing alkaline sulphates chlorides magnesium phosphate and calcium carbonate Roots also cont in *Asparagin* The mucilaginous substance contained in the leaves yields to hot water

Action —Leaves are demulcent aphrodisiac, laxative, diuretic pulmonary and sedative Bark is astringent and diuretic Root is diuretic Seeds are laxative expectorant and demulcent Mucilage yielded by leaves is diuretic and demulcent Zinc can be reduced into a *Sindoorum* which is specially useful for piles (Siddha system)

Siddha Action — Sweetish seethaveeryam, demulcent tonic laxative diuretic and sedative •

Preparations — Decoction of the seeds and bark (1 in 10) Mucilage of bruised leaves or mucilage yielded by leaves soaked in

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(a) —Therapeutic Notes

water Decoction of leaves Infusion of leaves or roots Seeds finely powdered, dose 1 2 drachms

Uses — Infusion of leaves (or leaves soaked in water yield a mucilage) or of *roots* is prescribed as a diuretic and demulcent in fevers, chest affections, gonorrhoea and urethritis Decoction of *leaves* is used as an eye wash and as mouth wash in toothache and in cases of tender gums and also in gonorrhoea, and internally for stone in the bladder (inflammation of the bladder) [1] *Flowers* and leaves are a local application to boils and ulcers Decoction of leaves is useful as a fomentation to painful parts [1] Leaves are used as a food in piles by Siddha physicians [2] *Juice* of leaves and ghee one tola each are given in catarrhal, bilious diarrhoea *Seeds* are used in decoction in piles and coughs They are distinctly useful in gonorrhoea gleet and chronic cystitis Seeds finely powdered can be given in doses of 1 2 drachms as laxative and expectorant [2] Seeds are burnt on charcoal and recta of children affected with thread worm are exposed to the smoke *Infusion of roots is used in relieving strangury* and haematuria, it is also useful in leprosy

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12 ACACIA ARABICA, Willd or A Ferruginea

(N O —Mimosaceae)

Sans —Vabboola, Vabbula, Barbara *Pers* —Kare-mugilan *Eng* —Indian gum arabic tree, Babul tree *Hind* —Kikar *Mah* —Babul, Kala babli *Beng* —Babhula *Sind* —Babhula. *Hind*, *Ben* & *Punj* —Babla, Kikar *Duk* —Kalikikar *Guj* —Kaloabaval, Baval *Tel* —Nallatumma, Barbaramu, Tuma *Tam* —Karuvael, Karuvelum *Can* —Karijali, Jali, Bauni *Mal* —Karuvelum, Babola *Kon* —Shameeruku *Punj* & *Kash* —Sak *Arab* —Am mughilam, Ummughilam. *Pers* & *Arab* —(extract) Akakia

Habitat.— Common all over India in dry and sandy localities, plentiful in Western Peninsula, the Deccan and Coromandal Coast

Parts Used.—Bark, gum, leaves, seeds and pods

Constituents.—Gum contains arabic acid combined with calcium, magnesium and potassium, also small quantity of malic acid, sugar, moisture 14 per cent, ash 3 4 per cent. Bark contains a large quantity of tannin, pods contain about 22.44 per cent tannin

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(a)—Therapeutic Notes.
(1) & (2)—Chopra's "I D of I", pp 456 & 561

Action—Astringent, demulcent, aphrodisiac, nutritive and expectorant. "Bark is a powerful astringent Pods are expectorant *Ahaba* (extract of gum) is styptic, tonic and astringent [1]

Posology—Dose of gum and extract is 30 grains each

Uses—Tender growing tops rubbed into a *paste* with sugar and water and given morning and evening act as demulcent in coughs Watery extract is injected to allay irritation in acute gonorrhoea especially in cases complicated with dropsy (when opium is prohibited) and leucorrhoea. Tender *leaves* beaten into a pulp are administered in dysentery and diarrhoea, this decoction is used in the same complaints as an astringent enema As *gargle* it is useful in spongy gums, relaxed sore-throat and as wash in haemorrhagic ulcers and wounds Bruised tender leaves formed into a *poultice* and applied to ulcers act as stimulant and astringent Decoction of bark is largely used as a gargle and mouth wash in cancerous and syphilitic affections, foul and aphthous stomatitis It is a useful injection or as a local astringent douche or enema in gonorrhoea, cystitis, vaginitis (vaginal discharges), leucorrhoea, piles, prolapsus aniprolapsus uteri (prolapse of anus) etc. Infusion or decoction of the bark (1½ ounces of bark to one pint of water) is given as an astringent tonic in chronic diarrhoea and diabetes mellitus, in doses of 1½ to 2 ounces twice a day "[2] Babul bark in combination with Mango bark, boiled for about half an hour in a pint of water forms a good preparation for mouth wash."[3] *Juice* of bark mixed with breast milk is dropped into the eye in conjunctivitis Burnt bark and burnt almond shell both pulverised and mixed with salt make a good tooth powder Gum is administered in the form of mucilage in diarrhoea and dysentery and also in diabetes mellitus, as the gum is not converted into sugar *Powdered gum* mixed with quinine is useful in fever cases complicated with diarrhoea and dysentery, mixed with the white of an egg it is applied to burns and scalds Powdered gum is also used to arrest haemorrhages Fried in ghee, the gum is useful as a nutritive tonic and aphrodisiac in cases of sexual debility In the form of emulsion the gum is a most common and useful adjunct to other medicines in pulmonary and catarrhal affections, and in irritable states of the genito-urinary organs Slight cases of cough or irritation of throat are often relieved by a piece of gum allowed to dissolve slowly in the mouth. "Gum is an efficient substitute for true gum acacia "[4]

(1), (2), (3) & (4)—Oxford "I D of I" pp 456 & 561

Pods are used in coughs The following is useful in chronic diarrhoea, dysentery and passive haemorrhages —Take of *Akakia* 2 drachms, berries of Myrtle 2 drachms Reduce these to a fine powder Dose —grs 10 to 30 three times a day.

13. ACACIA CATECHU, Willd. A. Suma ; or A. Wallichiana or A. Polyacantha.

(N. O —Mimosaceae)

Sans Mah and Can —(extract) Khadira *Eng* —Catechu ; Black Catechu *Hind* —Khair , Katha ; Kottha Fooflee Sooparee (Dye). *Mah & Ben* —Khair , Khayer *Bom* —Khaira , Khaderi *Gualior* —Khair , *Guj & Duk* —Kher , Kath Khar *Tel* —Podalimanu ; Poogamu , Kachu (dye) , Kaviti sandra *Tam* —Voadalam , Karangalli , Kasku kutta , Wothalay , Kasha katti (dye) *Mal* —Khadiram. *Kon* —Kathu *Can* —Kachu (dye) *Santal* —Khaiyar *Assam* —Khoira *Uriya* —Khoiru *Sinh* —Ratkihiri *Burm* —Sha

Habitat.—Common in forests of India and Burma "Lighter variety of catechu is an imported one from Malaya and Singapore and is derived from Uncaria gambier '[1]

Parts Used —Extract, bark, wood, flowering tops and gum

Constituents —Catechu tannic acid 35 per cent, catechuic acid or catechin , catechu red, *tannin, gum, quercetin* and ash *Catechu*-tannic acid occurs as a dark reddish brown powder which oxidises in the air 'Dye extracted from the inner wood is a brittle compact substance of chocolate colour containing much tannin, and an acid called catechuic acid, it has a stringent taste but no smell and is soluble in water '[2] "Dye occurs in dark brown masses with a very astringent taste '[3]

Action.—Powerful astringent

Preparations —Gum catechu, powder, tincture and decoction *Catechu* is a resinous extract prepared from the wood by boiling it in water and inspissating the decoction

Uses.— Catechu is chiefly used in India as an ingredient of the packet of betel leaves chewed by the people It is a valuable astringent 'given in doses of 5 15 grs alone or combined with cinnamon or opium '[4] in passive diarrhoeas and haemorrhages, either in *powder or as tincture* combined with other astringents, especially useful for

(2), (3) & (4) Chopra s "I D of I ' pp 561
(1)—*Manual of Jail Indsutries (1931) of Madras*

children Take powdered catechu and powdered cinnamon bark each 10 or 15 grains, mix them together in sufficient honey or syrup and make into four pills, or take of catechu powder three drachms and cinnamon bark powder one drachm, infuse both in half pint* of boiling water for two hours, filter and administer in doses of 1½ to 2 ounces three times a day For adults 5 drops of laudanum may be added to each dose during administration but not for young children ' A small piece of catechu with cinnamon and nutmeg '[1] held in toothache, loss of voice etc, also in cases of mercurial salivation lozenge and is of great service in hoarseness, relaxed sore throat, toothache, loss of voice etc, also in cases of mercurial salivation, bleeding, ulcerations and sponginess of the gums In toothache it is employed to stuff the hollow of the aching tooth An ointment, ' one drachm to an ounce of lard or vaseline '[2] makes a good local application to chronic ulcerations with foetid discharges, in obstinate cases a little of powdered copper sulphate (15 grains to the ounce of the ointment) may be added The *tincture* is an excellent application for threatened bed sores and the decoction is useful for washing sore or cracked nipples Catechu in the form of *injection* is useful in the treatment of gonorrhoea, otitis, otorrhoea etc

Some more Preparations—(1) *Kath bol* is a mixture of catechu and myrrh given to women after confinement, as a tonic and to promote secretion of milk. Combined with the seeds of Bonducella and with Ferri sulphas it is useful for strengthening gums (2) *Kathlon* is a confection containing the bark of Acacia Catechu, rose buds and sugar (3) *Svalpakhadiravatika* is a favourite medicine in diseases of the mouth and gums To prepare it take of catechu twelve seers and a half, water sixty four seers, boil down to eight seers then add nutmeg, camphor, betel nuts and *kakkola* each half a seer in fine powder and prepare a mass fit for being made into boluses They are directed to be kept in the mouth in affections of the teeth, gums, palate and tongue (Chakradatta) (4) The following decoction called *Khadirastaka* is prescribed for internal use in boils prurigo, measles and other skin diseases —Take of catechu, the three myrobalans, nimbark, leaves of *Trichosanthes Dioica, gulancha* and *Adhatoda Vasica* equal parts and prepare a decoction in the usual way (5) Sarangadhara describes a fermented liquor called *Khadira rishta* for use in skin diseases. It is prepared with catechu and the

(1) & (2) Chopra's "I. D. of I." pp 361

wood of *Pinus Deodara* and some other ingredients in smaller proportions (6) In the Konkan juice of the *fresh bark* is given with Asafœtida in hæmoptysis and juice of the flowering tops 2 tolas with cumin ½ tola, milk and sugar in gonorrhœa, syphilis and heat of the body (7) For leprosy, a decoction of the five parts of the plant, *viz*—the root, leaf, flower, bark and fruit is given as drink with food, it is also used externally for bathing the affected parts, locally to the ulcers an ointment of catechu is applied The following are a few more formulæ for household use —

(8) Take of catechu 5 parts asafœtida 4, *Papadkhar* (carbonates of potassium and sodium) 3, opium 2 parts Mix and make a pill mass Dose—grs 5 to 10 Given in the juice of betel leaf in chronic dysentery

(9) Take of Catechu, three myrobalans, bark of *neem* or Margosa tree, root of *Cocculus villosus Cocculus cordifolius* and leaves of Adhatoda vasika, all equal parts Prepare a decoction *Dose*— half to one drachm Useful in Prurigo and other skin diseases

(10) Take of bark of Acacia catechu 2 parts Conessi bark 2, bark of Margosa tree 2, Sweet flag root 2, Triphala 2 root of Ipomoea turpenthum 2 and water 20 parts Mix and make a decoction Dose —1 drachm used in gonorrhœal rheumatism

(11) Take of Catechu 10, Nutmeg, Camphor, Areca-catechu and Cardamoms each 2 parts Mix, make a powder and add gum of Acacia Arabica to make a bolus to be kept in the mouth in affections of the gums, teeth, tongue and palate

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14 ACACIA CONCINNA, DC., or A Rugata

(N O—Mimosaceæ)

Sans—Saptala *Hind*—Kochi, Ritha. *Duk*—Sikai *Ben*—Banritha *Tel*—Cheekaya, Seekaya, Gogu *Tam*—Sheeyakay, Seekai *Can*—Sheegae *Mal*—Cheeyakayi, Shikai *Kon*—Shikayi *Guj and Mah*—Reetah

Habitat.—In tropical jungles throughout India

Parts Used.—Pods (fruits) and leaves

Constituents.—Pods freed from seeds contain alkaloid Saponin 11 2 per cent, Malic acid 12 75 per cent, Resin 1 per cent, Glucose

13 9 per cent, Gum and colouring matter 21 5 per cent, Grude fibre 22 and Ash 3 75 per cent

Action.—Externally detergent and astringent Internally aperient, expectorant and emetic

Preparations — Decoction, infusion, ointment and paste

Uses.—The decoction of the *pods and leaves* is useful aperient in bilious affections The decoction of the pods (one in forty parts of water) is used as hair wash in lieu of soap, it promotes growth of hair and remove dandruff The *tender leaves* soaked into pepper-water and ground up with salt, tamarind and chillies form an excellent chutney, useful in bilious affections such as jaundice etc. The infusion of the leaves is useful in checking malarious fevers, it also prevents flatulence, as it acts as a mild laxative The pods ground up and formed into an ointment make a good application in skin diseases

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15 ACACIA FARNESIANA, willd

(N O —Mimosaceae)

Sans —Arimaedah *Eng* —Cassia flower *Hind* —Vilayati kikar, Gandbabul, Vilayati babul *Ben* —Guyababula *Duk* —Gu kikar *Guj* —Jabbaval, Gu baval *Tel* —Kempu Cumma or Nugatumma *Tam* —Pikkaruvil, Pavalam *Can* —Karijali *Mal* —Karuveelum, Pitumma Pivelum, Pikharu vil *Kon* —Kusri jhad. *Mah* —Gus babhul *Sind* —Kuebaval

Habitat.—It is found everywhere in India and is well known for its bright yellow flowers

Parts Used.—Bark, leaves gum, pods and flowers

Constituents —The oil of cassia flowers contains benzaldehyde, salicylic acid, methyl salicylate, benzyl alcohol analdehyde and essential oil—Flowers (pods) yield a most delicious perfume (balsamic liquid)

Action.—Astringent, demulcent and alterative, bark is astringent; flowers are stimulating The delicious perfume yielded by the pods is alterative

Preparations — Decoction mucilage and oil

Uses.—Decoction of the *bark* (1 in 20) together with ginger is an astringent wash for the teeth, and so it is useful in the bleeding

of the gums etc A *gum* exudes from the bark of the tree which is a good substitute for gum arabic but yields a gelatinous fluid on treatment with water *Tender leaves* are bruised with a little water and swallowed in gonorrhœa *Pods* of the round yellow heads constitute the cassia flowers which when distilled yield a delicious perfume Oil is employed as an adjunct to aphrodisiacs in spermatorrhœa

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16 ACACIA SENEGAL, willd

(N O —Mimosaceae)

Bom & Sind —Khor *Raj* —Kumta *Sudan* —Hashab

Habitat —A small thorny tree met with in Sind and Ajmer

Parts Used —Gum.

Action.—Gum is demulcent and emollient

Uses —Gum is used externally to cover some inflamed surfaces such as burns sore nipples etc and it blunts the acridity of irritating matters by being blended with them The powdered gum is useful in checking hæmorrhage from leech bites and when blown up into the nostrils checks severe epistaxis Internally it is useful in inflammations of the gastric and intestinal mucous membranes and also of the urinary organs Held in the mouth to dissolve gradually it allays cough and affords relief It is also used as a substitute for amylaceous food in diabetes since it is not converted into sugar

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17 ACACIA SPECIOSA

(N O —Mimosaceae)

Sans —Shirish Sahasrakı Pruthushrangi *Eng* —Sirissa tree *Hind* —Siris Sirin *Ben* —Siriz *Guj* —Pitosarshio *Mah* —Siras *Tel* —Girishamu *Tam* —Chireedam *Can* —Shireesha mara *Mal*— Nannæni

Habitat —Sub Himalayan tract Bengal Central and South India.

Parts Used —Seeds Bark, Root bark, leaves and flowers

Action —Astringent and cooling

Preparations.—Powder O I and Paste

Uses.—*Bark* and *seeds* are astringent and given in bleeding piles diarrhœa gonorrhœa &c in powder *Seeds* form part of an *anjan* used for ophthalmic diseases In *doses of 1½ drachms the* powder

of seeds has been successfully administered in cases of scrofulous enlargement of the glands, locally a paste made of the powder and water is also applied Oil extracted from the seeds is given in leprosy *Leaves* are applied to any eye complaints as in ophthalmia, *flowers* form a cooling application to boils eruptions and swellings Powdered root of the bark is used to strengthen gums when they are spongy and ulcerative

Acajuba Occidentalis—See Anacardium Occidentale

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18 ACACIA FERRUGINEA, DC.

(N O—Mimosaceae)

Nepal—Khour *Mal*—Thimai Velvelam *Beng*—Lonkhair

Action—Bark is astringent

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19 ACACIA INTSIA, willd

(N O—Mimosaceae)

Gwalior—Art

Habitat—Gwalior State,

Parts Used—Root

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20 ACACIA JACQUEMONTII, Benth

(N O—Mimosaceae)

Punj—Kinkar *Bom*—Ratobaval

Parts Used—Gum

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21. ACACIA LEUCOPHLOEA, or A LOEUCOPHLEA, willd.

(N O—Mimosaceae)

Sans—Shveta barbura *Hind*—Safed Kikar *Beng*—Safed Babul. *Tam*—Velvelam. *Tel*—Tella tumma

Parts Used—Bark

Action—Bark is astringent

22 ACACIA MODESTA, Wall,

(N O —Mimosaceae)

Punj.—Phulahi *Bom*—Kantosariyo

Parts Used—Gum.

Action—*Gum is restorative*

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23 ACACIA PENNATA, willd

(N O —Mimosaceae)

Hind—Biswal *Kumaon*—Agla *Nepal*—Atfu

Parts Used—Leaves

Uses.—Leaves are used in indigestion, bleeding gums and as a antidote for snake-poison

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24 ACALYPHA FRUTICOSA, Forsk

(N O —Euphorbiaceae)

Mal—Sinni maram *Hind*—Chinni ka Jhar, Chinni

Action—Leaves are stomachic

Uses—Leaves are used in dyspepsia

(Chopra's I D of I pp 457)

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25 ACALYPHA HISPIDA, Burm

(N O—*Euphorbiaceae*)

Mal—*Watta tali*

Parts Used—Flowers

Uses.—Flowers are used in diarrhoea

(Chopra's I D of I pp 457)

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26. ACALYPHA INDICA, *Linn*

or A Spicata or A Ciliata or A Canescana

(N O—Euphorbiaceae)

Sans.—Arittamanjarie *Eng*—Indian acalypha *Hind*—Kuppu, Khokali *Ben*—Muktajhuri Sveta basanta, *Guj*—Vanchi Kanto *Mah*—Khokli, Khajoti *Tel*—Kuppichettu, Harita manjiri, Kup-

pinta or Munpindi *Tam*—Kupplvaeni; Kuppaimeni *Tel*—Kuppigida *Mal*—Kuppamani *Kan*,—Kunkumiphal *Uriya*—Indian maris *Sinh*—Kupa menya

Habitat—Common annual shrub in Indian gardens and waste places throughout the plains of India

Parts Used—Leaves root stalks (young shoots) and flowers.

Constituents—Alkaloids acalypus and "acalyphine

Actron—Cathartic, anthelmintic, expectorant, emetic, anodyne and hypnotic

Preparations—Infusion of root powder decoction cataplasm, succus (juice expressed) tincture and liquid extract.

Uses—*Leaves* possess laxative properties are used as a substitute for Senega[1] are used in the form of powder or decoction mixed with garlic they are used as anthelmintic in worms Mixed with common salt they are applied to scalies and their juice mixed with oil forms an application in rheumatic arthritis *Lafretted part* of the leaves is a safe certain and speedy emetic for children in one teaspoonful (1 drachm) doses in cases of croup, in smaller doses it is expectorant and is useful in chronic bronchitis asthma and consumption The decoction is employed in earache as instillation and also as fomentation round the aching ear and a *cataplasm* of the bruised leaves is applied to syphilitic ulcers to maggot eaten sores and also to relieve the pain of snake bites Juice from fresh leaves may be employed in scabies and other skin diseases and with lime and onion it is a good stimulating application in rheumatism.[2] *Powder* of dry leaves as used in bed sores In congestive headache a piece of cotton saturated with the expressed juice of the plant or leaves and inserted into each nostril is said to relieve it by causing haemorrhage from the nose In cases of obstinate constipation of children the leaves ground into a *paste* and made into a ball and introduced into the rectum, relaxes the sphincter ani and produces free motions An infusion of the root or the root bruised in water acts as a cathartic In the treatment of acute mania the following is recommended—Macerate three ounces of the fresh *leaves stalks and flowers* in a pint of spirit of wine in a closed jar for seven days occasionally agitating, the same strain press filter and add sufficient spirits of either to make one pint dose is from 30 to 60 minims frequently repeated during the day in honey Hakims treat

(1) & (2)—Chopra's I D of I pp 457 & 562

cases of acute mania and hysteria in early stages by the following mode :—Take of one ounce of fresh juice of the leaves and dissolve in it six grains of common salt; drop a little of this mixture in each nostril every six hours from morning and then place the patient under cold shower baths for three mornings regularly; this causes a quantity of mucus and other matter to escape from the nostrils.

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27. ACALYPHA PANICULATA, Miquel.

Properties of this are same as A. Indica.

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28. *ACANTHOSPERMUM HISPIDUM*, DC.

(*N. O*—Compositae)

South American weed, spreading in parts of South Canara, North Malabar and Bangalore.

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29. ACANTHUS ILICIFOLIUS, Linn.

(N. O—Acanthaceae)

Sans—Harikasa *Eng*—Holy leaved Acanthus. *Hind. and Ben*—Harcuch Kanta *Goa*—Morainna *Mah*—Marandi *Mal*—Paina Schulli

Habitat.—Western India.

Parts Used.—Root, leaves and tender shoots

Constituents—A bitter alkaloid, an organic acid, fatty matter, chlorophyll and soft resins

Action.—Astringent and nervine tonic, expectorant and stimulant.

Preparations—Decoction (1 in 20) in doses of half to one ounce.

Uses—Tender *shoots and leaves* are used locally for snakebite. *Root* is expectorant and used in cough and asthma. *Root* boiled in milk is largely used in leucorrhoea and general debility. As stimulant the *decoction* is given with cumin seeds in dyspepsia with acid eructations

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30 ACER PICTUM, Thunb

(N O —Sapindaceae)

Punj—Kanzal *U P*—Kanchli

Parts Used —Leaves

Action —Leaves are irritant

(Chopra s I D of I pp 457)

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31 ACHILLEA MILLEFOLIUM, Linn

(N O —Compositae)

Bom—Rojmari. *Ind Bat* & *Cutch*—Biranjasif *Afg*—Bui maderan *Kash*—Momadruchopandiga

Habitat—Herb abounds in the Himalayas from Kashmir to Kumaon

Parts Used —Leaves , flower heads

Constituents —Essential oil HCN—glucoside achillein

Action —Stimulant tonic, carminative

Uses —Powdered leaves and flower heads are useful as carminative and tonic in 5 30 grs doses Hot infusion of leaves is a powerful emmenagogue

(Chopra s I D of I pp 457 & 562)

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32 ACHRAS SAPOTA, Linn

(N O —Sapindaceae)

Mah—Chikku *Eng*—Sapodilla plum , Sapota *Hind* & *Ben*—Sapota. *Bom*—Chikali *Madras*—Shimai-eluppai

Habitat—Said to be a native of America A small tree of slow growth, cultivated throughout the Bombay Presidency, thriving best near the sea

Constituents —Glucoside, Alkaloid, Sapotin

Action —Tonic, febrifuge diuretic

Uses —Fruits when ripe are delicious and are eaten

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the *seeds* is often used as an expectorant Seed rubbed with rice water is given in bleeding piles *Payasam* or *Kheer* made of seeds in milk is a good remedy for diseased brain Root taken on Sunday conjoined with *pushya nakshtra* after bathing and kept hanging in a corner is used in stimulating labour pains and expediting delivery It is tied into the hair or into the waist of the woman in pains The root immediately after delivery is removed and thrown into a running stream of water Seed soaked in butter milk during the night and ground into an emulsion the next morning is a cure for biliousness *Ashes of the root* rubbed with honey and administered (2 *rals or* 12 *grs*) is a cure for cough Ashes with water and jaggery cures dropsies such as ascites anasarca etc The following is the formula for *Apamarga Taila*—Take of sesamum oil four seers alkaline water prepared from the ashes of Achyranthes aspera sixteen seers, ashes of the plant one seer and boil them together in the usual way This oil is poured into the meatus in cases of noise in the ears and in deafness Instilled into the nostrils it cures nose bleeding The drug is also used in snake bites

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34 ACONITUM BALFOURII, Stapf

(N O—Ranunculaceae)

Nepal—Gobari

Constituents.—Pseudaconitine O 4%

(Chopra s I D of I pp 457)

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35 ACONITUM CHASMANTHUM, Stapf See also A Napellus

(N O—Ranunculaceae)

Jhelum Basin—Mohri Pinn *Kath*—Banhal nag

Habitat.—Alpine and sub-alpine zone of the Western Himalayas from Chitral and Hazara to Kashmir between 7000 & 12000 feet

Parts Used—Root

Constituents.—Alkaloid obtained from the plant is *Ind aconitine* 4 3% it melts with decomposition at 2 - 203°c it is soluble in acetone chloroform, alcohol or ether By adding light petroleum to a solution of the base well-defined crystals may be readily obtained

Action — The same as that of aconitine of the *A Napellus* and pseudo-aconitine of the *A Ferox* But it differs in degree only, not in kind

Uses — It is used in Northern India as a substitute for the imported tuber of Aconitum Napellus, which see

N B — A Chasmanthum or Indian napellus variety was formerly considered to be identical with A napellus of European species to which it is closely allied

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36 ACONITUM DEINORRHIZUM, Stapf

(N O — Ranunculaceae)

Indian Languages — Mohra, Mauzabikh.
Constituents — Pseudaconitine O 86%
Action — Poisonous
(Chopra's I D of I pp 457)

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37 ACONITUM FALCONERI, Stapf.

(N O — Ranunculaceae)

Indian Languages — Bis, Bikh, Meetha tellia
Action — Poisonous
(Chopra's I D of I pp 457)

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38 ACONITUM FEROX. Wall

(N O — Ranunculaceae)

Sans — Visha, Vatsanaba *Eng* — Indian aconite, Monkshood *Hind* — Mithazahar, Bish *Arab* — Bish *Pers* — Bishnag *Ben* — Kathish or Mithavish, Bish *Guj, Mah* & *Kom* — Vachnag *Tel* — Vasanubhi *Tam* — Vishamavi, Vishnanut, Vashanavi *Can Mal and Kon* — Vatsanabhi *Fr* — Char de Venus

Habitat — Eastern temperate and sub-Alpine regions of the Himalayas, eastward of Kumaon, Nepal, Kashmir and Sikkim

Parts Used — Dried tuberous root

Constituents — A crystalline toxic alkaloid called *Napelline or*

with a transparent vitreous appearance, soloble in boiling watet, less soluble in ether, chloroform and alcohol, and a small quantity of *aconitine* (0 97 to 1 23 per cent), picro-aconine, aconine, benzyl-aconine and homo napelline

Action —Diaphoretic, diuretic, antiperiodic, anodyne, antidiabetic, antiphlogistic, antipyretic, in very small doses In large doses it is virulent poison, narcotic and powerful sedative It reduces the frequency and tension of the pulse and paralyses the respiratory centre Root is intensely acrid and poisonous and distinctly more powerful than that of Aconitum napellus

Preparations —Liniment for exter al use, tincture (1 in 8 of alcohol) dose —2 to 5 minims

Uses.— The root is more suited for external applications or the manufacture of aconitine The root in the form of liniment or paste (*lep*) is spread upon the skin in cases of neuralgia and muscular rheumatism, acute and chronic, itching as in erythema, in nasal catarrh, tonsilitis sore throat, coryza, acute gout, and other painful affections [1] and in leprosy it is alterative and is a nervine tonic in cases of paralysis It controls spermatorrhoea and incontinence of urine It is found to be remarkably beneficial in diabetes, decreasing the quantity of urine and sugar For *internal* administration the tincture of Aconitum ferox must be used with great caution on account of the virulent character of the drug, because its alkaloidal content is high and it is very active and not standardised It should not be used when heart disease is present ' *Internally* the tincture of root is used in treatment of fever and rheumatism, usually in combination with other drugs, it is also used as a remedy for cough, for asthma and for snake-bite Hindu physicians use some varieties as cardiac stimulants after prolonged boiling in cow s urine By this process the active alkaloids are said to lose their depressant action on the heart and become stimulants instead ' [2] The following are some of the favourite medicines popular among Vaidyas, which contain aconite —Mrityunjaya Rasa, Ananda Bhairava Rasa, Jvara Murari Rasa, Panchavaktra Rasa, Saubhagya Vatika, Ramabana Rasa, Kaphketu Rasa, etc. These are employed in the treatment of a variety of fevers and inflammations of the mucous membranes of the throat, nose, stomach and intestines The following are a few useful, household formulas —

(1) & (2) Chopra s "I D of I pp 47 51 & 52

1 Take of Aconitum ferox root 1, Sulphur 1, black pepper 1, long pepper 2, Cinnabar 1, borax 1, juice of Datura alba sufficient quantity to make a pill mass Mix and divide the mass into pills of two grains each Dose —1 to 2 pills or grs 2 to 4 Used in fever with brain symptoms, if constipation exists add croton seed powder to the above pill mass

2 Take of Aconite Ferox root, borax, cumin seeds, *panch lavana, Triphala Trikatu,* mica or talc, cinnabar and sulphur equal parts Mix and make a pill mass Dose —grs 4 to 10 Used in obstinate fevers with temperature between 101 and 102° F

3 Take of Aconite Ferox 1, Mace 1, black pepper 1, Cinnabar 1, cloves or cinnamon 1, Ambergris ½, musk ¼ Mix and make a pill mass Dose —grs 2 Used in cough and asthma

4 Take of Aconite 2, Pellitory root 2 and Rock Salt 5 parts Mix and make a paste For application to swollen hands and feet

5 Take of Aconite ferox and opium equal parts Mix and make a paste in brandy Used as local application in cases of guinea worm

N B —"The so-called A ferox of Indian commerce has been shown to be a mixture of four species according to Stapf's classification They are A *deinorrhizum*, A *balfourii* of the deinorrhizum type, the former growing in Bashahr and the latter in Garhwal, Kumaon and Nepal, both contain the crystalline pseudoaconitine, and A *spicatum* and A. *laciniatum* of the Napellus type of Stapf, growing in Sikkim and Bhutan, contain the non-crystalline bikhaconitine Some of the specimens obtainable may consist only of the two former varieties The physiological action of both these alkaloids closely resembles that of aconitine

A ferox proper of Stapf is a rare, poisonous species which has only been found once by Wallich in Northern Central Nepal, and in some parts of Northern Himalayas

A lycoctonum is a variety which is non poisonous "[2]

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39 ACONITUM HETEROPHYLLUM, Wall.— or *A. Cordatum*

(N O —Ranunculaceae)

Sans —Ativisha, Sitashringi, Bhangura or Pankura, Upavisha aka *Mah* —Ativisha, visha. *Eng* —Indian atees *Hind* —Atis, Ateicha *Can* —Athivisha *Pers* —Vajji turki, Vaj turki *Tel* —Ati vasu, Atirasa *Tam* —Ativadayam *Guj* —Atavasa. *Ben* —Ataicha.

Habitat — Sub-alpine and Alpine Zones, the Himalayas from Indus to Kumaon

Parts Used — Dried tuberous roots

Constituents — The non crystalline (amorphous) intensely bitter alkaloid, atisine which is non toxic, aconitinic acid, tannic acid, pectous substance abundant starch fat, a mixture of oleic, palmitic, stearic glycerides vegetable mucilage, cane sugar and ash 2 per cent Chemical assay of A heterophyllum and A lycoctonum varieties shows that the alkaloid content of the so called Ferox form (A dinorrhizum and A balfourii combined) is double that of the European variety of A napellus official in the Pharmacopoeia, and that of the Indian Napellus variety (A chasmanthum) is ten times as much [1] Biological assay of these roots shows that the ether soluble alkaloid (pseudo aconitine) of the so called Ferox form is 1 5 times stronger than aconitine obtained from the European variety of napellus (A chasmanthum) and the alkaloids obtained from the Indian variety of napellus (A chasmanthum) are 0 7 times weaker [1 2]

Preparations — Tincture (1 in 8) Dose — 10 to 30 minims, decoction powder of root, Dose — 10 to 30 grains

Action — Roots are bitter, tonic astringent stomachic, antiperiodic and aphrodisiac

Action and Uses in Ayurveda & Siddha — Katu tikta rasam, ushna veeryam kapha pitta haram, dipanam, pachanam in athisaram, amadosham, kasam visham, chardhi krimi

Action and Uses in Unani — Hot 2°, Dry 1°, aphrodisiac, stomachic, astringent, balgham, piles, dropsy, vomiting safra [3]

Uses — It is well known to the hill people as being quite inert and it is eaten by them as a vegetable [4] Roots are sold in the bazars under the name of Atis or Atees [5] The alkaloid "atisine is employed medicinally in India as an antiperiodic, aphrodisiac and tonic It is valuable for combating debility and after fevers it is an excellent tonic and aphrodisiac, very efficacious in diarrhoea, dysentery acute inflammatory affections etc., also in cough, dyspepsia and diarrhoea depending thereon. In fever with diarrroea the following decoction is recommended in Sarangadhara — Take of A heterophyllum ginger Holarrhena antidysenterica bark, tubers of Cyperus

(1) (2) & (4)—Chopra s I D of I PP 49 & 55
(3)—Therapeutic notes

rotundus and root of Cocculus cordifolia equal parts, in all two tolas, water thirty-two tolas. Boil till the water is reduced to eight tolas. This quantity is given in two or three divided doses during the course of the day. Chakradatta recommends the following called *Hriveradi* in similar cases :—Take of Indian atees, dried Aegle marmelos, root of Pavonia odorata and Cyperus rotundus and the horny excrescence or gall of Rhus succedanea equal parts; powder and mix. This compound powder is given in doses according to age, with the addition of honey. Sometimes, long-pepper is added to the above ingredients, when the powder is called *Balachatur bhadraka*. The plain powder of the tuberous root mixed with honey is given in cough, coryza, fever and vomiting of children; it is applied to the tongue, dose being strictly according to age. The following are a few simple home remedies :—

(1) Take of aconite root 1 dr., Bonduc nut 2 drs, reduce to a fine powder and mix. Dose :—grs. 10 to 20. Used in bilious fever.

(2) Take of aconite root, *Mustaka*, the gall of Rhus succedanea and long-pepper equal parts. Mix and make a powder. Dose :—1 drachm for adults and ¼ to ½ dr. for children. Used in fever, diarrhoea and irritability of the stomach.

(3) Take of aconite root, chiretta, Cyperus rotundus and Delphinum denudatum each 1 dr., and Cocculus cordifolius 2 drs. Mix and powder. Dose :—½ to 1 dr. Used during intermissions of feverish attacks.

Antidotes.—Antidotes to aconite poisoning are tannic acid-astringent infusion, atropin, and stimulants like alcohol and ammonia; Digitalis also to counteract the depressing effect upon the heart. Evacuation, artificial respiration, warmth and friction.

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40. ACONITUM LACINIATUM, Stapf.

(N. O.—Ranunculaceae)

Indian Languages.—Kalo hikhmo. (Chopra's "I. D. of I." pp. 457)

41. ACONITUM LURIDUM, Hook.

(N. O.—Ranunculaceae)

Ben.—Bish; Butsnabbish *Bombay.*—Butchnab. *Hind.*—Mahoor. *Nepal.*—Atisingeeabish; Bikh; Bish; Bishnak. *Tel.*—Ativassa.

Habitat — Found largely in Sikkim, it finds its way into the market and is sold mixed with other varieties

Constituents — In the species examined by Col Chopra and his assistants, they say that they had very slight traces of the alkaloid 'lycaconitine', and that they were not able to isolate sufficient quantity of the alkaloid to investigate its physiological action fully It is said to contain an alkaloid called 'palmatisin' [1]

Action.—Chopra and his assistants declare the drug as absolutely non poisonous 'Palmatisin" alkaloid is physiologically inactive' says Chopra in his Indigenous Drugs of India [2] But Blatter, Calus and Mhaskar had declared it as a reputed poisonous drug'

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41 A ACONITUM LYCOCTONUM, Linn.

(N O—Ranunculaceae)

Constituents.—Alkaloid lycoctonine (Chopra's I D of I ' PP 457)

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42 ACONITUM NAPELLUS, Linn A. Chasmanthum

(N O—Ranunculaceae)

Sans—Visha *Eng*—Monk's hood, Aconite, Wolf's bane *Hind*—Mithazahar, Bachnag *Ben*—Katbish, Bisha. *Mah* & *Guj*—Nagpuri bachnag *Kash* & *Punj*—Mohri *Bom*—Bachnab *Tam*—Vashanavi

Habitat. —A herb indigenous to the temperate alpine Himalayas, where it grows in abundance Varieties —Out of several varieties napellus proper, A. rigidum, A multifidum and A rotundifolium are commonly known Some of these varieties are poisonous and others are non poisonous True A napellus is the European poisonous variety which is imported and sold in India and is the A. chasmanthum (Stapf)

Parts Used.—The dried root alone is non official but the leaves and flowering shoots were also formerly used

Constituents.—It yields several chemical (active) principles, the principal being the alkaloid *aconitine*, 'the most poisonous of all alkaloids (E Rost). 3 mg suffice to kill a horse '

(1) & (2)—Chopra's I D of I " PP 30
(3) Dr Madav's Book

Action.—Powerfully sedative, anodyne and antiphlogistic, " antipyretic. According to H. H. Meyer (in Reports of 30th Congress of Internal Medicine, 1913), excites the central parasympathetic, thermoinhibitory centre, thereby reducing the temperature. Since the question of the existence of a thermoinhibitory centre is not definitely settled Dr. Madans quotes this statement with all due reserve. The excitation of all sensory nerve-endings, on the other hand, is hardly in dispute. The cutaneous heat sensation is increased. It is indicated for fevers in which the sensations of heat and cold appear in turn in which the lips are dry and perhaps cracked, and where the throat is red and dry. It is useless against high temperatures in typhoid fever, consumption, malaria and fevers due to local inflammation. It is suitable, above all, where the high temperature commences with a sensation of thirst, accelerated pulse, anxious impatience, marked agitation, tossing about in bed (Hahnemann), as for instance, in inflammation of the throat and trachea ; pneumonia, pleurisy. Very small doses of Aconitine regularize the heart, says Dr. Hottinger, as he made his experiments on the chloralised heart yielding an irregular electrocardiogram."[a] In large doses, a virulent poison ; in small doses, a febrifuge and tonic.

Preparations.—Tincture, dose :—5 to 15 minims ; Liniment for external use only. An extract is also made from the fresh leaves and flowering tops.

Uses.— Alkaloid aconitine is used externally in various forms of neuralgia, tetanus, acute and chronic rheumatism, gout, erysipelas and in affections of the heart, characterised by increaesd action, it is a remedy of established value. It is also used internally in cases of fever and for relieving pain, its general effect being to lower the temperature, increase the amount of urine and to lessen sensibility, but its operation on the system requires to be carefully watched. Further uses of this root are as indicated under ACONITUM FEROX. Against the sequels of cold, e.g., cystitis, water diarrhoea, amenorrhea, and cough irritation (Hufeland) ; in neuralgias, more especially in facial neuralgias in young people. Attention should be given to the symptoms following repeated internal doses of 1·2 mg. Aconitine : paresthesia, formication, sensation of numbness, etc., in the limbs. In doses of that strength all sensation of pain ceases, e.g, in trigeminal neuralgia. (Meyer-Gottlieb). Hughes-Donner classes Aconi-

(a)—Dr. Madav's Book.

tum as an antirheumatic, with the most important remedies of acute rheumatism, both articular and muscular In these cases also it is indicated only for the beginning and may be suitably followed by Bryonia in pleuritis, by Colchicum in pericarditis, by Spigelia in endocarditis

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43 ACONITUM PALMATUM, Don.

(N O—Ranunculaceae)

Sans—Bikhma [a]

Habitat—Grows in the eastern temperate Himalayas from Garhwal to Manipur [b]

Action.—Intensely bitter like quinine, and is nonpoisonous [c]

Uses— In combination with pepper is used internally as a remedy for pains in the bowels, diarrhoea and vomiting, and as an anthelmintic against intestinal worms, externally it was used as an application for rheumatism.[d]

N B—A palmatum is often sold as an adulterant to active varieties

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44 ACONITUM SPICATUM, Stapf

(N O—Ranunculaceae)

Indian Languages.—Bikh, Kalo bikhoma donghi

Constituents—A toxic alkaloid bichaconitine

(Chopra s I D of I ' pp 457)

GENERAL NOTES ON ACONITES.

N B—All these scripts are from *Chopra's* I D of I book.

The alkaloids of aconites readily undergo changes in their chemical composition under different conditions of age, temperature, moisture, storage etc, so much so that sometimes older samples have been found to be seriously deficient in their active principles One cannot, therefore, rely on roots of questionable age

All A napellus sold in the Indian bazars is not the produce of India Quantities of imported European root also find their way into commerce.

(a), (b), (c) & (d)—Chopra s I D of I " pp 48

A ferox is differentiated from A napellus by its leaves being less divided, its flowers racemes being denser and there being a shorter back to the helmet A ferox was considered to be undoubtedly poisonous It was commonly known as the Indian aconite, as most of the root sold in the Indian bazars was believed to be derived from this variety, though undoubtedly it was adulterated with roots from other varieties

The white spongy root which is exported from Northern India is known as Lahore Bachnab or Mitha zahr This root is devoid of the peculiar smell of the A ferox root and is probably derived from A lycoctonum which grows abundantly from Kumaon to Kashmir (Western Himalayas) at an altitude of 7,000 to 10 000 feet above the sea level

In European commerce all the Indian forms of aconite were classed as forms of A ferox but true A ferox is not the most plentiful of the aconite roots in this country and certainly not the most accessible So the so called Aconite ferox sold by the druggists is an indiscriminate mixture of the roots of A ferox A lycoctonum A napellus and A palmatum the latter predominating To a careful selector, most of the important active varieties are available now in the market, though not without difficulty on account of the tendency to adulteration with cheaper and inactive varieties

Indian Aconites of Commerce According to New Classification

Names of Type	*Species & Varieties include in Type*
Napellus	A napellus, A ferox var laciniatum and A ferox var spicatum
Atrox	A. ferox var atrox A ferox var polyschiza
Anthora	A. heterophyllum and A paperatum.

Later Stapf (1905) divided the Indian aconites into three types according to their being annual perennial and biennial —

(1) Gymnaconitum type (annual duration) A gymnandrum

(2) Lycoctonum type (perennial) A Leve A latidum, A moschatum

(3) Napellus type (biennial and normally paired)

He also classified them according to their root structures as follows and this is he classification which is now accepted by botanists —

Napellus Type	Anthora Type	Deinorrhizum Type
A soongaricum	A. rotundifolium	A deinorrhizum
A chasmanthum	A heterophyllum	A bolfourii
A violaceum	A naviculare	
A falconeri	A palmatum	
A spicatum	A hookeri	
A laciniatum		
A ferox		
A heterophylloides		
A leucanthum		
A dissectum		
A jaduar		

In the light of this new classification, the position of common commercial aconites of India is as follows —

A heterophyllum belongs to the Anthora type of Stapf

A lycoctonum according to Stapf is of a perennial type and three species are included under it—A laeve A luridum and A moschatum These are non toxic and the species examined by Lt Col Chopra and his assistants had very slight traces of the alkaloid lycaconitine They could not isolate sufficient quantity of the alkaloid to investigate its physiological action fully, but it is absolutely non poisonous It is said to contain an alkaloid called palmatisin which is physiologically inactive Lt Col Chopra and his assistants were unable to isolate any alkaloid from the samples they analysed

Standardisation of Indian Aconites of Commerce —*Chemical assay* —Formerly aconite was standardised by the chemical method as laid down in United States Pharmacopoeia VIII In U S P IX Revision the official assay process is also a chemical one with an alternative biological assay method but the chemical method was accepted as the standard and was generally used Later it was shown by various workers that considerable variations and inconsistency in the potency of aconite preparations existed when assayed by chemical and biological methods This is due to the fact that though the various alkaloids present in the root behave similarly to solvents and precipitants their pharmacological action and toxicity vary considerably Chemical methods only indicate the total alkaloid whether active or inactive whilst aconitine and the allied alkaloids such as indaconitine and pseudaconitine are the ones that are responsible for the physiological activity of the drug For this reason several biological methods of assay were developed

Biological assay —Aconites are better assayed, not by chemical methods but by biological methods The 'guinea pig' methods of estimation of the alkaloids consists in finding out the minimum lethal dose of a given specimen to these animals according to their body weight, and comparing it with the quant ty of pure crystallised aconitine required for the same purpose as a standard This method gives a fairly accurate idea of the active principles present in a given specimen Lt Col Chopra and his assistants employed this method for assay of roots of different Indian varieties It was found that the alkaloids of the so-called Ferox variety were about 1 5 times stronger and that of the Indian napellus variety 0 7 times weaker than the aconite of European variety But the alkaloidal content of the ferox variety is double and Indian napellus (*A chasmanthum*) 10 times more than that of the European napellus variety

From a comparison of the chemical and biological assays of the different species of aconite that were examined by Lt Col Chopra and his assistants, it can be concluded that both Indian varieties i e Aconite napellus and the so-called Aconite 'ferox' can be used for the purpose for which aconite roots of the *British Pharmacopoeia* are used The other varieties sold in the Indian market have quite different physiological properties and cannot be used For practical purposes it would appear preferable to bring into use the aconites sold under the name of ferox, (the commonest in the Indian market) for the following reasons —(1) They are very common in the bazars and available in large quantities under the name of bachnab, bachnag, mithabish, mitazahar, singyabish and dagra (2) They can be easily distinguished and their adulteration with any other variety can be easily detected, which is not the case with the napellus variety (3) They are very easily identifiable both by their botanical and chemical characteristics. The tubers are sometimes single or more generally 2 3 fasciculated, fusiform 2"-5" long ¾"-1" in diameter (at the thickest portion), dark brown or nearly black externally (4) The outer cuticle is thick and prevents to some extent the access of moisture They do not deteriorate rapidly, and have a fairly constant composition owing probably to their being of a uniform variety (5) The alkaloid can be very easily crystallised, about 80 per cent. being crystallisable so much so that from an assay sample of about 10 grams of the root pure crystals are obtainable for identification

(Chopra's "I D of I, pages 47 to 56)

Table A

Chemical Assay of Aconites on the Indian Market

Name according to old classification	Name according to the classification of Stapf	Name of the alkaloids isolated from aconite roots	Percentage of total ether soluble alkaloids	Melting point of alkaloids	Crystalline or Non-crystalline	Remarks
Aconitum napellus (Mohri) Specimen I	A chasmanthum allied to European A napellus.	Indaconitine	4 50	202 203	Crystalline	Closely resembles aconitine
Aconitum napellus Specimen 2.			4 28		do	
Aconitum ferox	This specimen was a mixture of A deinorrhizum and A balfourii.	Pseudaconitine	0 86	211 212°	do	Physiological action resembles aconitine but is more powerful
Aconitum heterophyllum	Belongs to Anthora type of Stapf	Atisine	0 38	85°	Non-crystalline	
A lycoctonum.	Belongs to perennial type of Stapf and includes A luridum	Lycaconitsne (only a minute trace of the alkaloid was obtained)				

In the European variety of A napellus the total alkaloid content is 0 4 to 0 5 per cent. so that the alkaloidal content in the so-called feror variety is nearly double and in chasmanthum variety nearly 10 t mes more The small quantities of alkaloids contained in A. heterohhyllum & A lycoctonum, are physiologically not very active. * In England the drug is collected in the autumn soon after the stem and leaves have died down and before they have begun to be depleted of their starch by the growth of new shoots, for it is at this stage that the proportion of alkaloid is generally regarded to be greatest. After the removal of the rootlets the roots are washed and dried either whole or in longitudioal slices (World s Commercial Products by Freeman Chandler & Henry)

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45 ACORUS CALAMUS, Linn.

or A Odoratus

(N O—Aroideae)

Sans—Vacha Shadgranthagoloma, Ugragranthi, Jatila *Eng*—Sweetflag *Hind & Ben*—Bach, Gora bach *Pers*—Agar turki *Duk*—Vach *Guj*—Godavaj *Bom*—Vaj *Mah*—Vekhand *Tel*—Vasa *Tam*—Vashambu *Can*—Baje *Mal*—Vayambhu *Kon*—Ekhanda.

Habitat—A semi aquatic perennial cultivated in damp marshy places in India and Burma Exceedingly common in Manipur and the Naga Hills and on the edges of lakes and streams

Parts Used—Dried rhizome

Constituents—A volatile essential oil *acorin* a bitter principle *acoretin* (choline), *Calamine* (useful in dysentery), starch, mucilage, a little of tannin The dried rhizome yields 2 5 per cent to 2 7 per cent of a neutral yellow, aromatic, essential oil having an agreeable odour The fresh aerial parts yield about 0 123 per cent of the volatile oil, the unpeeled roots however, give a much better yield from 1 5 to 3 5 per cent [1] Acorin a glucoside is a honey like liquid very bitter and aromatic, soluble in alcohol chloroform, ether, splitting into sugar and volatile oil Acoretin is a resin like body yielding by reduction ethereal oil and sugar Calamine is a cystalline alkaloid soluble in alcohol and chloroform. The valuable essential volatile oil of Acorus Calamus is yellowish brown, and is found to be composed of asaryl aldehyde, free normal ($C_7H_{14}O_2$) heptylic

(1) Chopra s I D of I pp 264 & 265

and ($C_{16}H_{32}O_2$) palmitic acid, eugenol, esters of acetic and palmitic acids, "pinene, camphene, sesqui terpene, calamene $C_{15}H_{24}$ (2·3%), and a small quantity of phenol, Eugenol $C_{10}H_{12}O_2$ (0·3%), Methyl Eugenol $C_{11}H_{14}O_2$ (1·2%), Calamenenol $C_{15}H_{24}O$ (5·3%) and Calameone $C_{15}H_{26}O_2$ (2·2%)",[1] the crystalline body named *Calameone asarone* "The oil obtained from the Indian A calamus was studied by Rao, Sudborough and Waston (1925), and they found that this oil does not contain the lower boiling constituents such as pinene, camphene, etc, in the commercial oil from Europe [2] The oil mainly consists of asarone $C_{12}H_{16}O_3$ (82%), Palmitic acid was also found in the combined condition along with a small quantity of buturic acid (P C Guha). "Properties of oil of Indian A calamus have been found as follows — Specific gravity 1·069 at 15°, optical rotation 16·2°, saponification value 5·1, saponification value after acetylation 16·6, acid value 1·4"[3]

Action.—Root and rhizome are stimulants, emetic, nauseant, stomachic, aromatic, expectorant, carminative, antispasmodic and nervine sedative, in large doses, i.e., 30 to 40 grains it produces a violent and persistent emesis In the form of infusion it is tonic, stomachic or carminative, also anti periodic. The volatile oil is aromatic and antiseptic The rhizome has an expectorant action, due to the presence of the essential oil

Action and Uses in Ayurveda and Siddha —Katu rasam, tiktanursam, ushna veeryam, vata haram, emetic Improves agni, clears urine and stools In krimi, adhmanam, colic, insanity due to kapha.

Action and Uses in Unani — Hot 3° Dry 2°, cleans brain, aphrodisiac, strength to sight, expels leech, expels balgam, antipoison, paralysis, dropsy, and nervous complaints, digestive, cold, coughs "[4]

Preparations.—Powder, dose —5 to 20 grains; and Infusion (1 in 10 parts of boiling water), dose —1 to 2 ounces

Uses.—Given in the form of *infusion* it is useful in dyspepsia, flatulence, loss of appetite etc., and also in atonic and choleraic diarrhoea of children; as antiperiodic it is given in tertian fevers It is also beneficial in hysteria and neuralgia With the addition of a little liquorice root it is administered in cases

(1), (2) & (3) Chopra's I D of I pp 264 & 265
(4) Therapeutic Notes

of cough fever capillary bronchitis colic etc especially in children In cases of irritation of the throat and cough the root simply *chewed* produces copious salivation and an agreeable sensation of warmth in asthma it is found useful given in small doses of 10 grains repeated every two or three hours till relief is obtained It is eaten freely during the prevalence of any epidemic as it is supposed to be an antidote for several poisons including snake bite In croton poisoning its *powder* mixed with water is given to counteract the poisonous effect *Externally* it is used in chronic rheumatism the root being powdered and rubbed up with cachew spirits and as counter irritant to the chest in the catarrh of children, the powder is a very effective insecticide keeps moths from woollen goods and fleas from rooms The root burnt to cinder mixed with cocoanut or castor oil and smeared over the abdomen relieves flatulent colic The powder of the burnt root stock in 3 grain doses relieves infantile diarrhœa and colic It is used as a diuretic in calculous affections and as an anthelmintic to expel worms in children The drug is a very old remedy for chronic diarrhoea and forms part of a number of mixtures used in Ayurveda Evers (1875) tried it in chronic dysentery with good results Henry & Brown (1903) tested it and came to the conclusion that whatever action it had was due to the presence of tannins Chemically, there is no other constituent which might be held responsible for its astringent action (Chopra) [1] The rhizome with *bhang and ajowan* in equal parts is powdered and used as a fumigation to painful piles The following is a valuable compound powder useful in dyspepsia and as a stimulant in low fevers epilepsy and insanity —Take equal parts of acorus calamus root asafœtida *atis* long pepper black pepper, ginger chebulic myrobalan and sonchal salt Powder and mix them well together Dose —20 to 60 grains

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46 AÇRONYCHIA LAURIFOLIA, Blume

(N O —Rutaceae)

Sing —Akenda
Parts Used —Bark
Constituents —Essential oil
Uses —Bark is used in ulcers

(1) Chopra's I D of I pp 264 & 265

47 ACTAEA RACEMOSA.

(N O —Ranunculaceae)

Action —Nerve sedative

Uses.—Used in chronic rheumatism

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48 ACTAEA SPICATA, Linn.

(N O —Ranunculaceae)

Action —Nerve sedative

Uses.—Used in snake bite

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49 ACTINODAPHNE DICHOTOMA, Florsk

(N O —Laurineae)

Hind —Morpankhi *Bom* —Mayur-sikha

Habitat.—Common on the hills of South India

Action —Anthelmintic, styptic

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50 ACTINODAPHNE HOOKERI, Metssn

(N O —Laurineae)

Bom —Pisa

Habitat —Common on the hills of South India

Parts Used —Leaves, seeds

Constituents — Alkaloid 'actinodaphnine'

Uses.— Leaves are used in ordinary disorders Oil from seeds is used for sprains

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51 ACTINOPTERIS DICHOTOMA, Bedd

(N O —Tribe—Asplenieae)

Hindi —Morpankhi

Action —styptic, anthelmintic

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52 ADANSONIA DIGITATA, Linn

(N O —Malvaceae)

Sans and Mah —Gorakh chinch *Eng* —Boabab or monkey bread tree of Africa. *Hind and Guj* —Gorakh amli, Sumpura. *Duk* —Hathi khatiyan *Tam* —Pepper appauli, Paparapuli, Anaipuliyama ram *Can* —Brahmamlika *Tel* —Simae-chinta *Sinh* —Kauthimbul

Habitat.—One of the largest and long lived trees in the world, met with chiefly in Bombay, Gujarat and Coromandal Coast and

Ceylon A deciduous large tree 60-70 feet high, very handsome, though stumpy when in foliage *Hatti Khattyan means Elephant flax in allusion to the great strength of the fibre prepared from its bark*

Parts Used —Pulp of the fruit, bark and leaves

Constituents —Pulp contains phlobaphenes, mucilage and gum glucose, tartrate and acetate of potash and other salts Pericarp contains phlobaphene, albuminoids, gum, colouring matter, carbonate of potash and soda Leaves contain wax, glucose, salts, gum and al buminoids Bark contains wax soluble and insoluble tannin, acid gum, albuminous carbonate and chloride of sodium and potassium and a glucoside *adansonin*

Action.—Fruit is somewhat acid, refrigerant and diuretic Seed and its pulp are *astringent, demulcent, stomachic* and *antiscorbutic* Pulp is *aperient* and *demulcent*[1] *Bark is used as antiperiodic*

Preparations & Uses —*Pulp of the fruit* with figs is made into a *syrup cooling* and *refrigerant in fevers, diminishing* the heat and quenching the thirst It relieves night sweats and febrile flushes in consumption It is useful in bilious dyspepsia and acid eructations It is given in the form of a *sherbat* with cumin and sugar or with embelic myrobalans fresh mint, rock salt and long pepper Pulp of the seed being aperient and demulcent, mixed with buttermilk is useful in diarrhœa and dysentery *Externally* it is applied in skin diseases Fresh juice of the *leaves* mixed with powdered ginger together with the expressed juice of the fresh root of Salvadora Indica is applied with considerable benefit to painful joints, iodoleot syphilitic ulcers, aod chancres Leaves are used as *fomentations* and *poultices* for *rheumatic affections* of the *limbs* and *irritable inflammatory ulcers* Leaves dried and powdered are a good applicatioo to check excessive perspiration Decoction of the bruised *bark* (1 in 20) *boiled down to its third part* is used in intermittent fevers in 1 to 2 ounce doses

53 ADENANTHERA PAVONINA, Linn

(N O —Leguminosae)

Sans —Kuchandana, Kamboji *Ben* —Rakta Kambul, Ranjan. *Bom* —Val, thorli guni *Tam* —Manjadi, Anegundumani *Tel* —Bandi guruina, Mansenikottae *Mal* —Manjeti *Duk and Guj* —

(1)—Chopra s I D of I pp 458

Badi Gumchi, Hatı gumchi *Kon and Can*—Manjutti *Assam*—Chandar

Habitat—East Himalayas and Western Peninsula

Parts Used.—Seeds, leaves, root and bark

Preparations.—Powder and Decoction

Uses— *Powdered seeds* externally applied, hasten suppuration of boils inflammations etc. [1] A *decoction of the leaves or bark* is a remedy for chronic rheumatism, gout, haematuria and haematemesis Used for a long time it acts as aphrodisiac Root is used as an emetic

Adenanthera vasika—see Adhatoda vasika

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54 ADHATODA VASIKA, Nees or Adenanthera vasika

(N O—Acanthaceae)

Sans—Sinhapatni, Vasaka, Arusak, Vansa, Vrisha Sinhamukhi, Adarushah *Eng*—Malabar nut *Hind*—Adosa, Arusha, Rus, Bansa. *Ben*—Adulsa, Bakash *Pers*—Bansa *Duk*—Adarsa *Tel*—Addasaram Adampaka, or Adamkabu *Madras & Tam*—Adhato dai *Can & Kon*—Adusogae *Mal*—Ataloetakam *Mah*—Adulsa, Adusa *Guj*—Aduraspee, Adulso, Bansa *Punj*—Bhekkar

Habitat—This plant (bush) grows in most parts of India, especially in the lower Himalayan ranges

Parts Used—Leaves, roots flowers and bark

Constituents—An odorous volatile principle probably of the nature of an essential oil, fat, resin, a bitter non volatile alkaloid called *vasicine*, an organic acid *adhatodic acid*", sugar, gum, colouring matter, and salts The largest amount of *vasicine* contained in the root bark, and to the extent of 0 25 per cent in the leaves A yellow dye is commonly obtained from its leaves ' Pharmacology of Vasicine —The alkaloid viscine and its salts are not very toxic to undifferentiated protoplasm They have little or no effect on the free living protozoa such as *Paramaecium caudatum* nor have they any toxic or inhibitory effect on the cultures and growth of streptocci, staphylococci, B coli B diphtheriae or B tuberculosis It is possible that the antiseptic properties of the leaves recorded by previous observers may be due to the volatile principle. Solutions of concen-

(1)—Chopra s I D of I pp 458

trations of 1 to 5 per cent are not irritant to the mucous membrane. The alkaloid has a bitter taste but has no marked effect on the movements of the alimentary canal In high concentrations (1 in 20,000) the peristaltic movements of the isolated gut are inhibited, probably owing to depression of the vagal endings Intravenous injections in animals produce a slight fall of blood pressure due partly to direct depressing effect on the cardiac muscle and partly to depression of the terminations of the vagi in the heart There is no effect on the blood vessels

In the lungs of experimental animals the alkaloid, when given intravenously produces a slight but a persistent bronchodilatation This action is in all probability due to depression of the vagal terminals in the bronchi as it is absent with small doses of pilocarpine After administration of atropine, the bronchodilator effect is more pronounced The drug has a well marked expectorant action and it is probable that the essential oil plays an important part in this direction ' (Chopra)[1].

Properties — The base visicine or vasicine, is monobasic and occurs as white needle-shaped crystals and has a melting point of 190° 191° , or 182°C. It is easily soluble in alcohol, is slightly soluble in cold water but more so in hot water with an alkaline reaction. *A 20 per cent solution in chloroform is optically inactive.* It forms crystalline salts with mineral acids , oxidation product with $KMnO_4$ m p 213° 214° Vasicine behaves as a tertiary base (Tarak Prasad Ghose, Dehra Dun)

Visicine hydrochloride occurs in light, cream-coloured crystals, has a melting point of 180°C and is very soluble in water Visicinet artrate was also prepared and is a soluble salt The molecular weight of viscine was determined and found to be 188 which agrees with the empirical formula $C_{11}H_{12}N_2O$ found by analysis ' [2]

Action —Expectorant, diuretic, antispasmodic and alterative ' Vasicine has no marked action on the alimentary canal or on the circulation It produces slight but persistent broncho-dilatation in experimental animals and this effect is considerably increased after administration of atropine. The essential oil present in the leaves appears to be chiefly responsible for the expectorant action of the drug ' s " Clinically, tinctures and alcoholic extracts made from fresh and dry leaves, were tried in various civil hospitals and dispensaries

(1), (2) & (3) Chopra s I D of I pp 266-268

in different parts of India, have shown that the drug has a definite expectorant action. In acute bronchitis they were found always to afford relief, especially where the sputum was thick and tenacious, acting in very much the same way as ipecacuanha. In chronic bronchitis the cough is relieved and the sputum is liquefied so that it is brought up more easily. The depression of the vagal terminations further relieves irritation and spasm of the bronchioles "[1]

Action and Uses in Ayurveda and Siddha —" Tikta kasaya rasam, seetha veeryam, kapha-pitta haram, vatakaram, lagu, swaryam; in swasam, kasam, lagu, in swasam kasam, jwaram, chardhi, kushtam, kshayam, meham, rakta-pittam, rakta pradaram.

Action and Uses in Unani.—" Hot 2°, Dry 2°, cough, asthma, loosens bilgham for easy expectoration."[2]

Preparations.—Infusion (1 in 10), dose :—½ to 2 ozs; Aqueous extract, dose — 4 to 10 grains; Juice of leaves, dose :—2 to 4 drachms; Tincture (1 in 10), dose :—½ to 1 drachm; Compound Decoction, *Ghrita* and Electuary.

Uses.—Fresh *juice of leaves* two drachms with honey or with one drachm of ginger juice, or a *decoction of the leaves and root* with pepper in doses of half to one ounce, is an excellent cough mixture useful in chronic bronchitis, asthma and phthisis. In consumption, it relieves the irritable cough by its soothing action on the nerves and by liquefying the sputum which makes expectoration easier Juice of the leaves is considered, in Northern India, useful for diarrhœa and dysentery, especially in haemoptysis and in the bleeding of dysentery " In Burma and in Northern India, the leaves are applied locally in the form of a poultice on rheumatic joints, inflammatory swellings and in neuralgias."[3] Strong decoction is an efficacious fomentation to rheumatic and painful swellings and neuralgias; it is also a good application for scabies and other skin complaints. " Dried leaves in powdered form are given in doses of 30 grains, in malarial fevers Both the decoction and powder form constituents of many Ayurvedic preparations for affections of the respiratory tract. U. C. Dutt says " the medicine was considered so serviceable in phthisis that it was said, no man suffering from this disease need despair as long as Vasaka plant exists "[4] Dried leaves are smoked as ciga-

(1), (3) & (4) Chopra's ' I D. of I pp. 266-268
(2) Therapeutic Notes.

rettes with much benefit in asthma. Fresh *flowers* are bound over the eyes in ophthalmia.

Sarangdara describes the following compound decoction of the root of Adhatoda vasica, much used in fever with cough —Take of *vasaka* root, *gulancha* and the root of Solanum jacquini in equal parts, two tolas in all, and prepare a decoction in the usual way This is given with the addition of honey A *ghrita* is prepared with clarified butter, a decoction of the plant and a paste of the root taken in the usual proportion, and is used in phthisis *Vasavaleha* or electuary of *Vasaka* is prepared thus —Take of the juice of *Vasaka* leaves four seers, white sugar one seer, long pepper 16 tolas, clarified butter 16 tolas, boil them together till reduced to the consistence of an extract When cool add honey one seer and stir with a ladle till intimately mixed, Dose is one to two tolas in phthisis, cough with pain in the sides, haemoptysis and asthma (*Bhavaprakash*) *Bhaishajyaratnavali* contains description of an oil ' Vasachandanadi taila " which is prepared with a large number of valuable drugs, and useful for rubbing on the body in affections of the chest, especially in phthisis and also in epilepsy, hysteria, insanity and in scurvy

N B — The leaves are said to be toxic to all forms of lower life, prevent the growth of lower aquatics and check the development of parasitic vegetation According to Watt, the alcoholic extract of the leaves is poisonous to flies, fleas, mosquitoes, centipedes and other insects [1]

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55 ADIANTUM CAPILLUS-VENERIS, Linn. & Bedd

(N O —Polypodiaceae)

Eng —Maiden hair fern *Hindi* —Hansraj, Mubaraka *Guj* —Hanspadi *Kash* —Dumtuli *Kumaon* —Mubaraka *Arab* —Shair ul jin *Pers* —Sir sia peshane

Habitat — Chiefly obtained in the Punjab bazars and in some parts of Southern India

Action.— Expectorant, diuretic, emmenogogue

Uses.— Expressed juice with pepper is a favourite remedy in all kinds of fever A syrup prepared from the leaves is useful in chronic cough

(Chopra s I D of I pp 458, 562)

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(1) Chopra s I D of I pp 266-268

56 ADIANTUM CAUDATUM, Linn.

(N O—Polypodiaceae)

Sans—Mayurashikha *Punj*—Adhsarita jari
Uses—Used for skin diseases and diabetes
(Chopra s I D of I pp 458)

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57 ADIANTUM LUNULATUM, Burm

(N O—Polypodiaceae)

Gwalior—Hownsraj *Hind* & *Ben*—Kali jhant *Bom*—Hans ra)

Habitat.—Gwalior State
Parts Used—Fruits
Uses—Fruits are used in leprosy fever and erysipelas
1 Chopra s I D of I pp 458
2 Indigenous Drugs of Gwalior State

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58 ADIANTUM PEDATUM, Linn

(N O—Polypodiaceae)

Uses—Used in chronic catarrh
(Chopra s I D of I pp 458)

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59 ADIANTUM VENUSTUM, Don

(N O—Polypodiaceae)

Hind—Hansraj *Bom*—Mubarak
Action.—Resolvent expectorant diuretic emmenagogue
Uses—Used in scorpion sting
(Chopra s I D of I pp 458)

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60 ADINA CORDIFOLIA, Benth & Hook.

(N O—Rubiaceae)

Sans—Dharakadamba *Hind*—Hardu *Ben*—Keli kadam. *Mad*—Manja kadambe
Constituents—There is a bitter principle
Action.—Febrifuge ant septic
(Chopra s I D of I pp 458)

61. ADONIS OESTIVALIS, Linn

(N O—Ranunculaceae)

Constituents—Glucoside

(Chopra s ' I D of I pp 458).

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62 AEGLE MARMELOS, Corr

(N O—Rutaceae)

Sans—Bilva, Bilvam, Sriphal (Sri—Goddess of Abundance, Phal—Fruit It is an emblem of riches or fertility) *Eng*—Bael fruit, Bengal quince *Hind*—Bel, Bael Sripal *Guj*—Bilivaphal, Bilinuphal *Bom*—Bael *Mah*—Baela *Tel*—Bilvamu, Bilva pandu, Maredu *Tam*—Vilvam, Vilva pazham, Bilvam *Can*—Belapatre *Mal*—Koovalam, Vilvam *Ben*—Bela, Bael *Sind*—Katori *Gond*—Maika *Pers*—Shul

Habitat—Found all over India, from sub-Himalayan forests, Bengal, Central and South India, and in Burma ' Two kinds of fruit are available in the market—a small and wild variety and a large cultivated variety (The full grown fruit of either variety, when it just begins to ripen, is best for medicinal purposes) [1]

Parts Used—Fruit (both ripe and unripe), root bark leaves, rind of the ripe fruit and flowers

Constituents – The pulp contains mucilage, pectin sugar, tannin (tannic acid), volatile oil, bitter principle, ash 2 per cent, and a balsamic principle resembling balsam of Peru The wood ash contains potassium and sodium compounds, phosphates of lime and iron, calcium carbonate, magnesium carbonate, silicia, sand etc. Fresh leaves yield in distillation a yellowish green oil with a peculiar aromatic odour, Marmelosin ' According to Fluckiger & Hanbury the dry pulp contains chiefly mucilage and probably pectin The dried pulp was exhausted by Henry & Brown, with boiling alcohol, the extract concentrated in vacua and the thick syrup diluted with water to precipitate fatty and resinous matters. The liquor from this precipitate after concentration in vacua to remove all alcohol, was tested by them on a free living ciliate protozoon, Glaucoma The solution was found to be marked by toxic to glaucoma, but owing to the large amount of gum present it proved difficult to get a satisfactory preparation of the

(1) Chopra s *I D of I pp 269 to 271*

tannins of the plant, but even in the impure form these appeared to be fairly active They concluded that the drug may owe its activity to the tannins that are present since these are toxic to Glaucoma

Dutt & Dixit extracted the roots, bark, seeds, leaves and fruits, with various solvents and the composition was determined in each case The roots, leaves and bark were found to contain reducing sugars, and tannin mainly The fruit pulp yielded, in addition to the usual substances, a body which has been named marelosin, which is considered to be one of the most important active principles of the fruit The seeds, when crushed and extracted with petroleum ether, gave a light yellow oil which has been found to possess very good purgative properties when taken internally in doses of 1 5 gm [1]

Action.—Ripe fruit is sweet, aromatic, cooling, alterative and nutritive When taken fresh it possesses laxative properties Unripe fruit is astringent, digestive and stomachic, and a little constipative Pulp is stimulant, antipyretic and antiscorbutic. Fresh juice is bitter and pungent

Action and Uses in Ayurveda and Siddha — *Tender fruit* — Tikta kashaya rasam, ushna veeryam, vata kapha haram, pitta karam, grahi, ruksham, lagu, pachanam, balyam, improves agni *Fruits* —Mathuram, guru *Root* —Vata haram.

Action and Uses in Unani.—Hot 1°, Dry 2°, Tonic, brain, heart, stomach astringent, haemostatic, dysentery, aphrodisiac [2]

Preparations —Powder (of the dried pulp), dose —10 to 40 grains Syrup, dose —½ to 1 oz. Decoction, Juice of bark and leaves. Extract of bael made from fresh unripe fruit

Uses —*Fruit* is very valuable in habitual constipation, chronic dysentery and dyspepsia It is one of the ingredients in the Dasamul or ten roots used in Ayurveda *Unripe or half ripe fruit,* owing to the presence of tannins or mucilagenous substances which act as demulcent cut up in slices and sun dried or roasted and made into a confiture (conserve) or a powder, is prescribed in chronic diarrhoea and dysentery, with debility of the mucous membrane intestinal conditions specially useful in chronic diarrhoea and dysentery of children where there is no fever Dried pulp of the *fresh ripe fruit* is made into a pleasant orange-coloured morn-

(1) Chopra s I D of I pp 269 to 271
(2) Therapeutic Notes

ever, most evident when the condition in amoebic dysentery has become subacute or chronic After its administration in these conditions, the blood gradually disappears and the stools assume a more foeculent and solid form If bael is continued for sometime, the mucus is also decreased and may disappear It is very useful in patients suffering from chronic dysenteric condition characterized by alternate diarrhoea and constipation Claims have also been made that it relieves flatulent colic in patients suffering from a condition of chronic gastro-intestinal catarrh In the after treatment of bacillary dysentery, bael is a useful adjuvant According to Acton & Knowles the chief trouble with such patients, as a rule, is constipation which if not relieved does not allow the ulcerated surfaces to heal firmly Bael 'sherbet' is a useful addition to the dietary at this stage and acts chiefly as a demulcent

In cases of sprue also, the bael fruit has been spoken of highly by Manson Bahr In many patients, especially those in the pre sprue or early stages of the disease, it is unoubtedly helpful The fresh fruit is best taken raw mixed with sugar, though dried fruit has also been recommended [1] For a child the following is an excellent prescription in cases of chronic diarrhoea —Powder of unripe fruit six grains, compound powder of kino one grain and pure white sugar in fine powder one grain, mix together, this dose is to be given two or three times a day Pulp of the fresh fruit mixed with milk and administered with cubeb powder acts as diuretic and astringent on the mucous membranes of the generative organs, therefore useful in chronic gonorrhoea The small unripe fruit is given with fennel seeds and ginger in decoction for piles Two tolas of the juice of the *bark* is given with a little cumin in milk as a remedy for poverty of the seminal fluid The following are some useful household formulas —

1 Take of Beal fruit 1, Holarrhena antidysenterica 2, Indian sweet fennel seeds 1, chebulic myrobalan 1 and Sugar 3 parts Mix reduce the whole to a powder, then add Plantago, Ispaghula. Dose — One to three drachms Useful in subacute and chronic dysentery

2 Take of Bael fruit 4 drs, Scindapsus officinalis 1 dr, Andropogon muricatus 1 dr, Symplocos racemosa 1 dr, Mix and reduce the whole to a fine powder Dose —20 to 30 grains Useful in chronic diarrhoea and dysentery

(1) Chopra's I D of I " pp 269 to 271

3 Take of Bael (*dried pulp*) 2½ drs, *dried ginger* ½ dr, Indian sweet fennel seeds 2½ drs, Silk cotton tree s gum 1 dr honey 2 drs, Sugar 3 drs Mix and reduce the whole to a fine powder Dose —½ to 1 drachm Used in chronic dysentery and dysenteric diarrhoea of hot climates

4 Bael pulp 1 dr, Catechu 1 dr, Pomegranate bark 1 dr Mix and make a powder Dose —½ to 1 drachm Used in dysentery and chronic diarrhoea

5 Rind of the Bael *fruit* 5 *Cocculus Corditolius* 4 parts Mix and make a decoction in the usual way when ready add honey Given to check vomiting

6 *Bilva Panchaka* (Five drugs including Bael) —Take of Bael fruit 10 *Mocharasa* 10, Kernel (seed) of Mango Nutmeg 2 and Opium 1 part Mix and reduce the whole to a powder Dose —20 to 40 grains given in chronic dysentery

7 "Bilva Rasayanam 1 oz and castor oil emulsion 1 oz mixture, given 1 oz every three hours, cured dysentery within three days Diet —Thin butter milk and fruit juice of Kamala oranges "[1]

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63 AERUA LANATA, Juss

(N O —Amarantaceae)

Sans —Astmabayda *Hind & Ben* —Chaya *Madras* —Sirru pulayvayr *Tam* —Poolai *Tel* —Pindichettu

Habitat —Common weed in South India

Action —Anthelmintic *diuretic*

(Chopra s I D of I pp 458)

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64 AESCHYNOMENA OR AESCHYNOMENE GRANDIFLORA. See Agati grandiflora

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65 AESCHYNOMENA SESBAN. See Sesbania aegyptiaca

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(1) Andhra Medical Journal

66. AESCULUS HIPPOCASTANUM, Linn.

(N O —Sapindaceae)

Constituents —Saponin

Action —Antiperiodic

(Chopra s I D of I pp 458)

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67 AESCULUS INDICA, Hiern

(N O —Sapindaceae)

Hind & *Punj* —Kanor *Kash* —Hanudun

Uses — Fruits are given to horses in colic

(Chopra s I D of I pp 458)

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68 AGANOSMA CALYCINA A DC.

(N O —Apocynaceae)

Sans —Malati

Uses.— Useful in biliousness

(Chopra s I D of I pp 458)

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69 AGANOSMA GARYOPHYLIATA G Don

(N O —Apocynaceae)

Sans Hind & *Ben* —Malati

Action.—Tonic

(Chopra s I D of I pp 458)

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70 AGARICUS ALBUS

(N O —Fungi)

Bom —Gharicum *Kash* —Jangli Bulgar *Eng* —White Agaric, touchwood *Hind* —Chhattri *Punj* —Kiain

Habi at — Punjab Asia Minor

Parts Used — I ungus of the Larch Quercus and Fagus species

Constituents — Resin bitter extractive matter gum vegetable albumen and wax The true active principles are agaric & fungic or larcic acid also phosphoric acid potash lime ammonia sulp

hur, etc Agaricin the resin contains 97 p c of agaric acid and 3 p c of agaricol Agaric acid occurs in minute crystals, soluble in alcohol, chloroform and ether, boiled with water it forms a gelatinous solution Dose —1–1 6 to 1 grain, given to check night sweats

Action.—Astringent, cathartic and lactifuge, diuretic, expectorant

Preparations —Extractum agarici, dose —20 to 60 minims; liquid extract dose —3 to 20 minims Tincture (1 in 10), dose —20 to 60 minims

Uses — It is given in large doses with honey in eruptive fevers to promote the rising of eruptions *Agaricin* in small doses is given to check diarrhoea It is very useful in checking colliquative night sweats, phthisis, bronchial secretion and haemoptysis Applied to the breasts after weaning it stops the secretion of milk It checks bleeding from leech bites

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71 AGARICUS CAMPESTRIS, Linn

(N O —Fungi)

Sans —Chattrak *Bom* —Alombe *Tam* —Naikkodai *Tel* —Kukkagodugu

Action —Tonic

(Chopra s I D of I pp 458)

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72 AGARICUS IGNIARIUS

(N O —Fungi)

Kash —Bulgar jangli *Punj* —Kiain

Action —Tonic

(Chopra s I D of I pp 458)

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73 AGARICUS OSTEREATUS, Jacq or A Palmalus

(N O —Fungi)

Eng —Agaric of the Oak, Touchwood, Oyster mushroom.

Cutch, Mah and Kon —Panasalambe

Habitat — The fungus growing on Artecarpus integrifolia.

Parts Used —The Fungus

Constitueots.—Resin, organic acid and gelatine

Action.— Astringent

Uses.—It prevents excessive salivation It is also given internally in dysentery, diarrhoea, stomatitis, and a paste of it is applied to the gums in mouths of children suffering from aphthae

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74 AGATI GRANDIFLORA, Desv.

See Sesbania grandiflora, Pers

(N. O —Leguminosae)

Sans —Agastya ; Vaka *Ben* —Buko , Bak , Bakphul , Vaka. *Hind* —Hathia , Hadaga , Agastoya , Basna *Bom* —Basna *Mah* — Agasta , Hadaga *Guj* —Agathiyo *Tel* — Avisi , Aneesaj *Tam & Mal* —Akatti , Agatti , Athi , Argati *Can* —Agasemara *Sinh* — Kataru murunga *Sunderbans* —Bagful

Habitat —Cultivated in South or West India in the Ganges valley and in Bengal

Parts Used —Bark, leaves, flowers, gum, root bark, fruits

Constituents.—Bark contains tannin gum (red gum resembling Bengal Kino)

Action.—Bark is very astringent, bitter and tonic, leaves are aperient and tonic, root is expectorant Agasti has its action on the system in reducing Pittam and Kapham, cooling, dry and bitter in taste, induces vayu (*Bhavaprakash*) ' Fruits are nourishing, appetising and light During ripening period fruits are sweet, bitter and invigorator of memory and correction of *Tridosha* "—(*Brihannir ghantukara*)

Preparations —Decoction (1 in 20) of the bark, dose —½ to 1 oz Juice (of the root), dose —1 to 2 drachms Paste of the root and poultice of the leaves for local applications

Uses — ' Fruits are curative agents in colic, jaundice and poisoning Ripened fruits are useful in sinus and tumourous growths ". (*Brihannirghantukara*) Fruits and flowers are largely eaten by villagers in the form of curries

' Following decoction alone with honey or as an *anupana* or adjunct to some other indicated remedy in the treatment of phlegmatic conditions whether attended with fever or not, was generally admi-

nistered by Kaviraj A C Bisharad —Vaka flowers 4 tolas (or green top leaves if flowers are not available), Vasaka (adhatoda) leaves 4 tolas (total 8 tolas), water 16 ozs, boil on gentle fire till reduced to 8 oz Given in two equal doses mixed with a little honey thrice or four times daily as required This can be administered to infants even but in smaller doses according to the age and strength of the patient

Kaviraj A C Bisharad had been using the following prescription most successfully as an urethral injection in gonorrhoea in the male and leucorrhoea in the female —Fresh expressed juice of raw turmeric one part and juice of Vaka flowers one part lukewarm water two parts mix well strain through a clean linen and then administer If fresh flowers are not available a mild decoction of dry turmeric and the powdered flowers or the fresh leaves of Vaka (Agastya) may be used with the same result *Bark* is given as infusion in the first stages of small pox and other eruptive fevers Equal quantities of the *root* of the red flowered variety and the root of the black dhatura or stramonium (thorn apple) rubbed into a paste with water is applied to painful or rheumatic swellings *Root* is given with honey in catarrh (Kaviraj A C Bisharad) Juice of the *leaves and flowers* is a popular remedy for nasal catarrh and headache when it is sniffed up the nostrils It causes a very copious discharge of fluid and relieves pain and sense of weight in the frontal sinuses (*Bhava prakash*) For children 5 drops of the leaf juice in honey will suffice Leaves made into a paste should be treated in boiled ghee and administered in nyctalopia —*Bagbhata* In epileptic fits of children a snuff of fresh expressed juice of leaves is recommended —*Harita samhita* In epilepsy of elderly people a preparation made of leaves and round pepper well ground with cow's urine and used as snuff is recommended as a certain cure (Kaviraj A C Bisharad) *Bhava prakasha* further recommends it as an external application of much value in *Bata rakta* or leprous eruptions (Kj A C Bisharad) Juice of the flowers is squeezed into the eyes to relieve dimness of vision Powdered flowers well mixed with buffalo's milk and curd prepared thereafter and butter prepared from this curd is highly efficacious in curing eruptions on the body (Kj A C Bisharad) Juice of flowers is efficacious in leucorrhoea Flowers fried in ghee may also be given as an useful and nourishing diet in leucorrhoea There is no doubt about the superior efficacy of the juice of flowers as an ideal

expectorant We have largely used it in bronchitis broncho-pneumonia and pneumonia with marvellous results (Kj A C Bisharad). A *poultice* of the leaves is a popular remedy for bruises For congenital bronchitis or cold in babies 2 drops of the leaf juice mixed with 8 to 10 drops of honey is applied carefully with the tip of a finger to the fontenal in the infants by the midwife *Agasti* is a curer of quotidian (daily) fever (*Bhavaprakash*), and is effective in the treatment of *Tridoshas* (*Rajanighantu*) In *Sushruta* it is recommended for nyctalopia (Kj A C Bisharad)

N B —A Note on Agave The agave is an important economic plant, the chief product being the fibre called commercially American aloe, which causes the agave to be confounded with the aloe (liliaceae), the chief botanical difference being in the position of the ovary The ovary being superior in the aloe and inferior in the agave Cattle are extremely fond of eating young agave genera plants '[a]

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75 AGAVE AMERICANA, Linn

A cantula or A cantala

(N O —Amaryllidaceae)

Sans —Kantala *Eng* —American aloe, Carata *Hind* —Barakhawar *Hind & Duk* —Rakaspattah *Ben and Mah* —Janglianarash, ghayal *Gwalior* —Guarapata *Guj* —Jangli Kanvar *Tel* —Rakashimatalu, Banda kattala *Tam* —Anekatalai, Anai kattaleyi *Mal* —Eroppakaita, Anakyitha *Can* —Anekatali, Bhuttala.

Habitat.—The century plant naturalised in many parts of India

Parts Used.—Roots leaves and gum

Constituents —Juice of the stalk contains a sugar yielding alcohol from which is obtained a fermented intoxicating drink called *pulque* in Mexico *Agavose* is an inactive sugar, and Saponins

Action.—Root is diuretic and anti syphilitic Sap is laxative, diuretic, emmenagogue and antiscorbutic

Preparations —Decoction, juice from leaves, sap or gum from the root

Uses —*Roots* are used with sarsaparilla in the form of decoction (4 ounces to 1 pint of water) in syphilitic complaints, the *juice* which

(a) B'bay Govt. Agricultural Dept. Bulletin

yields on cutting the leaves is also useful in syphilis Sap is useful in Scurvy, the dose is two fluid ounces Fresh juice is a good external application to bruises and contusions *Gum* exuding from the leaves and root is used as a cure for toothache *Pulp of the leaves* mixed with sugar is a popular remedy for gonorrhœa Large fleshy leaves cut into thin slices may be used as a tonic and as a poultice

76 AGAVE CANTALA, Roxb

(Species E of J R Drummond and D Prain) [1]

Mah —Ghayal *Can* —Kalnaru *Guj* —Jangli Kunwara

Habitat — Common throughout the Bombay & Madras Presidencies

77 AGAVE VERA CRUZ, Miller

(Species D of Drummond & Prain) [1]

Mah —Latia ghaial

Habitat — Common throughout the Bombay & Madras Presidencies

78 AGAVE VIVIPARA, Linn

(N O —Amaryllideae)

Sans —Kantala, *Hind* —Khetki *Madras* —Kathalai

Uses — Used in contusions of draught cattle

(Chopra s I D of I pp 458)

79 AGAVE WIGHTII

(Species I of Drummond & Prain) [1]

Mah —Chota Ghaial

Habitat —Common throughout the greater part of Bombay & Madras Presidencies

80 AGERATUM CONYZOIDES Linn

Eng —Appa Grass *Bom* —Osadi

Constituents —The essential oil contains about 90% of a compound, $C_{12}H_{16}O_2$ (Kishori Lal Mondgill Trivandrum)

Action — Antiurithic

(Chopra s I D of I pp 458)

(1) Manual of Jail Industries (1931) Madras

81 AGLAIA ROXBURGHIANA, Miq

(N O—Meliaceae)

Sans, *Hind* & *Ben*—Priyangu

Action—Fruits are cooling and astringent

Uses—Fruits are used in leprosy

(Chopra s I D of I pp 458)

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82 AGRIMONIA EUPATORIUM, Linn

(N O—Rosaceae)

Constituents.—Essential oil

Action.—Aromatic, astringent, anthelmintic, diuretic.

(Chopra s I D of I pp 458)

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83 AGROPYRUM OR AGROPYRON REPENS, (Beauvis)

See Triticum repens, Linn

(N O—Glumiflorae Family—Gramineae)

Latin—Agropyrum, Triticum. *Eng*—Couch grass, Quitch, Twitch *Fr*—Rhizome de Chiendent *Ger*—Queckenwuezel

Habitat—Though this troublesome weed is indigenous to Europe and is introduced into America is now available in India

Constituents—Glucoside

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84 AILANTUS EXCELSA, Roxb

(N O—Simarubeae)

Sans—Madala Aralu, Mahanimba Atarusha *Hind*—Maha nimb *Ben and Duk*—Maharukha *Mah*—Mahanimb, Adusa *Uriya*—Mahanim, Mahala *Tel*—Peddamanu *Tam*—Perumaruttu *Can*—Doddamani or hiremara *Guj*—Adusa Motho-araduso *Mal*—Perumaram

Habitat—Common in many parts of India U P, Behar, Bom bay Western Peninsula Carnatic Coromandal Coast.

Parts Used—Bark and Leaves

Constituents.—Bark contains an important bitter principle, known as *Ailantic Acid* It is waxlike, reddish brown easily soluble

in alcohol, water, ether etc It is related to *Quassin*, probably inden tical with *Codrin* and *Samaderin* obtained from other members of this species

Action.—Bitter tonic, carminative and febrifuge Bark is ex pectorant and antispasmodic

Preparations —Infusion of the bark, (1 in 20), dose —1 to 2 ounces Ailantic Acid dose —1 to 3 grains, in large doses it causes nausea, vomiting and purging

Uses —*Bark* and the *leaves* in infusion are reputed as tonic in debility after child birth, especially—useful in dyspepsia, bronchitis and asthma *Juice* of leaves is usually administered in *Khir* or the juice of the fresh bark is given with cocoanut milk and treacle or with aromatics and honey, it is said to stop after pains The bark is a good substitute for *Kuda* bark *Ailantic Acid* is given as tonic and alterative in dyspepsia with constipation

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85 AILANTUS GLANDULOSA, Desf

(N O —Limarubeae)

Parts Used —Bark
Constituents —A bitter substance
Action —Bark is anthelmintic
Uses —Bark is used in dysentery
(Chopra s I D of I pp 459)

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86 AILANTUS MALABARICA, DC.

(N O —Xanthoxylaceae)

Sans —Mahanimba, Pishachavraksa *Bom & Mah* —Guggula dhup *Bom* —Maddedhupa, baga dhupa *Tel* —Maddipalu or Pedda manu *Tam and Mal* —Perumaram, Mattipal *Can* —Hennmara, Dhup

Habitat.—Malabar Coast Travancore and Ceylon

Parts Used —Bark, fruit and gum.

Constituents.—Gum obtained from the bark contains 77 p c. of pure resin of a strong balsamic odour, the rest being impurities Resin is soluble in alcohol There are 3 varieties of the resin in the market—the soft, the flat and the hard, the first variety is most useful, Quassin, ailantic acid

Action.—Bark is tonic, carminative & febrifuge Gum is stimulant Bark contains no tannin and therefore is administered like calumba and quassia with the preparation of iron

Preparations.—Powder and Infusion of Bark

Uses — *Bark* is bitter and is given in dyspepsia Fresh *juice* of the bark (one ounce) with equal quantity of curd given morning and evening prove beneficial in dysentery and bronchitis *Resin or gum* is useful in dysentery in the form of powder Milk mixed with the *powder* and strained is given in dysentery; it is a good stimulant in bronchial affection It is also used for incense, when burnt it gives out fragrance *Fruit* triturated with mango and mixed with rice is useful in cases of ophthalmia This drug is also used in snake bite

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87 AJUGA BRACTEOSA, Wall

(N O—Labiatae)

Kumaon—Ratpatha *Punj*—Khurbanti

Action.—Bitter, astringent, diuretic, aperient

Uses.—The drug is used as a substitute for cinchona

(Chopra's 'I D of I' pp 459)

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88 ALANGIUM LAMARCKII, Thwaites

A decapetalum, or A. tomentosum or A hexapetalum

(N O—Cornaceae)

Sans—Shoedhanam, Ankota *Eng*—Sage leaved alangium *Hind*—Akola, Dhera *Ben*—Akar kanta, Baghankura *Guj*—Onkla. *Mah*—Ankoli *Bom*—Ankola *Tel*—Ankolamu, Uduga chettu, Kudagu *Tam*—Ankolum, Atikoevam, Alangi *Can*—Ankoelaemara. *Mal*—Ankolam, Chemmaram

Habitat—Common in tropical forests of South India and Burma, occasionally found in gardens

Parts Used.—Root, root bark, seeds and leaves

Constituents.—Non-crystallizable, amorphous, bitter alkaloid '*alangine*' soluble in alcohol, chloroform and ether, but insoluble in water "A preliminary assay of the bark showed presence of about 0 82 per cent of an alkaloid on the air dried material Syste-

matic chemical examination gave the following results :—(a) Petroleum ether extract (B. P. 35°-70°), 0.40 per cent ; (b) Absolute ether, 0.66 per cent ; (c) Absolute alcohol, 4.01 per cent ; (d) Alcohol (70 per cent), 3.5 per cent. Detailed chemical study revealed the presence of an alkaloid and a fair amount of potassium chloride but no tannins or glucosides. The base was purified to great extent but all attempts to prepare a crystalline salt has thus far been frustrated. The sulphate of the base was obtained as a white powder which was found to be hygroscopic and had a tendency to turn yellow on keeping."[1] "There are at least two alkaloids in the bark of the root, one non-phenolic obtained in a pure crystalline form m. p. 170° sharp but obtained in very small quantities ; the other phenolic may probably be a mixture of two alkaloids ; the phenolic is in a greater proportion than the non-phenolic." (D. D. Kanga)[2]

Action.—"Alangine sulphate (sulphate of the active principle of A. lamarckii) in doses of 4 to 5 mgm. per kilo body weight, administered intravenously in cats, produces a sharp fall of blood pressure of about 30 to 40 mm. This fall is only temporary and within 1 to 2 minutes the blood pressure returns to the normal level. The auricles and the ventricals are dilated and the strength of the heart beats is reduced. The depression of the heart is also noticed in isolated perfused mammalian hearts. Respiration becomes irregular. The tone and the peristaltic movements of the intestines are increased, and there is an increase in the volumes of the intestines, the spleen and the kidney."[3] *Alterative* ; root-bark is emetic in doses of 45 to 50 grains ; in smaller doses, i e., 2 to 5 grains it is nauseant and febrifuge. "Root-bark is anthelmintic and purgative in indigenous medicine."[4] Root is laxative and anthelmintic ; fruit is cooling, nutritive and tonic.

Preparations—*Infusion and decoction* of root ; powder of root-bark.

Uses :— *Root-bark* is an antidote for several poisons. Rubbed in rice-water it is given with a little hooey in diarrhoea. It has a reputation in leprosy, syphilitic and other skin diseases ; it is also useful in simple continued fevers. *Root* in infusion or decoction is given with ghee for dog-bites. It is also useful in worms, colic, inflammations and poisonous bites including snake-bites. *Oil of the*

(1), (3) & (4)—Chopra's "I. D. of I." pp. 272 & 273.
(2)—Prof. D. D. Kanga's Monograph.

root-bark is a useful external application in acute rheumatism. *Fruit* is useful in burning of the body, consumption and haemorrhages Dose of the root bark as an alterative tonic is from two to five grains in powder In doses of 6 to 10 grains it is used as diuretic in ascitis Root bark is alexiteric especially in cases of bites from rabid animals

89 ALBIZZIA AMARA Boivin & Roxb

See Mimosa amara

(N O—Mimosaceae)

Sans—Krishna sirish *Bom*—Lulai *Madras*—Thuringi
Constituents—Saponin
Uses.—Used in inflammation and ulcers
(Chopra s I D of I pp 459)

90 ALBIZZIA JULIBRISSIN Durazz

(N O—Mimosaceae)

Hind—Lal Siris
Uses—Used in snake-bite
(Chopra s I D of I pp 459)

91 ALBIZZIA LEBBEK, Benth.

(N O—Mimosaceae)

Sans—Pit shirish *Hind*—Siris *Bom*—Motha siris, Sirish. *Madras*—Kot vaghe *Tam*—Vaghai *Tel*—Dirisana
Constituents.—Saponin
Uses.—Used in snake-bite and scorpion sting
(Chopra s I D of I pp 459)

92 ALBIZZIA ODORATISSIMA, Benth.

(N O—Mimosaceae)

Hind Bom & Ben—Siris *Madras*—Kar vaghe
Action.—Tonic.
Uses.—Cures night blindness
(Chopra s I D of I pp 459)

93 ALBIZZIA PROCERA, Benth.

(N O—*Mimosaceae*)

Hind.—Safed siris *Ben.*—Kori *Bom.*—Kinai tihiri *Madras*—Konda vaghe

Uses—Used for gums

(Chopra's I D of I pp 459)

94 ALBIZZIA STIPULATA, Boivin.

(N O—*Mimosaceae*)

Hind.—Siran *Ben.*—Chakua *Bom.*—Udala *Madras*—Kat turanji

Uses—Used for gums

(Chopra's I D of I pp 459)

95 ALEURITES MOLUCCANA, Willd

or A Triloba

(N O—*Euphorbiaceae*)

Sans.—Askhota *Eng.*—Indian walnut, Filberts, Candle nut *Hind.*—Akhrot *Ben.*—Jangli akrot Bangle-akrot *Can.*—Nat akrodu *Mah.*—Ramakrot *Tam.*—Woodooga *Madras*—Nattu akrotta kottai

Habitat.—This plant which is a native of the Malay Archipelago is found wild in many parts of South India

Parts Used—Nuts (kernel) and oil of seeds called *Kakm* or *Kakune*, or *Kakmi oil*

Constituents.—Kernel contains cellulose fat, organic matter, mineral matter and ash containing lime magnesia phosphoric anhydride etc Seeds yield a fixed oil which contains olein myristin palmitin, stearin and an acrid resin in which resides the purgative principle

Action.— Oil of seeds is a mild aperient like castor oil Kernel has aphrodisiac properties

Uses.—*Kernels* of the nuts, which taste like *English walnuts*, yield by expression a very agreeable fixed oil, which has a mild aperient action like castor oil. *Juice* of the fruits or nuts is a remedy

for worms, piles etc. Fruits or nuts soaked in oil and placed in the anus relieve piles.

(Chopra's "I. D. of I." pp. 459)

96 ALHAGI CAMELORUM, Fisch.

(N. O —Papilionaceae)

Pers —Khar i buz

Action.—Laxative, diuretic, expectorant.

(Chopra's "I D. of I." pp. 459)

97. ALHAGI MAURORUM, Desv

(N O.—Papilionaceae)

Sans —Duralabha. *Hind* —Jawasa. *Ben.*—Dulal labha.

Constituents —Manna.

Action.—Laxative, diuretic, expectorant.

(Chopra's I D of I." pp. 459)

98. ALLAMANDA CATHARTICA, Linn

(N O —Apocynaceae)

Bom —Jahari Sontakka

Constituents —Alkaloid glucoside

Action.—Cathartic.

(Chopra's I. D. of I." pp. 459)

99 ALLIUM AMPELOPRASUM, Linn.

(N O —Liliaceae)

Parts Used —Bulbs

Uses —Bulbs are used to hasten suppuration of boils

(Chopra's I D. of I " pp. 459)

100 ALLIUM ASCALONICUM, Linn.

(N O.—Liliaceae)

Eng —Shallot *Hind* —Ek-kanda lasun. *Ben* —Gundhun.

Habitat—This plant is cultivated in gardens where English vegetables are grown, in the Bombay Presidency

Action.—Aphrodisiac

Uses—Used in ear ache

(Chopra's "I D of I" pp 459 & Bombay Govt Agri Dept Bulletin)

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101 ALLIUM CEPA, Linn or A Porrum

(N O—Liliaceae)

Sans—Palandu, Durgandha *Eng*—Onion *Hind & Pers*—Piyaz *Ben*—Piyaj, Piyang, Pyaj, Pulantic. *Guj & Sind*—Dungari kando *Sind*—Basar *Mah*—Kanda *Can*—Neerulli *Tam*—Vengayam, Ullegaddi, Irulli *Mal*—Eerulli, Bawang *Tel*—Yerragadda, Neermulli *Burm*—Kyet th wont ni, Kesun ni *Assam*—Piyas *Sind*—Lunu *Arab*—Basl

Habitat—Cultivated all over India

Parts Used—Bulb and seed

Constituents—Bulbs contain an acrid volatile oil which contains sulphur, essential oil and organic sulphides [1] outer skins of the bulb contain a yellow colouring matter Quetcetin "Fresh red onions contain 85 60 moisture, and the completely dried material contains ether extract 2 17 p c, Albuminoids 11 62 p c (containing 1 86 p c), soluble carbohydrates 78 53 p c, woody fibre 4 02 p c, and Ash 3 66 p c (contg 0 635 p c) respectively. Onions also contain a considerable amount of sugar." [2]

Action.—Oil contained in the bulb is stimulant, diuretic and expectorant Bulb is emmenagogue, externally it is stimulant and rub-facient Roasted it acts as demulcent both internally and externally Juice of the onion is aphrodisiac, stimulant and expectorant [3] generally mixed with honey, ginger juice and ghee Though raw onion scents the breath in a very unpleasant manner, it has an especially antiseptic value throughout the entire alimentary canal, be er than when roasted or cooked Eaten raw it is also diuretic and emmenagogue

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(1) & (3) Chopra's I D of I pp 459 & 563
(2) Bombay Govt Agri Dept Bulletin

Action and Uses in Ayurveda and Siddha—Mathura rasam, Kapha karam Vata karam, as for *vellai poondu*

Action and Uses in Unani—Hot 2°, Dry 1° Stomahic, mun zij aphrodisiac diuretic, jaundice dog bite piles [1]

Uses—Onions are largely used as an article of food and condiment Onions can advantageously be eaten raw, flavoured with lemon juice pepper salt etc to enable the body get the maximum amount of the vegetable juices and their vitamins *Bulb* are useful in fever dropsy catarrh and chronic bronchitis mixed with common salt the *onions* are a domestic remedy in colic and scurvy Roasted or otherwise they are applied as *poultice* to indolent boils bruises wounds etc to relieve heaty sensation, applied to the navel in dysentery and bodyheat., juice is used like smelling salts in faintness, in infantile convulsions headaches epileptic and hysterical fits it is dropped warm into the ear to relieve earache and applied hot to the soles of feet as a derivative in convulsive disorders it is sniffed in epistaxis, it is applied to eyes in dimness of vision and locally to allay irritation of insect bites scorpion stings and also in skin diseases It is given as an antidote in tobacco poisoning Mixed with mustard oil in equal proportions it is a good application to rheumatic pains other inflammatory swellings and in skin diseases [2] Onions are eaten to mitigate cough in phthisis mixed with vinegar they are useful in cases of sorethroat Cooked with vinegar they are given in jaundice splenic enlargement and dyspepsia In malarial fevers they are eaten twice a day with two or three black peppers with remarkable relief Onions eaten with jaggery stimulate growth of children A decoction of the onions is found to benefit much the cases of strangury and extreme heaty sensation, and roasted onions mixed with cumin sugar candy and cow's ghee is a nice demulcent of great benefit in piles

102 ALLIUM LEPTOPHYLLUM, Wall

(N O—Liliaceae)

Eng—Himalayan Onion

Parts Used.—Bulbs

Action.—Bulbs are sudorific.

(Chopra's I D of I PP 459)

(1) Therapeutic Notes

(2) Chopra's "I D of I PP 459 & 563

103 ALLIUM MACLEANI, Baker—See Orchis mascula.

(N O—Liliaceae)

Indian Bazar—Badsah salap

(Chopra's I D of I pp 459)

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104 ALLIUM PORRUM, Linn

(N O—Liliaceae)

Eng—Leek *Ben*—Paru *Arab*—Kirath

Habitat—This plant is cultivated in gardens where English vegetables are grown

Constituents—Contains As

(Chopra s I D of I ' pp 459 & Bombay Govt Agri Dept Bulletin)

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105 ALLIUM SATIVUM, Linn

(N O—Liliaceae)

Sans—Lasuna, Ugragandha, Bhutagna, Mahusudha, Rasonam, Mlecha gandha *Eng*—Garlic. *Hind* & *Bom*—Lasan *Sind*—Thum. *Pers*—Sir *Guj*—Lasan, Shunam *Mah*—Lasun *Tel*—Vellulı, Tellagaddz. *Tam*—Vellapundu, Vallaipundu, Ullipoondu. *Mal*—Vellulli *Can*—Bellullı. *Ben*—Rasun

Habitat—Cultivated all over India.

Parts Used—Bulb and oil

Constituents—An acrid volatile oil which is the active principle, starch, mucilage, albumen sugar etc. Volatile essential oil (0 25%) obtained by distilling the bruised bulbs contains allyl, propyl disulphide and other organic sulphides or sulphur compounds. It is a clear limpid liquid of dark brown or yellow colour, of very repulsive and intense garlic odour and of repugnant taste 'The yield is from 0 06 to 0 1 per cent. Its specific gravity at 14 5° is 1 0525 and it is optically inactive When purified it is colourless and can be distilled without decomposition With some samples, even at winter temperature, the oil becomes semi solid through the deposition of fine crystals Semmler found that the oil decomposes

tite is improved and in some cases night sweats are also koown to subside completely As a result of the sensation of well being and comfort produced, sleep is induced and digestion improves resulting in gain in weight Minchin (1916) warmly advocates the use of garlic preparations in tuberculous affections According to him, allyl sulphides can be used in all tuberculous lesions in accessible situations or in those which can be rendered accessible He has treated a number of cases of tuberculosis of the larynx in man by ½ to 1 drachm doses of the juice 2 to 3 times a day and has always obtained very good results [1]

Action and Uses in Ayurveda and Siddha — All rasa except amla, root, katu, stem kashayam, leaf tikta, top lavana, bulb mathura Poondu —Katu mathura rasam, katu vipaka, ushna veeryam, snigdham, brahmanam vrishyam, pachanam, tikshnam rasayanam, in swasa kasam, archas, kushtam, krimi agnimandyam Juice — T B Sinus

Action and Uses in Unani —Hot 3°, Dry 3°, paralysis, forgetfulness, tremor, colicky pains, of the intestines internal ulcers of the lungs, secretes semen chronic fevers [2]

Further Uses —Clove of garlic (juice) was known as a home remedy in olden days in the East and is one of the most useful on account of its prophylactic and curative properties A German firm (A Broautigam & Co, 29 30 Cremon Hamburg 8), prepares garlic oil capsules in a cold process without any chemical constituents but of a potence well calculated to protect the human body from the attacks of bacteria and bacillae in times of epidemics, or when the danger of infection is prevalent and containing all the curative properties of the clove of garlic. These capsules renew the blood, cleanse it of all impurities, regulate the digestion and remove all parasites in the intestines which might be injurious to health, and are recommended for diseases of the lungs, arterio-sclerosis, high blood pressure, gout, rheumatism, asthma, chronic bronchial catarrh intestinal complaints loss of appetite, constipation and worms Used extensively as a spice in India for chutnies, in seasoning vegetables and curries, and for flavouring pickles The oil from seeds is prescribed internally as a febrifuge to prevent recurrence of the cold fits of intermittent fever, *externally* it is used in paralytic and rheumatic affections

(1) Chopra's I D of I pp 273 to 276
(2) Therapeutic Notes.

As resolvent the *garlic* is applied to indolent tumours, *internally* it is given with common salt in affections of the nervous system, headache, flatulence, hysteria, coughs etc It is applied like onions to the nose in cases of fainting In the form of confection it is given in rheumatism *Externally* the juice used as a rubefacient liniment acts very beneficially in infantile convulsions, other nervous and spasmodic affections, relaxed sorethroat, in asthma, general paralysis, facial paralysis, gout, sciatica, and in skin diseases including leprosy Bruised garlic and onions are applied to the chest as *poultice* When eaten in cold season it is said to ward off attacks of rheumatism and neuralgia Mustard or cocoanut oil in which garlic has been fried is an excellent antiseptic application for scabies and maggots infesting ulcers, ulcerated surfaces and wounds Its juice mixed with salt is applied to bruises and sprains and also to relieve neuralgia and earache Garlic is applied *externally* for deafness and pain "Garlic juice mixed with 3 or 4 parts of ordinary or distilled water (succus allii) has been used as a lotion for washing wounds and foul ulcers Definite improvement in the condition of infected wounds was noticed within 24 hours after washing with this lotion and a very marked and decided improvement within 48 hours Not only was the purulent discharge markedly decreased but the pain was also considerably relieved and in some cases it entirely disappeared No injury to the tissues could be noticed as a result of application of this solution Though the carbolic acid co-efficient of this solution was found to be rather lower than other antiseptics (Rideal Walker co-efficient=2), it possesses the distnict advantage of being much less irritant to the tissues than carbolic acid Whereas it is seldom possible to use carbolic acid lotion in a greater strength than 1 in 40 (2½ per cent), the succus allii can be employed in a strength of 20 to 25 per cent without apparent injury to the tissues Minchin (1916) states that he has used allium preparations in the treatment of suppurating wounds and foul ulcers for 15 years and obtained very satisfactory results"[1] *Garlic* is rubbed over ringworm with relief. A clove or two of garlic boiled in half ounce of gingilly oil is useful as eardrops in atonic deafness and to allay the pain in otorrhoea *Expressed juice* is applied in case of elongated uvula with some good effect, like that of silver nitrate Like onion, garlic produces copious diuresis and therefore it is used in dropsy or anasarca

(1) Chopra's "I D of I" pp 273 to 276

Decoction of garlic described by Chakradatta :—Take of garlic 32 tolas, water 4 seers, milk 4 seers; boil together till the water is evaporated, and strain This decoction in milk is given in small doses, in hysteria, flatulence, sciatica and heart disease.

Svalparasuna pinda :—Take of garlic 12 tolas, asafoetida, cumin seeds, rock salt, sonchal salt, ginger, long-pepper, and black-pepper each one eighth of a tola, powder them finely and mix. Dose is about 20 grains every morning with decoction of the root of the castor oil plant, in facial paralysis, hemiplegia, sciatica, paraplegia and convulsive affections This medicine should be continued for a month

Veterinary Value of Garlic Oil Essence.—Mr. Milton Dewhurst, B.Sc., A I C. (White, Tomkins & Courage, Ltd.,) contributed to "Our Dogs", of May 24 last, an article on "The Medicinal Value of Onions and Garlic" In the course of this he emphasises the value against parasites located elsewhere than in the digestive tract of the volatile organic sulphur compounds which are absorbed by the blood stream, and so distributed to every part of the body As a source of these compounds we naturally turn, to onions and garlic. After pointing out the wisdom of feeding dogs twice weekly with boiled onions, he commends as a medicine a teaspoonful of garlic juice, remarked, however, that the juice must be absolutely fresh and that a preserved product has little to commend it.

"The compounds of medical value may, on the other hand, be isolated either in the form of essential oil, or essence. When the garlic plant is distilled in a current of steam, the essential oil, consisting almost entirely of the sulphur compounds, distils over with the steam, and when the vapours are condensed, it separates from the distillation water as an oil The yield of oil is only about 0·005 to 0·009 per cent of the weight of plant distilled. This oil, of course, is very expensive, and would be a most difficult article for the ordinary fancier, because of its great potency; "The other form in which the valuable sulphur compounds are isolated is essence of garlic, which contains all the components of the oil in a form in which they will not deteriorate all the sugars, acids, &c., of the juice having been eliminated. The essence is, of course, much less potent than the oil; but it has the great advantage that, whilst containing all the medicinal compounds of the oil in a stable form, it can be easily handled by the ordinary fancier. One ounce of essence should

be diluted to about a pint, to make a suitable medicine, of which one teaspoonful is the correct dose for a dog of medium weight.

"The best medium in which to administer garlic (i.e. the best article with which to dilute the garlic essence) is undoubtedly not sugar, as is often supposed, but oil-olive oil, nut oil, cottonseed oil, cereal oil, &c. Oil has two great advantages. In the first place, by its soothing action, it prevents any irritation of the delicate membranes; in the second place, it aids absorption of the medicine into the blood stream, with consequent distribution to all parts of the body.

"A word of warning in connection with garlic preparations is desirable. Any preparation purchased should be guaranted pure garlic, free from mustard oil, artificial mustard oil, or any nitrogen compounds. Essential oil of mustard (obtained by the steam distillation of mustard seeds) consists almost entirely of the sulphur compound allyl isothiocfanate, with traces of ally cyanide. Its odour and characters are remarkably like those of garlic, oil, but actually its components are derivatives of prussic acid. As artificial mustard oil (allyl isathiocyanate) is sold commercially at about 3s. 6d. a pound, whereas genuine garlic oil is about £2 per oz., the danger is obvious.

"A word of encouragement to those who are dubious about the value of garlic may not be out of place. One of the real old-fashioned remedies for distemper-used long before the chemistry of these essential oils was known—was oil of asafoctida, an oil which owes both its disagreeable odour and its medicinal value to the organic sulphur compounds. This oil, however, has a much lower organic sulphur content than garlic oil." ["The Perfumery and Essential Oil Record" July 1935, Vol 26, No. 7].

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106. ALLOPHYLLUS SERRATUS, Radlk.

(N. O.—Sapiodaceae)

Tam.—Amalaï. *Tel.*—Eravalu

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107. ALNUS NEPALENSIS, D. Don.

(N. O.—Cupuliferae)

Hind. & Nepal.—Udis. *Punj*—Kohi.

(Chopra's "I. D. of I." pp. 459.)

108 ALNUS NITIDA, Endl

(N O —Cupuliferae)

Punj —Saroli *Kumaon* —Paya

(Chopra's ' I D of I " pp 459)

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109 ALOCASIA INDICA, Schott

or A Montana

(N O —Aroideae)

Sans —Alooka , Manaka *Eng* —Great leaved Caledium *Hind* —Alu , Mankanda *Guj* —Alavu *Mah* —Alu *Kan* —Kasalu *Ben* —Mankachu *Can* —Genasoo

Habitat — Indigenous in India

Parts Used —Root stock or tubers , Petioles and Stems

Constituents – Contains acicular crystals of Oxalate of lime to which its acridity is due

Action.—Digestive, laxative, diuretic, lactagogue , and leaves are styptic and astringent

Preparations.—Ash, Juice , *Manmandu* (diet) and Poultice

Uses.— *Juice of the petioles* is dropped into the ears of children in otorrhoea *Tubers* (underground stems) made hot are locally applied to painful parts in gout and rheumatism *Conjee* made of the *root stock or the dried stems* (*tubers*) boiled with rice flour is given in anasarca, no other food being allowed to the patient It is also given in cases of piles and for habitual constipation Ash of the root stock, mixed with honey is a local application for aphthae in the mouth Ash of the root stock or tuber of *Ran Alu* is given in water for worm troubles In anasarca, gout, rheumatism and dropsy, powdered meal of the root stalk (underground stem)— (about a year old), 8 tolas or about 3 ounces, powdered rice 18 tolas or 6 ounces, water and milk 48 tolas or 20 ounces each, boiled together till the water is evaporated, is given as a diet in doses of 5 2 ounces [1] as a substitute for food This preparation is called *Manmanda* It may also be given from 4 oz. to 1 pint according to the strength of the patient. No other diet in addition to it is allowed except milk. Besides the nourishing effect it affords, oxalate contained therein relieves the oedema caused by the retention of salts Because calcium oxalate when administered has the property of

definitely increasing the chlorides and urea in the urine particularly the former both in normal and oedematous conditions

Juice of the leaves or the water resulting from the boiling together of the stems and leaves is given with ghee for three consecutive days in colic and constipation

(Chopra s I D of I pp 459 & 563)

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110 ALOCASIA MACRORRHIZA Schott

(N O —Aroideae)

Uses —Used in scorpion sting

(Chopra s I D of I pp 459)

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110 A ALOE ABYSSINICA Lam

(N O — Liliaceae)

Parts Used —Leaves
Constituents —Aloin 13 6%
Action —Leaves are emollient

(Chopra s I D of I pp 459)

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111 ALOE INDICA, A BARBADENSIS or A barbados, A Vera Var Officinalis

(N O —Liliaceae)

Sans —Ghrita kumari *Eng* —Indian aloes *Hind* —Ghikanvar, Kumari *Ben* —Ghrit kumari Musabbar *Guj* —Kunvar *Mah* —Pivalaboel Korphad *Tel* —Kalabanda *Tam* —Kattalai, Kumari *Can* —Kathaligida *Mal* —Kattavala *Duk* —Musanbar *Punj* —Elwa *Kash* —*Musabbar*

Habitat —Cultivated throughout India in many varieties some of which run wild as on the coasts of Bombay Gujerat and South India (Mysore and certain parts of Madras Presidency)

Aloe abyssinica is grown in Jaferabad in Kathiawar Aloe vera or A barbados have become completely naturalised in India especially in the hot dry valleys of north western Himalayas and throughout the central table land extending as far as Cape Comorin [1]

Parts Used —Expressed and dried juice of leaves and pulp

Varieties —Aloe litoralis (Seaside aloes), Arabian Aloes or Aden Aloes known as *Yamini* or *Moka*, yielded by *Aloes Indica* It is of a blackish colour, shining on the surface, porous and translucent, when held before the sunlight the colour changes to red It is also known as *Bandhano Eliyo* and *Petino Eliyo* The former is mixed with stone, clay etc, and is wrapped up in mats, the latter is clean and is packed in boxes Cape Aloes is yielded by Aloes spicata Aloe socotrina (B P), Zanzibar Aloes, Bombay Aloes are other varieties

Action.—Stomachic tonic in small doses, in large doses, purgative and indirectly emmenagogue and anthelmintic

Preparations—Confection Tincture, Lotion and juice

Uses—It is a favourite remedy for intestinal worms in children Dissolved in attar of roses, or in water with borax and a little opium added strained the water or *lotion* is applied to eyes in various affections of the eye as in catarrhal and purulent ophthalmia Dissolved in spirit it is used as a hair dye to stimulate hair growth A sweet *confection* prepared from the pulp of the leaves is given in piles *Pulp* with honey or saltpetre and turmeric is given in coughs and colds To correct its griping effect confection of roses and mastich is added In colic and pneumonia of infants its *inspissated juice* with a little gum asafœtida is given internally in doses of 1 grain, it may also be given in mother's milk with the addition of a little borax *Juice of the leaves* is applied to painful inflammations of the body and to chronic ulcers The *pulp* washed in cold water and then mixed with a little burnt alum is a good remedy to persons predisposed to apoplexy The following Ayurvedic preparation known as *Kumari Asava* is useful in several ailments and it is prepared thus —Take of Aloe juice 100 Jaggery 20 Cannabis Indica 5 and water 50 parts Make a decoction to this when ready add honey 1, flowers of Woodfordia fibribunda 6 Nutmeg Cloves Cubebs Nasdostachys *Jatamansi* dried unripe spikes of black pepper, root of Plumbago Zeylanica mace or the arillus of Myristica Officinalis, the gall of Rhus succedanea Belleric myrobalan, root of Aplotaxis auriculata each 1 part *Tamra Bhasma* and *Loha Bhasma* (prepared powders of Copper and Iron) each ½ part Mix keep for about a month and allow it to ferment Used in general debility, cough, dyspnoea asthma, consumption, piles epilepsy, colic and tympanitis

(Chopra's I D of I pp 57)

112 *ALOE LITTORALIS*—See *A barbados*, *A indica*

(N O—Liliaceae)

Sans—Ikshuramallika Kanya Kumari *Eng*—Small aloe *Hind*—Chhotakanvar Elva Musambar *Ben*—Ananash *Guj*—nahani Kanvar *Mah*—Lahani kumari kalaboel *Tel*—Chinikala banda mushambaram *Tam*—Chirukattalai Kariambolam Kirra polam musambaram, raktapolam perra karalai siru karalai *Can*—Lolisara *Mal*—Kattavala Chennanayakam *Punj*—Elwa *Kash*—Musabar *Sinh*—Karibolam *Burm* Mo

Habitat—This has become quite naturalised on the southern coast of the Madras Presidency

Parts Used—Juice from transversely cut leaves inspissated by heat or solidified without the aid of heat leaves and root

Constituents—Aloin resin 30 to 50 p c volatile oil and ash 1 p c also aloetic and chrysamic acids Aloin (B P) is a neutral active principle obtained by digesting aloes in alcohol boiling, filtering and crystallizing It occurs in tufts of yellow acicular crystals without any odour

Action—Laxative tonic and emmenagogue

Action and Uses in Ayurveda and Siddha—Katu tikta kashaya rasam seetha veeryam ushna katu vipaka in kapham raktapittam menorrhagia pittam purgative emmenagogue vata pains megha diseases N B—*Rakta bhara* swellings due to injury severe heart pain pain in the sides with inability to be erect *Plant*—*Mathura rasam seetha veeryam mathura vipakam*

Action and Uses in Unani—Hot Dry 3° slowly acting drastic purgative In Souda diseases tonic to stomach brain tonic hair growth anti vayu externally for enlarged spleen [1]

Preparations—Decoction juice pulp and paste

Uses—It is a laxative tonic useful in diseases of the spleen, the *decoction of the root* is prescribed as a febrifuge very largely used in Mysore as an aperient and as an emmenagogue Tender *leaves* mixed with the powder of cumin seeds and sugar candy are an excellent remedy in dysentery characterised by bloody stools *Juice of the leaves* mixed with a little opium and applied to the forehead relieves headache mixed with gingily oil and boiled it makes a fine hair-oil useful in cases of sleeplessness *Pulp* of the leaves well

(1) Therapeutic Notes.

washed in cold water is prescribed as a refrigerant medicine in conjunctivitis with a small quantity of sugar candy, the same pulp so purified and with the addition of a little burnt alum is considered a valuable application in cases of ophthalmia. Freshly expressed juice is in almost universal use as an external refrigerant application to all external or local inflammations Mixed with butter it is applied to ulcers to relieve the burning sensation In glandular enlargements and spleen affections *juice of the leaves* is given with the addition of powdered turmeric Following is a useful prescription generally employed in Indian households —Aloe leaves sliced 3 ounces common salt 3 drachms heat them to boiling point strain, and add pure white sugar one ounce this is for one dose to be taken cold early in the morning *Tuber ground into paste* with turmeric powder added is applied as *lep* to inflamed or diseased breasts

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113 ALOE PERRYI Baker

(N O —Liliaceae)

Eng — Socotrine aloes

Habitat — Though native of Socotra Island and Africa are cultivated in Bombay Presidency

Constituents —Barbaloin Socaloin

Action —Stomachic tonic purgative

Uses —Useful in dyspepsia jaundice and amenorrhoea

(Chopra s I D of f pp 459)

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114 ALOE VERA, Linn

(N O —Liliaceae)

Sans —*Bo* —Ghrita kumari *Hind* —Ghi kanwar *Madras* — Kattalai

Parts Used —Leaves fresh juice pulp root

Constituents —Alo n isobarbaloin emodin

Action —Fresh ju ce is cooling and cathartic

Uses — Leaves are being used successfully in America in the local treatment of chro ic ulcers A Loveman (Louisville) reports on several cases of X Ray ulcer which defied other methods It acts better than a salve prepared from the constituents of the leaves First the pains diminish and after a few weeks the ulcers heal (Arch of

Derm & Syph Vol 36, No 4, 1938—Medical World quoted in Antiseptic , Dec 1939 Fresh juice is useful in fevers , pulp is used on uterus , root is used in colic

(Chopra s I D of I pp 460)

Aloexylum agallochum—see Aquilaria agallocha

Alpinia calcarata, Roxb —see A galanga A calcarata is a substitute for A galanga (Chopra s I D of I ' pp 460)

115 ALPINIA CHINENSIS—See Alpinia khulanjan

Eng —Lesser galangal *Sans* —Rasnah *Tam* —Chitta rattai , Sanrashtam *Tel* —Sannarastram *Can* —Rasna *Arab* —Khulanj , Khulanjan

Parts Used —Rhizome

Action and Uses in Ayurveda and Siddha —Tikta rasam ushna veeryam, vata kapha haram , guru , in soolam swasam, vatha raktam soolam, udaram kasam, jwaram poison (Therapeutic Notes)

Action and Uses in Unani —Hot 2°, Dry 2° Tonic for stomach *appetiser, carminative headache epilepsy cough lumbago* colicky pains, sciatica, hoarse voice (Therapeutic Notes)

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116 ALPINIA GALANGA, Willd , or A calcarata

(N O —Scitaminaceae)

Sans —Sugandhavacha , Mahabaravach , Kulinjana , Dhumpa rastna *Eng* —Java Galangal , grand or greater galangal , galanga cardamoms *Duk Bom & Hind* —Saphed panaki jhad , Barakulinjan , Kulanjan *Mah* —Kosht kulinjan *Ben* —Sugandha vacha , Kulinjan *Can* —Dhumarasmi *Mal* —Chitta ratta *Tam* —Peria reta , pera rattai *Tel* —Pedda dhumpa , rash trakam *Pers* —Khus ravedurue kalan *Arab* —Khulanjan e Kabir , Khulanjan e-qasbi

Habitat—South India and Bengal

Parts Used —Rhizome and fruit

Constituents— According to Chemist Jahns galanga root contains *three different compounds* —campheride, galangin and alpinin From the green rhizomes a pale yellow volatile essential oil (one of the important constituents of the drug) with a pleasant odour can be obtained on *distillation* This oil contains 48 per cent

of methyl cinnamate 20 to 30 per cent of cineole, camphor and probably d pinene [1]

Action.—Aromatic stimulant and bitter, stomachic and carminative The tubers and seeds are said to possess carminative properties The drug has a slight irritant action on the mucous membrane of the stomach and this may be used in producing a reflex increase in the bronchial secretion As the oil is excreted through the lungs it acts as an expectorant [2]

[3] Pharmacological Action —Intravenous injections of small doses of a tincture or an infusion of A galanga produce a sharp fall in blood pressure in experimental animals The blood pressure however comes to normal in a short time The fall in blood pressure is accompained by a rise in the volume of the intra-abdominal organs like the spleen and the intestines showing that dilatation of the splanchnic blood vessels is one of the causes of the fall of blood pressure The contractions of both the auricle and the ventricle are lessened showing that the drug has a depressant action on the heart Dilatation of the peripheral blood vessels is observed when they are perfused with physiological saline solutions containing various concentrations of the drug The drug is a depressant to the cardio vascular system

Respirations in experimental animals are stimulated in small doses but depressed with larger ones the respiratory centre being paralysed The important action of the drug is however, on the bronchioles Even small doses produce a dilatation of the bronchiles and this effect is much more pronounced when the dose is increased Asthma like conditions produced artificially in animals by administering pilocarpine are immediately relieved by small doses of the tincture of A galanga

The drug has no marked action on other systems of the body The secretion of urine is slighty diminished but this effect appears to be vascular, for the rate of secretion comes to normal as soon as the blood pressure comes to normal The isolated uterus is relaxed and its contractions become regular The action of the gastro intestinal tract is similar to that produced by other essential oils [3]

Preparations.—Powder (dose —5 to 10 grains) Tincture (1 in 10) dose —½ to 1 drachm. Paste made with any bland oil to apply locally in skin diseases

(1) (2) & (3)—Chopra's I D of I pp 276 to 278

Uses — The plant is fairly largely used in Southern India In Mysore, it is a domestic medicine much used by old people with bronchial catarrh The rhizomes are useful in rheumatism and catarrhal affections Tubers and seeds are used as a fragrant adjunct to complex prescriptions Hakims consider these to be a good remedy for impotence and nervous debility The drug is a popular remedy for many respiratory ailments Yajolu found that administration of a paste of A galanga in honey lessened the paroxysms of cough in children suffering from whooping cough He also found that in young children suffering from bronchitis administration of this drug relieved the distressing symptoms and also had a favourable action on the temperature of the patients The drug therefore promises to be of use in respiratory troubles especially those of children The antispasmodic action of the drug may also prove useful in conditions like asthma

In affections of the gastro intestinal tract the drug can be used like other volatile oils It has got the advantage of having a very pleasant odour and thus may be used in cough and digestive mixtures It has been suggested that it may be useful in intestinal and biliary colic. [1]

Used also in dyspepsia fevers incontinence of urine and also advocated in diabetes mellitus and said to diminish the quantity of urine, it is used to destroy bad smell in the mouth and in other parts of the body, used to improve the voice in throat affections

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117 ALPINIA KHULANJAN, M Sheriff

See—Alpinia chinensis

(N O—Scitamineae)

Hind—Khulanjan
Constituents—Essential Oil
Action—Stimulant carminative stomachic, expectorant

(Chopra s I D of I pp 460)

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118 ALPINIA NUTANS, Roscoe

(N O—Scitamineae)

Ben—Punnag champa.

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(1) Chopra s I D of I pp 276 to 278

Constituents —Essential oil
Uses —Same as Galanga

(Chopra s I D of I pp 460)

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119 ALPINIA OFFICINARUM, Hance

(N O —Scitamineae)

Hind —Khulinjan *Ben* —Sugandha bacha
Constituents —Galangin , essential oil
Action —Stomachic, stimulant, carminative

(Chopra s I D of I pp 460)

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120 ALSTONIA SCHOLARIS, R Br

(N O —Apocynaceae)

Sans —Saptaparna visaltvak brihatvaka *Eng* —Dita Bark *Hind* —Datyuni , Chhatiun *Ben* —Chhatim *Mah* —Satveen *Tel* —Palagaruda Aedakularitichettu , Edakula pala *Tam* —Aelil appalai , wodrasi *Can* —Hale *Mal* —Daivapal , aerilampal *Kon* —Santhni rooku Kadusalle rooku

Habitat —Wildly cultivated throughout India , found in sub-Himalayan tract from the Jumna eastward ascending to 3000 feet , abundantly found in Bengal and South India

Parts Used —Leaves and bark , milky juice

Constituents —Bark contains alkaloid "*ditamine*" and *echita mine* (Bacon) and *echitenine*, also *echicaoutchin*, an amorphous yellow mass *Echicerin* in acicular crystals , *echitin* in crystallized scales *echitein* in rhombic prisms (a crystallisable acid) and *echretin* an amorphous substance, resembling an alkaloid, a fatty acid and fatty resinous substances An uncrystallisable bitter principle called 'ditain' isolated long ago was ascribed the febrifuge properties of the drug *Ditamine* can be separated from its solutions by making them alkaline with sodium bicarbonate and extracting with ether , *echitamine* is obtained by making the solution strongly alkaline with NaOH and extraction with chloroform Goodson & Henry (1925) reported that the principal alkaloidal constituent of A Scholaris and other allied species such as A congensis, A gilletii, A angustiloba and A spathulata was '*echi'amine*' ($C_{22}H_{28}O_4N_2$) This alkaloid,

however, was found to be absent in other representatives of the Alstonias, e g, A constricta, A macrophylla, or A villosa (Goodson 1932). (Sharp 1934) reported the presence of four alkaloids in A constricta, of which *'alstonine'* was considered the chief one and was obtained in crystalline form as sulphate [1]

Action—Stimulant, carminative, stomachic, bitter tonic, astringent, aphrodisiac, expectorant, febrifuge, alterative and anti periodic Bark of the tree has been reputed in Ayurveda for ages as febrifuge, alterative, tonic and gastro-intestinal sedative *Ditamine* or *ditain* possesses anti periodic properties equal to the best sulphate of quinine without its disagreeable secondary symptoms, but its febrifuge effect is not lasting Bacon found that in action the alkaloid *'echitamine'* is not a protoplasmic poison like quinine or emetine Amoebae suspended in a 1 per cent solution of *echitamine* hydrochloride seem to thrive, there is no decrease in their motility even after exposure for 2 hours The use of 'dita' extract in place of quinine for malaria and for amoebic dysentery would thus seem to be of doubtful value (Chopra) Echitamine produces only slight action even in doses of 5 mgm

"Goodson, Henry & Macfie (1930) tried the alkaloids 'echitamine', 'distamine', 'akuammine' and 'harmine', in bird malaria, and found them inactive except 'echitamine' which produced feeble action in doses of 5 mg per dose Buttle (mentioned by Sharp, loc cit) recorded the inactivity of alstonine sulphate in bird malaria" [2]

Preparations and their doses—*Of the infusion* 1 to 2 ozs, *of the tincture*, 1 to 2 *drachms diluted in* water and of *ditain* 5 to 10 grains given two or three times a day An extract is prepared from the fresh bark and given in milk in cases of leprosy It is also used as an anthelmintic

Preparation of Amritashtakapachana.—Take of the bark of Alstonia scholaris, *gulancha*, leaves of Adhatoda vasica and Trichosanthes dioica, tubers of Cyperus rotundas, Calamus rotung, catechu and *nim* leaves and prepare a decoction in the usual way Dose:—One to two *ounces two or three times a day*

Uses.—*Bark* is valuable in debility and after-effects of fever, also in chronic diarrhoea, dysentery and in catarrhal fever "Equal doses of ditamine and sulphate of quinine were said to have the

(1) & (2)—Chopra's "I D of I" pp 278 & 279

same medicinal effects as quinine, in malaria and other malignant tertian fevers, as in the Manilla Hospital results of trials obtained in malaria were very satisfactory, and when tried in 14 cases of malaria in India, in all cases it caused the temperature to fall steadily to normal in a short time No perspiration and over exhaustion of the patients were induced Treatment for a few days only was sufficient to cure the patients [1] The Report of the Indigenous Drugs Committee, Madras, 1921, states that the drug A Scholaris seems to produce good effects in cases where the catarrhal conditions of the mucous membrane of the intestines have lasted for some time It does not seem to produce any marked effect in ordinary diarrhoea [2] and would completely replace quinine in malignant tertian fevers or diarrhoea where A Scholaris, in some form or other, is not used

It was also recognized in the B P 1914 It is a popular belief in Bengal and some other parts of India that genuine dita bark, if administered in the form of a decoction ('*pachan*') according to strict Ayurvedic principles, is almost as effective as quinine, and would completely replace quinine in malignant tertain fevers (Chopra 1933) But, Drs B Mukerji, B K Ghosh and L. B Siddons write in December 1942 issue of Indian Medical Gazette, that, in all these early reports, no definite proof was given that the cases treated were truly *malarial* in origin Presumably, purely clinical spot diagnosis was the criterion employed without any laboratory examination of the blood for the presence of parasites It is, therefore, difficult to give much credence to such findings

During the period that the chemo therapeutic studies were proceeding, a tincture (1 in 10), containing approximately 1 3 gr TAS per ounce, was prepared from the powdered bark of A Scholaris and this was administered in doses of one ounce thrice daily in a few patients suffering from malaria Authentic records of only six cases are available, but more than a dozen patients were treated In four cases, malarial infection was definitely proved by the demonstration of parasites (BT parasites in one and MT parasites in three) In two cases, the presumption was drawn from symptoms and previous history associated with palpable spleen, but parasites were not detected in the peripheral blood, at the time of admission In none of these cases, according to the opinion of the physicians in charge, did the tincture of Alstonia produce any significant way the course of the

(1) & (2) Chopra s I D of I pp 278 & 279

disease. The temperature chart of three patients, however, showed a distinct drop in fever almost immediately following or about half an hour after doses of the tincture were administered The patients appeared during these periods to be comparatively free from subjective symptoms such as headache nausea, etc. On critical examination this mild reduction in temperature has been ascribed by the physicians to simultaneous coincidence rather than to any direct effect of the drug At any rate, no demonstrable anti malarial action could be proved It is possible that the slight reduction in temperature may be the result of central action of TAS contained in the tincture, as is observed after the administration of centrally acting antipyretics (I M G, Dec 1942, pp 724 725) These three doctors conclude that careful investigations in the laboratory and in the clinic of the total alkaloids isolated from A Scholaris, and also of a tincture (1 in 10) made from the powdered bark show that, contrary to popular belief and the earlier records of clinical trials with the drug A Scholaris has little or no demonstrable action in malaria induced in monkeys and naturally occuring in human patients It cannot, therefore, be recommended as a substitute for quinine and other cinchona alkaloids [1]

N B —For greater details (Experimental) re Alstonia Scholaris on (a) Separation of total alkaloids, (b) Pharmacological studies, (c) Chemo-therapeutic studies (d) Clinical studies, etc., refer pages 724 and 725 of INDIAN MEDICAL GAZETTE, of Dec 1942

Milky juice is applied to ulcers and to rheumatic pains, mixed with oil and dropped into ear it relieves earache *Tincture* of the bark acts in certain cases as a powerful galactagogue *Juice of the leaves* with that of fresh ginger root or zedoary is administered to women after confinement The drug is also used in cases of snake bite

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121 ALSTONIA SPECTABILIS R Br

(N O —Apocynaceae)

Constituents.—Alkaloids alstonamine, ditamine echitamine, echitenine.

(Chopra's ' I D of I pp 460)

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(1) Indian Medical Gazette, Dec 1942, pp 724 & 725

122 ALSTONIA VENENATUS, Brown

(N O —Apocynaceae)

Sans —Raja adana *Madras* —Pazhamunnipala

Parts Used —Ripe fruit

Action.—Tonic

Uses —Ripe fruits are used in syphilis, insanity, epilepsy and as tonic

(Chopra s I D of I pp 460)

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123 ALTERNANTHERA ECHINATA.

(N O —Amarantaceae)

Habitat —This weed was evidently introduced recently at Bangalore and Coimbatore

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124 ALTERNANTHERA SESSILIS R Br

(N O —Amarantaceae)

Bom —Lanchari *Tam* —Ponnanganniikkirai *Tel* —Ponaganti kura

Habitat —Grows in damp places of South India

Action.—Galactagogue cholagogue

Uses —Used in snake bite

(Chopra s I D of I pp 460)

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125 ALTHAEA OFFICINALIS, Linn

See A rosea.

(N O —Malvaceae)

N B —This is the English marsh mallow which yields gum mauve

Hind Duk and Bom —Gulkhairo Gul i khere (flowers) *Tam* —Shemaitute *Pers* —Tukm e khitame (fruits, carpels) or Reshai i Khitame (roots) *Eng* —Marsh mallow root

Habitat —Kashmir

Parts Used —Flowers Carpels Leaves and Root

Constituents —Root contains a little starch nearly 20 per cent of gum or mucilage some uncrystallizable sugar and a crystallizable principle and other unimportant constituents The crystalline principle *althaein* seems to be identical with the asparin of asparagus

Preparations —Decoction powder and syrup

Action.—The plant is suppurative and emollient

Uses — Internally flowers are expectorant, internally the root is a demulcent *Leaves* are used for poultice and fomentation Mixed with oil the *leaves and flowers* are applied to burns and parts bitten by venomous reptiles *Flowers* form an ingredient of various cough mixtures *Carpels* are useful in urinary complaints and coughs The sweet soft lozenges are used for sore-throat *Root* is given in irritable state of the respiratory and digestive passages and of the bladder and intestines Its *decoction* is used as an emollient enemata in irritability of the vagina or rectum The following are useful household remedies —

1 Take of Marsh mallow root 4 its carpels 4 Bonduc seed 4 *Gokharu* 4 cubebs 5 rhizome of Iris pseudocorus 2 Sugar 6 Black pepper 1 part Mix and make a powder Dose —grains 10 to 20 used in urinary complaints (scanty urine gonorrhœa,) etc.

2 Take of Marsh mallow root 4 its carpels 5 Liquorice root 6 flowers of Viola dorata (sweet scented Violet or *Guli Banaphsha* 4 Figs 5 Black raisins 5 and *Trikatu* 2 parts Mix and make a decoction Dose —½ to 2 drachms Used in cough asthma, etc.

3 Macerate 3 parts of marsh mallow root in 40 parts of water for 12 hours, strain press filter until 32 parts have passed through To this add 64 parts of sugar dissolve warm and heat the syrup to boiling when cold skim and strain through flannel This syrup is used as a demulcent in irritation or inflammation of mucous membranes.

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126. ALTHAEA ROSEA, Linn

See *A. officinalis*

(N O —Malvaceae)

Parts Used —Seeds roots

Action.—Seeds are demulcent diuretic and febrifuge Roots are astringent and demulcent

(Chopra's I D of I pp 460)

127 ALTINGIA EXCELSA, Noronha

(N O —Hamamelideae)

Sans —Sillhaka *Hind Mah and Can* —Silaras *Mal* —Rasamala *Burm* —Nan ta yok *Eng* —Storax *Assam* —Jutili *Tam* —Neri arishp pal

Habitat —This is a magnificent tree of the Indian Archipelago, common also in Burma and Assam

Parts Used —Resin (known as storax) obtained from the tree

Constituents —Storax is a mixture of Cinnamic acid, [1] cinnamic aldehyde benzaldehyde, [1] vanillon, styrol, styracin, etc

Action —Stimulant expectorant, anodyne, antiphlogistic, "stomachic and antiscorbutic [2]

Uses —It is useful in affections of the throat and skin diseases, smeared over the abdomen of children to relieve colicky pains, applied in case of orchitis over the inflamed testicle covered over with dry tobacco leaves useful especially in early stages of hydrocele

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128 ALYSICARPUS LONGIFOLIUS, (W & A)

(N O —Papilionaceae)

Indian languages —Shevara *Broach* —Ghaula

Habitat —Grown in the Bombay Presidency

Parts Used —Roots

Uses —Roots are used as a substitute for liquorice

(Chopra s I D of I pp 460 and Bombay Govt Agri Dept Bulletin)

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129 ALYSICARPUS MONILITER, DC

(N O —Papilionaceae)

Habitat —Grows wild in Southern India

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130 ALYSICARPUS PUBESCENS, Law.

(N O —Papilionaceae)

Habitat —A tall annual plant grows in the Bombay Presidency

Uses —Till this plant flowers its leaves are eaten by cattle This is best cut before flowering to make the material into silage

(Bombay Govt Agri Dept Bulletin)

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(1) & (2)—Chopras I D of I pp 460

131. ALYSICARPUS MONILIFER, DC.

(N. O.—Papilionaceae)

Indian Languages.—Shevara.

Habitat.—This is a tall annual plant grown in Bombay Presidency.

Uses.—This and other species are eaten by cows and buffaloes in Bundelkhand. Leaves only are eaten in the green stage. The plant is useful for making silage.

(Bombay Govt. Agri. Dept. Bulletin)

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132. ALYSICARPUS VAGINALIS, DC.

(N. O.—Papilionaceae)

Habitat.—Grows wild in Southern India.

(Chopra's I. D. of I." pp. 460.)

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133. ALYXIA STELLATA, Rom. & Sch.

(N. O.—Apocynaceae)

Constituents.—Alkaloid.

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134. AMARANTUS ANARDANA, Hamilt.

(N. O.—Amarantaceae)

Hind.—Chua. *Bombay.*—Chuko.

Uses.—Used in scrofula and diarrhoea.

(Chopra's I. D. of I." pp. 460.)

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135. AMARANTUS BLITUM, Linn.

Variety : A. oleracea, Hooker.

(N. O.—Amarantaceae)

Mah.—Tambada math ; Pokla.

Habitat.—A pot herb cultivated in Bombay Presidency.

Constituents.—Fresh vegetable contains 84.00 per cent *moisture* ; *completely dried matter* contains ether extract 4.12 ; *Albuminoids* 18.75 (contg. Nitrogen 3.00 p. c.) ; Soluble carbohydrates

50 63, woody fibre 7 25; and Ash (contg. sand 0 81) 19 25 per cent respectively.

Uses.—Leaves and tender shoots are only used for vegetable purposes

(Bombay Govt Agri Dept. Bulletin)

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136 AMARANTUS CAUDATUS, Linn,

(N. O.—Amarantaceae)

Himalayan name—Kedari-chua

Parts Used—Leaves

Constituents.—Oxalic acid

(Chopra's I. D of I." pp 460)

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137 AMARANTUS FARINACEUS, Roxb

(N O—Amarantaceae)

Action—Diuretic

(Chopra's I D of I." pp. 460)

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138 AMARANTUS FRUMENTACEUS

See :—Amaranus paniculatus.

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139 AMARANTUS GANGETICUS, Linn

(N O—Amarantaceae)

Hind—Lal saag. *Mah*—Tambda math; math *Ben*—Dengua *Sind*—Marito *Tam*—Thandukkirai *Tel.*—Kamulu, Dant u

Habitat.—Largely cultivated in South India

Uses—Leaves are used as a vegetable in the Bombay Presidency. A poultice of the leaves is prepared

(Chopra's "I. D. of I." pp 460, and Bombay Govt Agri Dept. Bulletin)

140 AMARANTUS HYPOCHONDRICHUS, Linn
(N O—Amarantaceae)

Action.—Astringent

(Chopra s I D of I pp 460)

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141 AMARANTUS MANGOSTANUS Linn
(N O—*Amarantaceae*)

Hind—Chaulai *Mah*—Pokla

Habitat.—Grown in gardens as a pot herb in Bombay Presidency

Varieties—Two kinds—*green* and *red*

Uses—Leaves are eaten

(*Chopra s I D of I pp 460* and *Bombay Govt Agri* Dept Bulletin)

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142 AMARANTUS OLERACEUS Linn. or oleracea, Hook.
(N O—*Amarantaceae*)

Mah—Tandulja

Habitat—*Grown in gardens at any time of the year, in the* Bombay *Presidency*

Uses—Only the leaves and *top shoots* are eaten as a pot herb.

(Bombay Govt Agri Dept Bulletin)

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143 ANARANTUS PANICULATUS, Miq
or A Frumentaceus or A anacardan or A farinaceus

(N O—Amarantaceae)

Ben—Chuko, Bathu *Guj*—Rajagro *Mah* & *Duk*—Rajgira *Pers*—Taje khuras, Bustan Afroz *Hind*—Chua.matsa-ganhar *Bom*—Kahola Bhaji *Can*—Rajgira.

Habitat.—Throughout India, grown as a vegetable in gardens at any time of the year

Varieties.—There are two—red and green In the green variety the seed plume is deep *crimson* and the stem and leaves are tinged with crimson, otherwise the varieties do not differ [1]

Parts Used—Seeds leaves and tender shoots

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(1) Bombay Govt. Agri Dept Bulletin.

Constituents.—Seeds contain all the food-elements in standard ratio, like an ideal food

"A sample of the *rajgira* seed from the Poona district, gave the following analysis —Moisture 8 90, Ether Extract 5 25, Albuminoids 15 43 (contg Nitrogen 2 47), soluble carbohydrates 65 82; woody fibre 1 95, and Ash 2 65 (contg Sand 0 25) p c. respectively On analysis, the fresh vegetable contains Moisture 80 00 p c., and the dry material contains Ether Extract 2 70 p c., Albuminoids (contg Nitrogen 2 85), soluble carbohydrates 50 69, woody fibre 10 40, and Ash 18 40 (contg Sand 0 80) p c. respectively [1]

Action and Uses.— It is much eaten on fast days in cakes made from the flour of the parched grain The grain is also parched or roasted on a popper and made into *labis* (Marathi) These are made into balls which form a favourite dish on fast days Leaves and tender shoots are used as vegetables The plant is also cultivated for its seed [2] It is a perfectly wholesome article of food used for purifying the blood, it is beneficial in piles and in strangury it acts as diuretic In scrofula it is locally applied to scrofulous sores and also administered in the form of liquid It is one of the most important articles of food with the hill tribes

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144 AMARANTUS POLYGAMUS

or A Hypochondriacus

(N O —Amarantaceae)

Eng—Prince's feathers, Cock's comb *Ben*—Sveta murga *Guj*—Lapadi safed murga. *Hind*—Sarvari, Deokali *Mah*—Koordoo Chavli, Tandulja. *Tel*—Guruguu *Can*—Gorajl

Habitat.—Through India & Tropical Asia

Parts Used.—Seeds, leaves and root

Action —Astringent and nervine tonic, anodyne

Preparations.—Decoction or Infusion (1 in 10), dose —1 to 2 ozs Poultice

Uses.— It is given in diarrhoea, seminal debility, leucorrhoea and menorrhagia The *ashes of the root* are used for the same purposes as the ashes of *Aghada* A poultice of the *leaves* besmeared with honey is used as a cooling application to inflamed and painful

(1) & (2) Bombay Govt. Agri. Dept Bulletin.

parts such as buboes, abscesses etc. Leaves are eaten as pot herb [1] The whole plant is used as an antidote for snake-poison and the *root* as a specific for colic. It is also considered as a lactagogue and boiled with pulses and given to cows Root is regarded as a specific in gonorrhoea and also advocated in eczema.

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145 AMARANTUS TRISTIS, Linn, or A tricolor

(N O—Amarantaceae)

Mah—Math *Hind*—Lal sag *Sans*—Mekanada *Santhal*—Pondgandhari

Habitat.—Grown in gardens any time of the year, in Bombay Presidency

Varieties—*Math* is of two varieties—green and red

Action—Demulcent diuretic

Uses—Leaves and young shoots are eaten boiled Used also in snake bite

(Chopra's I D of I pp 460 and Bombay Govt Agri Dept Bulletin)

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146 AMARANTUS VIRIDIS, Linn

(N O—Amarantaceae)

Sans—Tandulija. *Tam*—Kuppaikkirai *Tel*—Chilakathotakura.

Habitat.—Common weed in South India

Uses—Used in snake-bite and scorpion sting

(Chopra's I D of I pp 460)

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147 AMMANNIA BACCIFERA, Linn

or A Vesicatoria

(N O—Lythraceae)

Sans—Agni-garbha or Agni garva *Ben and Hind*—Dadmari, Jangli Mendi or Mehudi *Punj*—Didarbootie *Bombay & Dak*—Ban mirich, Agnibuti, Bhuri Jambol *Tam*—Kalluruvi, nirumel neruppu *Tel*—Agnivendra paku. *Mal*—Kallur Vanchi

Habitat—Very common throughout India in marshy places

Parts Used—The herb and leaves

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(1) Bombay Govt Agri Dept. Bulletin.

Constituents — Resin, glucose and perhaps an active principle

Action.—Leaves are exceedingly acrid, irritant and vesicant

Uses.—*Leaves* are used by the country people to raise blisters "in rheumatism"[1] by applying them to the skin for half an hour or a little longer. Their ethereal *tincture* has been tried with success and found equal to liquor epispasticus *Leaves or the ashes of the plant* mixed with oil are applied to cure herpetic eruptions The plant fresh or dried is administered in *decoction* with ginger and Cyperus root for intermittent fever Decoction of the dried plant (1 in 20) may be given in doses of 4 drachms or half an ounce In the Konkan the *juice* is given with water to animals when in heat to extinguish sexual appetite

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148 AMMANNIA OCTANTRA, L. in f.

(N O—Lythraceae)

Habitat.—Common in wet places of India

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149 AMMANNIA SENEGALENSIS, Lam

(N O—Lythraceae)

Punj—Faugli mehndi

Action.—Blistering agent

(Chopra's I D of I ' pp 460)

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150 AMOMUM AMARUM

See—Elletaria cardamomum

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151 AMOMUM AROMATICUM, Roxb

(N O—Scitamineae)

Hind & Ben—Morang iladi *Bom*—Veldode

Parts Used—Seeds, oil

Constituents.—Essential oil

Uses.—Seeds and oil are used as other species of amomum.

(Chopra's I D of I " pp 460)

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(1) Chopra's ' I D of I pp 460

152 AMOMUM GALANGA

See Alpinia galaoga

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153 AMOMUM MELEGUETA, Roscoe

(N O —*Scitamineae*)

Constituents —Essential oil

Uses —Used as a carminative for cattle

(Chopra s I D of I pp 460)

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154 AMOMUM SUBULATUM, Roxb

See—Elettaria major

(N O —Scitamineae)

Sans —Brihat upa kunchika, Ela *Eng* —Ceylon cardamom, Greater cardamom *Hind* —Bari elachi *Ben* —Bara-elachi *Guj*— Moto-elachi *Mah* —Moto eldori, mote veldode *Tam* —Periya yelakay *Tel* —Pedda elakkay, Adavi ellakkay *Mal* —Peri-elav, Periya-elattari *Pers* —Qakilahe kalan *Arab* —Qakilhahe-kibar *Burm* —Pala *Can* —Dodda yalakki

Habitat.—Eastern Himalayas Nepal and Ceylon In Bengal a kindred variety A. aromaticum is found

Parts Used.—Seeds and oil

Constituents.—An essential oil extracted from the seeds of A *subulatum is rich in cineole*

Action and Uses —*Seeds* yield a medicinal oil *It is* an agreeable aromatic stimulant and is used for flavouring It acts as a stomachic, used to allay irritation of the stomach produced either by cholera or some other affections Seeds are stomachic, carminative and stimulant. [1] *Decoction* of cardamoms is used as a gargle in affections of the teeth and gums In combination with the seeds of melon *it is used as a diuretic in cases of gravel of the kidneys It* is invaluable in certain disorders of the digestive system marked by scanty and vesical secretion from the intestines, promotes elimination of bile, and is useful in liver affection such as congestion of the liver, especially where abscess threatens. Dose is 10 grains. It is also useful in neuralgia, in large doses, i.e., 30 grains in conjunc

(1) Chopra s I D of I " pp. 564

tion with quinine, in gonorrhoea, it is used as an aphrodisiac. The drug is also used in scorpion sting and snake bite Both in the indigenous and western medicines cardamom is used as a frequent adjunct to other stimulants bitters and purgatives, in the form of tincture or powder

N B — Owing to cheapness, these seeds are frequently employed in place of El-ttaria cardamomum,—the true cardamom. [1]

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155 AMOMUM XANTHIOIDES, Wall

(N O —Scitamineae)

N B —45 Species of Amomum *are uninvestigated*

Hind —Ilayechi *Ben* —Elach

Parts Used —Seeds

Action.—Seeds are stimulant and carminative

(Chopra s I D of I pp 461)

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156 AMOORA ROHITUKA, W & A.

(N O —Meliaceae)

Sans —Rohitaka *Hind.*—Harinhara *Ben* —Tiktaraj *Madras* —Rakta rohida. *Tam* —Semmaram *Tel.*—Sevamanu

Action.— Aperient

Uses.— Used in enlarged glands liver and spleen diseases and corpulence

(Chopra s I D of I pp 461)

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157 AMORPHOPHALLUS CAMPANULATUS, Blume

or A. Sylvaticus

(N O —Aroideae)

Sans —Arsaghna (curer of piles), Kunda *Eng* —Telugu potato or Elephant's foot *Bom*, *Mah* & *Hind.*—Jangli suran or alu, Madana masta, ol. *Ben.*—Ol. *Burm* —Wa. *Tom* —Karuna kalang, Karakkaranai. *Tel* —Thiya kandha, Poti kunda, Manchi kunda guddae *Mal.*—Kizhanna. *Mah* —Suran. *Can* —Suvarna gadde

(1) Chopra s I D of I pp 564

Habitat.—Bombay Presidency, India

Parts Used.—Corm or tubers root

Constituents.—"Fresh plant contains 78 00 p c. moisture and the completely dried material contains Ether Extract 0 50 p. c., Albuminoids 12 18 p c. (contg Nitrogen 1 90 p c), soluble carbohydrates 76 28 p c., woody fibre 4 00 p c., and Ash 7 04 (contg Sand 0 18 p c.) p c. respectively '[a] Tubers contain an acrid juice

Preparations.—Powder, dose —5 to 10 grains Confection known as *Laghu Suruna Madaka* or *Brihat Suran Madaka* containing *Madanmust*, treacle, *trikatu* and plumbago root, equal parts dose — ½ to 2 drachms in dyspepsia

Action.—Stomachic, carminative and tonic, used in piles and given as a restorative in dyspepsia, debility etc. 'It is the corm which gives the vegetable and which has the appearance of an elephant's foot. The corm, if stored well, keeps good for a considerable period '[b] It is a hot carminative in the form of a pickle '[c]

Uses.— *Root* is used in boils and ophthalmia, also as an emmenagogue *Acrid juice of the tubers* should be got rid of by thorough boiling and washing lest it otherwise irritate the mouth and fauces, they are regarded good in haemorrhoids "The vegetable is considered nutritious and wholesome when cooked It is boiled like potatoes and eaten with mustard, or it is cooked in curries, or it is cut into slices, boiled with tamarind leaves, and made into pickles; it is also cooked in syrup and made into preserve The plant, when dead and dry, is greedily eaten by cattle '[a]

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158 AMPHICOME EMODI, Lindl.

(*N O*—*Bignoniaceae*)

Kath—Kaur

Constituents.—A bitter alkaloid

Uses.—Used as a substitute for churetta.

(Chopra's "I D of L" pp. 461)

(a), (b) & (c)—Bombay Govt. Agri. Dept. Bulletin.

159. AMYGDALUS COMMUNIS, Linn

(N O—Rosaceae)

Hmd & Ben—Badam *Madras*—Vadam kottai

Parts Used—Root

Action—Diuretic Root is alterative

(Chopra's "I D of I" pp 461)

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160 AMYRIS COMMIPHORA, Roxb

See Balasamodendron Roxburghii, Arn

(N O—Burseraceae)

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161 ANACARDIUM OCCIDENTALE, Linn

(N O—Anacardiaceae)

Sans—Shoephahara *Eng*—Cashew nut *Hmd, Duk, Kon, Mah & Guj*—Kaju *Ben*—Hijlibadam *Tel*—Jaedima midi; Moonthamamudivittu *Tam*—Mundiri kai or kottae; Mundiri paruppu, Mundiri appazham *Can*—Gaerumara Turukageru, Kempukerubija. *Mal*—Kappa mavu *Pers*—Badami Pharangi

Habitat.—In the coast forests of India and all over South India

Parts Used.—Fruit, seeds, spirit, bark and oil

Constituents.—The pericarp or shell of the kidney shaped nut or seed between the shell and the kernel is the acrid brown oil, contains a black caustic fluid or tar containing an acrid oil (cardol) and anacardic acid, Seeds contain a bland oil similar to olive oil, which is obtained by expression Juice of the fruit produces a wine, a spirit is distilled from it, which has a peculiar flavour A gum (containing true gum and bassorin) partially soluble in water exudes from the bark

Action.—Tar or the acrid oil is an irritant and vesicant "Bark is alterative and astringent, fruit is used as a counter irritant "[1] Spirit distilled from the fruit is locally rubefacient

Preparations—Acrid oil from the shell; expressed oil from the seeds, anacardic acid, spirit from the fruit and the kernel of the nut

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(1) Chopra's "I D of I" pp 461.

Uses.— In the fruit there is the nut known as cashew nut, commonly eaten roasted America uses these nuts principally in the salted nut trade and in the manufacture of confectionery The ripe fleshy stalk or torus of the plant which has a pleasant sour flavour is also eaten The raw kernel is unpleasantly bitter but when fried and coated with sugar it is much prized in confectionery The black and acrid *oil obtained from the pericarp of the nut*, is not edible but is used in medicine and is an effective preventive against white ants etc., and therefore applied to floors and wooden rafters, also used by book binders *Fruit* is useful as an anaesthetic in leprosy and psoriasis, and as a blister in warts, corns and ulcers. *Juice* of the nut is used as a substitute for iodine locally, while the oil obtained from the shell by maceration in spirit, is the very best application for cracks of the feet so common in India. The enlarged pedicel of the *fruit* is eaten and is a remedy for scurvy A well known native physician of Ratnapura (Ceylon), recently deceased, had been observing a leper in an advanced stage of leprosy, subsisting entirely on Cadju fruits, in jungles of Kakul Korle, almost completely cured, and later experiments by the physician had proved that Cadju is beneficial in other bad skin maladies also Dr R. Row, M D., D Sc., F C P S, etc., of Bombay City, had also agreed with above Ratnapura physician's observations The *kernel* is a good substitute for almond mixture and is also a food for weak patients suffering from incessant and chronic vomiting with 2 3 *minims* of *dilute* hydrocyanic acid in each dose. The *oil obtained from the kernels* is remarkably sweet, edible and wholesome, and is a mechanical as well as chemical antidote for irritant poisons It is also a good vehicle for liniments and other external applications, and as such is useful for pharmaceutical purposes

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162 ANACYLUS PYRETHRUM, DC. (Pyrethrum radix)

(N O—*Compositae*)

Sans—Akarakarava. *Eng*—Pellitory *Hind., Bom & Ben*—Akarkara. *Guj*—Akorkaro *Arab*—Aquarqartha. *Tam*—Akkirakaram. *Tel*—Akarakaram. *Mah and Can*—Akkalkara.

Habitat.—Bengal and Arabia

Parts Used.—Root.

Constituents.—It contains an essential volatile oil and an alkaloid pellitorin or pyrethrin [1]

Preparations.—Compound powders pills and paste

Action.—Cordial, stimulant and sialogogue

Uses.—*Root* is a valuable sialogogue and is regarded as a tonic to the nervous system It is powerfully irritant A *decoction of the root* is useful as a gargle in carious teeth toothache sore throat and tonsillitis [2] It is frequently employed in gargles It has been given in paralysis hemiplegia, epilepsy chorea and rheumatism and a host of other diseases As the *root* is a sialogogue it is administered to backward children in the Deccan to make them talk [3] An *infusion* of this drug is useful in cases of rheumatism *Powdered root* is given in honey for epilepsy and also used as a snuff in the same disease Together with *tekhand* it is given rubbed into thin *paste* with water in cases of poisoning with red Iodide of Mercury *Akarakarava* 35 grs boiled in water is given as drink in diabetes

The following compound powder and pill are useful in various complaints —

1 Take of Pellitory root 4 Indian Colocynth 2 Sal ammoniac 3 seeds of Nigella Sativa 2 black Hellebore 4 and black pepper 4 parts. Mix and make a powder This is used for blowing into the nose in cases of Epilepsy

2 Take of Pellitory root 4 Nutmeg 3 Cloves 2 Cinnamon bark 3 Root of Piper longum 1 Saffron 2 Opium 1 Cannabis Indica 4 Liquorice root 4, Calatropis gigentea root bark 5 Berries of Embelia ribes 3 and Honey 5 parts. Mix, powder and make a pill mass Dose —1 to 5 grs. Given to children for irritability of temper wakefulness, painful dentition diarrhoea, colic and vomiting

3 *Akara Karabhadi Churna*—Take of Pellitory root, dried ginger saffron nutmeg long pepper cloves red sandalwood each two drachms and opium one drachm. Mix and add sugar six drachms and make a confection Dose —6 grains Given in impotence and chronic bowel complaints

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163 ANAGALLIS ARVENSIS Linn.

(N. O —Primulaceae)

Hind.—Jotdkhemri

Constituents.—Saponin enzyme.

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(1), (2) & (3)—Chopra's "I D of I" pp 461 & 564.

Uses —In gout, dropsy, and snake bite, and as fish poison
(Chopra s I D of I pp 461)

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164 ANAMIRTA COCCULUS W & A, or A paniculata.
See—Cocculus suberosus.
(N O — Menispermaceae)

Sans —Kakaphala. *Hind* & *Ben* —Kakmari *Tam* —Kakkay kolliviral.

Habitat.—Met with on the Pulneys and Western Ghats of South India.

Constituents.—Picrotoxin, cocculin anamirtin

Uses.—Seeds used in night sweats of phthisis
(Chopra s I D of I pp 461)

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165 ANANAS SATIVUS, Linn. & Schult, or A. cosmus, Merr
(N O —Bromeliaceae)

Eng —Pineapple *Hind, Guj* & *Mah* —Ananas. *Arab* & *Pers* —Aananunnas. *Ben* —Anaras. *Tel* —Ananash or Anasa pandu. *Tam* —Parangithalai, Anasshapazham. *Mal* —Annanas *Can* —Anasu Parangi kayee, Ananasa hannu. *Smh* —Annasi. *Burm* —Nanna ti.

Habitat.—Cultivated throughout India, and is common in the bazar

Parts Used.—Ripe and unripe fruits and leaves

Constituents.— Bromelin, As-0 008 mg in 100 g [1] Juice contains a proteid digestive ferment which acts equally well in acid or alkaline intestinal secretions It also contains a milk-curdling ferment. Ash contains phosphoric and sulphuric acids lime, magnesia, silicia, iron chlorides of potassium and sodium.

Action.— Fresh juice of the leaves or leaves by themselves are powerfully purgative and anthelmintic, and vermicide. [2] Juice of the ripe fruit is anti scorbutic, diuretic, diaphoretic, aperient and refrigerant and helps in the digestion of albuminous substances. Juice of the unripe fruit is acid, styptic, powerful diuretic and anthelmintic and emmenagogue, in large quantities it is abortifacient.

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(1) & (2) Chopra s "I. D of I." pp 363.

Preparations—Oil or Essence of the juice, fresh juice of the leaves

Uses.—Fresh *juice of the leaves* is given with sugar to relieve hiccup, also acts as a purgative Juice of the *ripe fruit* allays gastric irritability in fever, it is useful in jaundice Juice of the *unripe fruits* in large quantities causes uterine contractions and ought to be rigorously avoided by pregnant women *Oil or essence of pineapple* is used for flavouring purposes in confectionery, it is a solution of ethyl butyrate in alcohol This is used to give flavour to Jamaica rum Pineapple is used for Jam Pineapple is generally regarded as one of the most delicious fruits met with in tropical regions The fruit is eaten either stewed or fresh with a little sugar or salt [1]

(Chopra's I D of I pp 461)

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166 ANAPHALIS NEELGERRIANA, DC.

(N O—Compositae)

Nilgiris—Kaat plaster
Habitat.—Nilgiris (South India)
Uses—Leaves are applied to wounds

(Chopra's I D of I pp 461)

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167 ANASTATICA HIEROCHUNTIA Linn

(N O—Cruciferae)

Hind & Bom—Garvaphul
Uses.—Used in difficult labour

(Chopra's I D of I pp 461)

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168. ANDIRA ARAROBA.

(N O—Leguminosae)

Eng.—Goa powder
Constituents.—Chrysophanic acid
Uses.—In ringworm.

(Chopra's 'I D of I.' pp 461)

(1) Chopra's "I D of I." pp. 563

169 ANDRACHNE CORDIFOLIA,

(N O —Euphorbiaceae)

Punj —Gurguli

Uses.—This is poisonous to cattle

(Chopra s "I D. of I " pp 461)

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170 ANDROGRAPHIS ECHIOIDES, Nees.

(N O —Acanthaceae)

Tam —Peetumba *Deccan* —Ranchimani

Habitat —Common in South India

Uses —Useful in fever.

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171 ANDROGRAPHIS PANICULATA, Nees

See Kariyat pp

(N O —Acanthaceae)

Sans —Bhunimba, Mahatikta (King of Bitters), Kirata *Eng* —The Creat, King of Bitters, Chiretta *Hind* —Kiryat, Mahatita *Ben* —Kalmegh *Arab* —Qasabuzzarirah *Pers* —Nainchavandi *Guj* —Kiryato, Olikiryat *Duk* —Kalafath *Mah* —Olenkirayat *Tel* —Nelavemu *Tam* —Nilavembu, Shirat kuchchi *Mal* —Nila vaepu, Kiriyat *Can* —Nelabaevu

Habitat.—This annual is common in hedgerows throughout the plains of India, cultivated in gardens from Lucknow to Assam, especially in Bengal.

Parts Used.—Whole herb

Constituents.— Dymock and his co-workers found that an aqueous infusion of the herb was intensely bitter and acid and thought that the bitterness was due an indifferent, non basic principle Gorter (1911) thought that the bitter substance in the leaves was a lactone 'andrographolid' of the formula $C_{20}H_{30}O_5$ Later investigations by Bhaduri (1914) showed that the leaves contained two bitter substances and traces of an essential oil The first bitter principle obtained as intensely bitter yellow crystals with formula $C_{19}H_{28}O_5$ and M P 206° It did not respond to any tests for alkaloids and glucosides The second bitter substance was obtained in an amorphous

form and was named Kalmeghin' $C_{19}H_{51}O_5$, M P. 185° [1] The plant as a whole contained a bitter principle and the ash a considerable quantity of Sodium Chloride and potassium salts The plant is very rich in Chlorophyle A green resinous extract is obtained by extraction with alcohol which is believed to be the active principle, called Kalmeghin (Kalmegh Resin) and contains 0 6% alkaloid of the crude plant —(Dr K C Bose)

Action.—Roots and leaves are stomachic, tonic, antipyretic, alterative, anthelmintic, febrifuge and cholagogue

Preparations —Dried leaves,—about 10 grains (with 20 grs of black pepper) (Dr K C. Bose) Succus (concentrated expressed juice of the fresh leaves and stalks, 1 in 4 of the drug) , dose — 10 to 60 minims Compound infusion (1 in 20) containing orange peel and coriander, each 1 to 4 of the drug , dose —1 to 2 ounces Compound tincture (3 in 20) containing myrrh and aloes, each 1 to 6 of the drug dose —1 to 4 drachms Compound pill or tablet containing cumin, aniseed, cloves and greater cardamoms, all in equal parts mixed in the juice of *Kalmeg* dose —2 to 5 grains Inf Andrographis Dose ½ to 1 fl oz Tinctura Andrographis dose ½ to 1 fl drachm Kalmegh Resin dose ½ to 2 grains (Dr K C Bose)

Uses.— The shrub is well known as Kalmegh and forms the principal ingredient of a household medicine called alui which is extensively used in Bengal Alui is prepared and prescribed as follows —Take cumin, aniseed, capsules of greater cardamoms—pound them well with the expressed leaves of the juice of Kalmegh the mass thus prepared is divided into small pills and dried in the sun One pill rubbed down with human milk, is an ordinary dose (Dr K C. Bose) 3 to 6 Kirata Tablets or pills each of 5 grains are given every morning with water and honey according to the virulence of attacks in malaria Brigade Surgeon G G Hunter considers this superior to quinine *Green leaves* are given with aniseed (4 to 20) as a stomachic and anthelmintic *Green leaves* with the leaves of Aristolochia indica and fresh inner root bark of country Sarsaparilla made into an electuary, is used by Hakims of India as a tonic and alterative in syphilitic cachexia and foul syphilitic ulcers (Dr K C Bose) *Tincture of the root* is

(1) Chopra's I D of I pp 280 & 281
(2) Chopra's " I D of I pp 565

tonic, stimulant and gently aperient Expressed *juice of the leaves* alone or together with cardamom, cloves and cinnamon, made into little globules, which are prescribed ,[1] as a *domestic remedy* in griping, irregular stools, loss of appetite, flatulence and diarrhoea of children , is also anthelmintic ' *Decoction or infusion of the leaves* has been used with satisfactory results in sluggish liver, neuralgia, certain forms of dyspepsia associated with gaseous distention of the bowels (gouty dyspepsia) , in general debility, in convalescence after fevers and in advanced stages of dysentery During epidemics of influenza a tincture of the plant is highly efficacious in arresting the progress of the disease , very useful in intermittent and remittent fevers, especially when combined with arsenic

"*Decoction or strong infusion* of the root stalks and leaves is a household febrifuge, bitter tonic, alterative anthelmintic and anti-periodic useful in ague or intermittent fevers [3] The whole plant being an intensely bitter substance, yielding its properties readily to water or spirit, seems to be in no way inferior to other bitters mentioned in the B P It is easily available, very cheap and merits better recognition [4] (Chopra)

(Bom Govt Agri Dept Bulletin)

172 ANDROPOGON ANNULATUS, Forsk

Eng—Marvel grass *Poona*—Marvel *Panch Mahals*—Ginja , Jinjva. *Dharwar*—Marwaljan hullu *Mah*—Sheda , Sam-payen palwan , gavat *Surat*—Zinjvo Handi Daroya , Daroya *Broach*—Dhrow *Chorasi*—Zinzma

Habitat—A wild fodder grass of the Bombay Presidency

Composition—Analysis of the fodder grown at Poona gave the following results —

	Before flowering per cent	In flower per cent	*In seed per cent*
Moisture	69 9	65 9	65-4
Ether Extract (oil etc.)	1 6	1 7	1 7
Proteids (nitrogen x 6 25)	2 1	2 2	2 0
Digestible carbohydrates	13 5	14 9	12 8
Woody fibre	9 2	11-6	14 3
Ash	3 7	3-7	3 8
	100 0	100-0	100-0

(1), (2), (3) & (4) Chopra s *I D of I* pp 280 & 281

the leaves is recommended as a diaphoretic in fever and is used as a stomachic tonic diuretic and refrigerant

(Bombay Govt Agri Dept Bulletin)

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174 ANDROPOGON CONTORTUS, Linn

(N O—Gramineae)

D Lad—Nani Sunkhali Sunkhali *Chorasi*—Survalu *Poona*—Kusali *Mah*—Kusal Sukhli Kursali *Belgaum*—Ganjali hullu

Habitat—Common all over the Bombay Presidency and India

Composition—

	Before flowering	In flower	After flowering
Moisture	66·20	62·00	60·32
Ether Extract	1·70	1·56	1·81
Albuminoids	2·35	2·42	1·70
Carbohydrates	22·71	22·19	20·33
Woody fibre	4·01	5·72	9·12
Ash ..	3·03	6·11	6·72

Uses.—Largely used as fodder when young and after the spears have fallen In Australia this grass is considered to be splendid for a cattle run while it is young It is most nutritious in the flowering stage, before the awns develop Good hay and silage can be made from the grass if it is cut early

(Bombay Govt Agri Dept Bulletin)

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175 ANDROPOGON HALEPENSIS, Brot.

or Sorghum halepense

(N O—Gramineae)

Eng—American Johnson grass *Northern India*—Baru Dobad—Baru. *Mah*—Baru

Habitat.—A tall perennial grass crop, though of America and Southern Asia, is also a native of India grown on the military grass farms in Western India the Deccan and Gujarat

Uses — Good, fairly soft succulent fodder for horses, and bullocks greedily eat this But like *jouar*, it seems to be poisonous in its early stages, when plants are too young, especially when vigorously growing plants are stunted by drought or otherwise

N B —The seed of Sudan Grass which is not shaped like jowar but more like barley and about one-third the length is very similar to that of *A hale* penies from which it can be only distinguished with difficulty Perhaps this is the source of the confusion in these two grasses '

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176 ANDROPOGON IWARANCUSA, Roxb

or *A Laniger*

(*N O* —Gramineae)

Sans —Lamajjaka *Hind & Punj* —Lamjak, Bur, Panni, Karankussa, Ibharankussa, Ghatzari *Ben* —Karankusa *Mah* —Pivala vala *Guj* —Pilo-valo

Habitat — Lower Himalayan Tracts to the plains of U P and Sind

Parts Used —The fibrous roots, and flowers

Constituents.—Essential Oil

Action.—Carminative, stimulant and emmenagogue

Uses — It is used as a stimulant diaphoretic in gout, chronic rheumatism and intermittent fever, used also in coughs and cholera, used to purify the blood Arabian and Persian Physicians describe it as hot and dry, lithontriptic, diuretic, emmenagogue and carminative and recommend it to be boiled in wine as a diuretic, ground into *paste* it is applied to abdominal swellings, added to purgatives it is given in rheumatism The *flowers* (calyxes) are used as haemostatic

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177 ANDROPOGON MARTINI, or *A Calamus aromaticus*

or *A. pachnodes*

(*N O* —Gramineae)

Sans —Bhustrina, Mulatrina. *Eng* —Grass of Nemaur, Roosa grass *Ben.*—Gandhabena *Hind* —Merchya *Mah* —Rhus sugandhi *Tam* —Kamakshapullu. *Tel* —Kamachi kasturu

Habitat.—Western Ghats, South India, Ceylon, Burma.

Parts Used.—Essential oil from the grass

Constituents.—Ganiol or the grass oil of Nemaur, or Turkish essence of geranium or *Roosa-ka-attar* : it is volatile, closely resembles lemon grass oil.

Action.—Carminative and stimulant; externally rubefaciant.

Preparations.—Oil and Infusion of grass.

Uses.—*Oil* is given on loaf sugar in 1 to 3 minim doses in bilious affections for neuralgia and rheumatic pains. Grass is used to medicate baths in fevers to cause diaphoresis Internally its *tea* is used in colic, bilious vomiting and dyspepsia It also prevents hair from falling after acute fevers, confinement or prolonged lactation. Other uses are like those of cajuput oil.

(Bombay Govt. Agri Dept. Bulletin) .

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178. ANDROPOGON LAWSONI, Hk. f.

(N. O.—Gramineae)

Habitat.—Common in Dharwar & Belgaum districts of Bombay Presidency

Uses.—Late cutting gives reduced yield and the value of the fodder is also reduced. Cattle do not seem to relish this grass even before flowering although they do eat it.

(Bombay Govt. Agri Dept Bulletin)

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179. ANDROPOGON MONTICOLA, Schult.

(N. O.—Gramineae)

Dohad.—Sunthia Khad *Poona*—Agiva ; Gogar ; Ghora ; Dand ; Pandhari Kusal. *Bijapur.*—Kare hullu.

Habitat.—A fairly common grass in the Bombay Presidency

Composition —

	Before flowering	In flower	After flowering
Moisture	78 53	76 83	68.30
Ether Extract	1 91	1 85	1 92
Albuminoids	3 06	1 31	1 28
Carbohydrates	9 15	10 71	13 62
Woody fibre	5 15	6 85	12 54
Ash	2 20	2 45	2 34

Uses — An excellent fodder before flowering, bullocks are found to relish the grass in green condition before flowering

180 ANDROPOGON MURICATUS Retz

or A Squarrosus

(N O — Gramineae)

Sans —Usheera, Veeranam, Amranalam *Eng* —Cuscus grass *Hind* —Khas, Khas bena *Ben* —Khaskhas *Guj* —Valo *Mah* — Vala *Gualior* —Khus *Tel* —Kuruveru, *Vetti vellu*, *Vetti veru* *Tam* —Vettiver *Mal* —Ramachham *Can* —Lavanchi, *Mudivala* *Kon* —Bhanavalo *Punj* —Panni

Habitat — Coromandel Coast, Mysore, Bengal, Rajputana and Chota Nagpur

Parts Used —*Fibrous wiry roots from the rhizome*

Constituents.—A volatile essential oil, resin, colouring matter, a free acid, a salt of lime oxide of iron and woody matters

Action —Tonic, refrigerant, stomachic, stimulant, antispasmodic, disphoretic, diuretic and emmenagogue

Action and Uses in Ayurveda and Siddha —*Tikta rasam*, Mathura anurasam, seetha veeryam *kapha pitta haram*, *lagu*, *pachanam*, *sthambhanam*, in *jwaram*, *chardhi*, *trishna*, *rakta dosham*, visar pam, daham, krichram vranam

Action and Uses in Unani — Hot 2°, Dry 2° Tonic to heart and brain, blood purifier, headache, palpitation [4]

(4)—*Therapeutic Notes*

Preparations —Powder, dose —5 to 30 grains, infusion (1 in 40), dose —1 to 2 ounces, paste for external application Essence or oil or otto, dose —1 to 2 minims on loaf sugar

Uses.— Being a cooling medicine it is in the form of infusion a grateful refreshing drink in fevers, inflammations and irritability of the stomach *Externally* a *paste* of root is rubbed on the skin to remove oppressive heat or burning of the body By mixing it with red sandalwood and a fragrant wood called *padma kasta* (all in powder) to a tub of water an aromatic bath is prepared Its essence or oil or otto is given in two minim doses to check the vomiting of cholera, and is used in perfumery Grass used in the form of *cigarettes* and smoked with benzoin relieves headache

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181 ANDROPOGON NARDUS Linn

(N O —Gramineae)

Sans —Guchcha *Eng* —Citronella *Hind* —Ganjni *Ben* — Kamakher *Mal* —Ooshadhana *Tam* —Vasanepillu, Kamakshipillu *Tel* —Allupu, Kommu *Duk* —Gand bel *Sinh* —Maana

Habitat —United Provinces, the Punjab and Ceylon

Parts Used —Essential oil and grass

Constituents —Essential oil contains an aldehyde a terpene, an isomer of borneol named *citronelol* and acetic and valeric acids

Action.—Antispasmodic, carminative and stimulant

Preparations —Infusion of leaves and essential oil

Uses — Almost same as A muricatus *Essential oil* is given in flatulence, spasmodic affections of the bowels and in cholera, dose — 1 to 4 minims on loaf sugar *Oil* is also used in perfumery *Leaves* are occasionally used in the form of infusion in doses of ¼ to 2 ounces as stomachic and especially in the bowel complaints of children

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182 ANDROPOGON ODORATUS, Lisboa

(N O —Gramineae)

Bom —Ushadhana

Constituents —Essential oil

Action —Carminative,

(Chopra's "I D. of I " pp 462)

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183 ANDROPOGON PERTUSUS, Willd

(N O —Gramineae)

Satara, Sholapur & *Poona*—Ghanya marvel *Mah*—Payen, Palva, Palvan

Habitat.—An annual or a low perennial grass of Bombay Presidency

Uses.—This grass has an odour that apparently prevents animals from relishing it It is eaten when mixed with other grasses, useful in a grazing mixture, and for ensilage This grass is best fed green

(Bombay Govt Agri Dept Bulletin)

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184 ANDROPOGON PUMILUS, Roxb

(N O —Gramineae)

Surat—Zinzvo *Mah*—Baerki, Gondwal, Lalgwat, Tambrut Gondad, Chimanchara, Malakava

Habitat—A low annual grass found generally in the dry or semi dry tracts of Bombay Presidency

Uses—Cattle eat the fodder both green and dry, but seem to prefer it in the green state

(Bombay Govt Agri Dept Bulletin)

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185. ANDROPOGON PURPUREO-SERICEUS, Hochst

(N O —Gramineae)

Habitat—Tall annual grass growing in the Nasik & Poona Districts & above the ghats of Bombay Presidency

Uses—Bullocks relish this best before flowering

(Chopra's I D of I pp 462)

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186 ANDROPOGON SCHOENANTHUS, Linn

(N O —Gramineae)

Eng—Geranium grass *Sans*—Bhutrina *Tam*—Shakanarupillu *Hind*—Ruaghas *Hind* & *Ben*—Gandhabena, Agraghas, Rohisl

Habitat.—This is another of the fragrant grasses which is indigenous to Central India the U P & the Punjab

Constituents —Essential oil

Action —Aromatic, oil is stimulant, carminative, antispasmodic and diaphoretic

Uses.—Oil distilled from the leaves is known in commerce as Rusa oil, 'Nimar oil and oil of ginger grass It is very extensively employed in soap making and perfumery Oil is useful in flatulence and spasmodic affections of the bowels *Externally* it is used like the oil of lemon grass in conjunction with or as cajeput oil

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187 ANEILEMA NUDIFLORUM, R. B

(N O —Commelinaceae) Is common in wet situations

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188 ANEILEMA SCAPIFLORUM, Wight

(N O —Commelinaceae)

Hind —Siyah musli *Ben* —Kureli. *Bom* —Sismulia

Parts Used.—Roots

Action.—Roots are astringent and tonic.

Uses.—Roots are used in snake-bite

(Chopra's "I D of I" pp 462)

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189 ANEILEMA SPIRATUM, R. Br

(N O —Commelinaceae)—Common in wet places.

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190 ANEMONE OBTUSILOBA, Don.

(N O —Ranunculaceae)

Punj —Padar, Rattanjog *Kumaon*—Kakruja.

Habitat.—Himalayas from Kashmir to Sikkim at any altitude of 9,000 to 15,000 feet and on the higher elevations of the Nilgiris and the Puloeys.

Parts Used.—The root and seeds

Constituents.—*Anemonin* is deposited in rhombic crystals melting at 152° It is volatile with steam and on exposure to air at ordi

nary temperatures it is slowly converted into anemonic acid

Action —Vasicant and acrid Anemonin is a toxic substance, it produces paralysis of the central nervous system

Uses —Pounded *root* mixed with milk is given *internally with caution* for contusions It is used *externally* as a blister, but is apt to produce sores and scars *Seeds* if given internally produce vomiting and purging *Oil* extracted from them is used externally in rheumatism

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191 ANETHUM FOENICULUM

See Foeniculum vulgare

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192 ANETHUM SOWA, Roxb or A Graveolens

See *Peucedanum graveolens*

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193 ANETHUM TRIFOLIATUM

See Pimpinella anisum

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194 ANGELICA GLAUCA, Edgw

(N O —Umbelliferae)

Punj —Chota
Action —Cordial, *stimulant*
Uses —Used in dyspepsia and constipation
(Chopra s I D of I pp 462)

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195 ANISOCHILUS CARNOSUS, Wall

(N O —Labiatae)

Sans —Ajapada, Ulpalabheda Induparni *Eng* —Thick leaved lavender *Hind* —Panjiri ka pat, Sitaka *Guj* —Ajamanupatree *Mah* —Kapurli, Karupuravalli *Tel* —Rosachettu *Tam and Mal* —Karpooravalli *Can* —Doddapatri, Karaveru *Kon* —Savirsambhari
Habitat—Northern Circars Mysore and Malabar
Parts Used —Leaves and essential oil
Constituents.—A volatile essential oil
Action.—Volatile oil is stimulant, diaphoretic and expectorant

Uses —Fresh *juice of the leaves* mixed with sugarcandy is given to children in coughs, mixed with sugar and gingelly oil it forms a cooling liniment for the head Leaves and stems in *infusion* are useful in coughs and colds Volatile oil is given in doses of 1 to 3 minims on loaf sugar

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196 ANISOMELES MALABARICA, R Br.

or A disticha or A frutiosa

(N O —Labiatae)

Sans —Alamoola Butan kusham *Eng* —Malabar catmint *Mar* —Chodhara *Tel* —Mogbeeraku *Tam* —Paeyemaruti, Karin toomba *Mal* —Karitumpa *Can* —Karithumbi *Bom* —Gaozaban, Chodhara *Duk* —Maogbira Kaspatta *Kon* —Kalothumbo

Habitat —Travancore Malabar Coast South India & Ceylon

Parts Used —Herb leaves and essential oil

Constituents —This aromatic plant contains a volatile essential oil and a bitter alkaloid

Action —Stomachic, carminative diaphoretic & astringent

Preparations —Infusion of leaves (1 in 10), dose —½ to 1 ounce Decoction of the whole plant (1 in 10) dose —½ to 1 oz Essential oil Juice of leaves dose —½ to 1 drachm

Uses —*Infusion* is useful in affections of the stomach and bowels in catarrh and intermittent fevers *Juice of leaves* is administered to children in colic dyspepsia and fever caused by teething *Vapour* of the hot infusion inhaled induces copious diaphoresis *Decoction* of the plant is an excellent fomentation for rheumatic joints *Essential oil* distilled from the leaves is used *externally* as an embrocation in rheumatic arthritis *Internally* it is given in doses of 2 to 5 minims The drug is used in scorpion sting and snake bite

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197 ANISOMELES OVATA, R. Br

(N O —Labiatae)

Bom —Gobura

Action —Carminative astringent tonic

Uses — Useful in uterine affections

(Chopra's I D of I pp 462)

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198 ANNONA CHERIMOLIA, Mill

(N O—Annonaceae)

Eng—Cherimoya, Cherimoyer *Mah*—Marutiphal *Can*—Hanamphala.

Habitat.—Cultivated in Bombay Presidency

(Bombay Govt Agri Dept Bulletin)

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199 ANNONA MURICATA, Linn.

(N O—Annonaceae)

Mah—Mamaphal *Indian languages*—Mamphal *Eng*—Sour Sop of America.

Habitat.—Indigenous to West Indies but cultivated in the Bombay Presidency and Eastern India.

Constituents—Ripe fruit has pleasant slightly acid pulp which is employed in preparing refrigerant drink in fevers. When unripe, the pulp is *stringy and intensely acid, it is very astringent and* is employed in intestinal atony and in scorbutic conditions The bark is astringent and the root bark is given in ptomaine-poisoning, especially after *putrid fish-eating* Leaf is used as an anthelmintic and externally as suppurant.

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200 ANNONA RETICULATA, Linn

(N O—Annonaceae)

Sind, Bom, Mah, Guj & *Can*—Ram phal *Ben*—Nona *Hind*—Lona *Eng*—Bull's heart, bullock's heart or true custard apple of America, Sweetsop *Tam*—Ram sitaphalam *Tel*—Ram seetapandu *Fr*—Petitcorossol *Ger*—Rahmapfel

Habitat.—Indigenous to West Indies, but now naturalized in India and occurring in Bengal, Burma and South India

Parts Used—Bark, fruit, seeds and leaves

Constituents—Seeds and bark contain *much tannic acid.* 'Analysis on the pulp of big and small Ramphal revealed —Moisture 61 67 (big) p c. and 64 33 (small) p c., Reducing sugars 31 47 (big) p c. and 29 30 (small) p c., *Non reducing sugars nil in* (big & small), total sugars 31.47 (big) p c. and 29 30 (small) p c"[1]

(1) Bombay Govt. Agri Dept. Bulletin.

Action and Uses —Bark is a powerful astringent and much used as a tonic by the Malays and Chinese Pulp in the fruit is white, denser and more acid than in A squamosa Unripe and dried *fruit* is used as an astringent in diarrhoea and as an antidysenteric and vermifuge *kernel of the seeds* is highly poisonous Fruit is anthelmintic [1] *Leaves* like those of A squamosa have a fetid odour and when beaten to pulp are also used to kill lice on cattle [2] *Leaves* are anthelmintic and *externally* they are useful as suppurant

201 ANNONA SQUAMOSA, Linn

(N O —Annonaceae)

Sans —Shubha Suda Ganda Gutea Gandhagatra *Eng* —Custard Apple Sweet Sop of America Sugar Apple *Hind* —Sharifah Sitaphal *Ben* —Ata *Guj* —Anusa *Duk Mah ard Can* —Sitaphal *Tel* —Seetapandu *Tam* —Sitapalam. *Mal* —Sirpha. *Assam* —Ata Katal *Burm* —Amesa *Sin h* —Atta *Fr* —Attier *Ger* —Zue Kerapfel

Habitat —In gardens all over India

Parts Used—Leaves bark, root seeds and fruit

Constituents— Analysis on pulp revealed—Moisture 64 67 p c reducing sugars 5 68 p c non reducing sugars 0 87 p c and total sugars 6 55 p c respectively [3] Seeds yield an oil and resin seeds leaves and immature fruit contain an acrid principle Amorphous alkaloid toxic resin [4]

Preparations —Poultice Paste and Powder

Action — Bark is powerful astringent and tonic Leaves seeds and unripe fruit are vermicide or insecticide Leaves are anthelmintic Root is a violent purgative Ripe fruit is a maturant Unripe fruit is astringent Seeds are detergent

Varieties — Names of two varieties of custard apple are Ramphal and Sitaphal [5] The fruit with creamy coloured channels on the surface and with pulp of the same colour is considered superior to that with white channels and white pulp [6]

Uses —*Ripe fruit* bruised and mixed with salt is applied to malignant tumours to hasten suppuration *Leaves* made into a paste without adding water are applied to unhealthy ulcers *seeds* applied

(1) & (4) Chopra s I D of I pp 462
(2) (3) (5) & (6) Bom Govt. Agri. Dept Bulletin

to os uteri cause abortion *Leaves,* ' which have a fetid odour when bruised, are applied for extraction of guinea worm, and when reduced to powder, are used to kill lice on cattle Bruised leaves are used for destroying worms bred in sores [1] They are also used in fomentations Fresh leaves crushed between fingers and applied to nostrils cut short fits of hysteria and fainting Powder of seeds mixed with gram is a good hair wash, " White or creamy sweet *pulp* of the ripe fruit, which has the consistency of soft butter, is edible and is employed in preparing cooling drink in fevers, and is used to flavour ice-puddings ' [2] *Unripe fruit* is given in diarrhoea, dysentery and atonic dyspepsia. *Bark* is used as atonic.

N B — ' Fruits of all the above Annona varieties are large, with white or yellowish sweet pulp very juicy, with pleasant acid taste ' [3]

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202 ANOGEISSUS LATIFOLIA, Wall

(N O —Combretaceae)

Eng —Ghati gum *Hind* —Bakli *Gwalior* —Gond dhow, *Tam* —Vakkali

Habitat.—Gwalior State Western Ghats

Parts Used.—Gum.

Action —Astringent.

Uses.—Gum is used in confectionery, drug is used in scorpion sting and snake-bite

' Chopra's I D of I " pp 462, and ' Indigenous Plants and Drugs of Gwalior State

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203 ANTHEMIS NOBILIS, Linn

See—Matricaria chamomilla.

(N O —Compositae)

Eng —Chamomile, Camphor plant (odour of the flowers being like that of camphor) *Hind* & *Ber.*—Babunke-phul. *Pers*—Babunah *Arab*—Babunj, Babunaj, Shajrat-ol kafur *Mah*—Babuna. *Tam* —Shum-dapu, Shumai-chamanthipu *Mal* —Shima jevanti pushpam. *Tel* —Simachamauli pushpamu, Sima-chamanti pushpam. *Can* —Shime-shavantige.

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(1), (2) & (3) Bom. Govt. Agri. Dept. Bulletin.

Habitat.—Native of Europe and Persia, but cultivated in India chiefly in the Punjab Dried flowers are available in all the bazaars

Parts Used —Dried flower heads and oil

Constituents —A volatile essential oil, anthemene 1 p c, anthemic acid, a bitter extractive principle, tannin, resin, malates and tannates Oil consists of (1) angelic and tiglic esters of isobutyl amyl and hexyalcohols (2) an alcohol anthemol and anthemene-a hydrocarbon

Action —The volatile oil has the power of lowering reflex excitability and therefore useful in nervous diseases of women It generally acts as stomachic, tonic, carminative, emmenagogue, anti periodic, vermifuge and insecticide The *essential oil* has anti spasmodic properties in doses of 1 to 3 minims Flowers are stimulant, tonic and carminative [1]

Preparations —Infusion Paste Oil and Extract solid and fluid

Uses.— Properties of this drug are same as Matricaria chamomilla [2] *Chamomile* is useful in dyspepsia and general debility in doses of 10 to 30 grains "*Warm infusion of flowers* is carminative, and is used as anthelmintic for children," [3] in large doses is sometimes used to promote the emetic action, it is useful in hysteria and dysmenorrhoea. It is also given in flatulent, colic, dyspepsia, chlorosis etc *Cold infusion* is given in indigestion and summer diarrhoea in half to one ounce doses *Externally* an infusion or *decoction* or *cataplasm* of the flowers is used to relieve pain Its odour is destructive to gnats and itch insects and hence the flowers are used as insecticide The dose of solid extract is 2 to 10 grains and of fluid extract is 30 to 60 minims

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204 ANTHOCEPHALUS CADAMBA, Miq

(N O —Rubiaceae)

Sans.—Kadamba, Nipa, Haliptiya, Sisupala. *Eng.*—Wild cinchona *Guj, Bom* & *Hind.*—Kadamba. *Mysore.*—Heltege, Arsenatega. *Can.*—Kadvala *Tam.*—Vella Kadamba. *Tel.*—Rudrakshkamba *Mah.*—Kalamb *Ben.*—Kadam.

Habitat.—All over India.

Parts Used.— Fruit, leaves and bark.

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(1), (2) & (3) Chopra's "I D of I pp 462

Constituents —Bark contains an astringent principle, this astringency is due to an acid similar to cincho-tannic acid and the drug contains a ready formed oxidation product of the nature of cinchona red

Action —Bark is tonic, febrifuge and astringent Fruit is refrigerant.

Preparations —Juice and decoction of the bark (1 in 10), dose —1 to 2 ounces

Uses.—*Juice of the fruit* is given to children with cumin and sugar in gastric irritability and the fruit is given in fever with great thirst Fresh *juice of the bark* is applied to the heads of infants, when the fontanella sinks and a small quantity mixed with cumin and sugar is given internally In inflammation of the eyes, the bark juice with equal quantity of lime-juice, opium and alum is applied round the orbit. Decoction of the bark is given in fevers *Decoction of the leaves* is used as a gargle in aphthae or stomatitis The drug is also used in snake-bite

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205 APIUM GRAVEOLENS, Linn

(N O —Umbelliferæ)

Sans —Ajmoda. *Eng* —Celery, Wild celery *Bom* —Badi ajmud, Karap *Ben* —Chanu, Randhuni *Punj* —Bhutghata *Hind* —Ajmoda

Habitat.— Base of the N W Himalayas and outlying hills in the Punjab and in Western India

Parts Used.—Roots and seeds

Constituents —It is said to contain sulphur It also contains apoil—a poisonous principle, a lucoside apiin a volatile essential oil albumen, mucilage and salts.

Preparations.—Powder, Decoction and distilled medicated water

Action and Uses —Celery is a known preventive of rheumatism and gout It is described by Hakims as deobstruent and resolvent and used internally as pectoral and as tonic and carminative adjunct to purgatives also as diuretic, emmenagogue, lithontriptic and alexi-

pharmic Officinal *root* is considered alterative and diuretic and given in anasarca and colic. *Seeds* are given as stimulant and cordial As antispasmodic they are used in bronchitis, asthma and to some extent for liver and spleen diseases It is used as a diet by cooking celery root into a variety of preparations, stew, soup etc Celery coffee made from the root is supposed to give strength to the brain and nerve Following home remedies have been found beneficial—(1) Take of Apium graveolens 2 Cyperus rotundus 1½, Anise seeds 1½ and Valeriana wallichi 1 part Mix and reduce them to a powder Dose —½ to 1 drachm, or (2) Take of Apium graveolens 2, Anise seeds 1 and sugar 1 part Mix and reduce the whole to a powder Dose —½ to 1 drachm Used in flatulence and colicky pains (3) Take of *Wild Celery* 1, *Ptychotis ajowan* 1 and *Water* 20 parts Distil the whole Dose—1 to 2 ounces Given in flatulent colic and used as an adjunct to antispasmodic and carminative medicines The blanched stalks are eaten as a vegetable

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206 APIUM PETROSELINUM

See Petroselinum sativum Linn

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207 APLOTAXIS AURICULATA, DC.,

(N O —Compositae)—*Saussurea auriculata*

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208 AQUILARIA AGALLOCHA, Roxb

or A Gvata

(N O —Thymelaeaceae)

Sans —Agaru, Rajarah kalpya, Jushvampa *Eng*—Aloe wood, Eagle-wood. *Ben* —Agaru. *Mal* —Kayagahru *Pers* —Belanjuj *Tel., Tam and Can* —Krishnagaru *Arab*—Ud-el juj *Burm* —Akyan. *Chin*—Chin heang *Hind., Bom* & *Tam*—Agar

Habitat—Assam, East Himalayas, Bhutan and Kassia Mountains

Parts Used—Wood

Constituents—A volatile essential oil

Preparations—Decoction (1 in 10) dose—4 to 12 drachms Powder and paste Confection made with a number of drugs, dose —30 to 60 grains

Action and Uses—Used as a perfume in the form of *Powder* and internally as stimulant cholagogue and deobstruent It is an ingredient in various nervine tonics carminative and stimulant preparations It is used in gout and rheumatism, to check vomiting and also in snake bite As an anodyne *fumigation* it is used to relieve pain in surgical wounds and ulcers A *paste* of *Agaru* and *Israri* with brandy is applied to the chest—in bronchitis of children and to the head in headache It is a chief ingredient in incense sticks A *confection* containing many drugs and known as *Jawarusa uda* is given in doses of 20 to 60 grains as a nervine tonic in seminal debility giddiness and leucorrhœa

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209 ARACHIS HYPOGAEA, Linn

(N O—Papilionaceae)

Sans—Buchanaka *Eng*—Earthnut, groundnut, peanut, monkey nut pindar *Hind*—Bhuisng, Mungphali *Guj*—Bhoisng *Beng*—Chinese badam *Duk*—Velati mung *Mah*—Bhuichana, Bhui mug *Tel*—Vaerushanagalu, Virushanaga kaya, Nila kadalai *Tam*—Vaerkadalai Manilakottai *Mal and Can*—Nelakadale *Kon* & *Sind*—Bhui mug *Bom*—Bhuisheng, Bhuichane *Malay*—Nela Katala *Burm*—Mibe, Myepe *Singbhum*—Rata Kaju

Habitat.—One of the most important of the cultivated plants, being grown in South India, Pondichery, Madras Presidency, Bombay and some parts of Bengal and Upper India.

Varieties—(1) Big Japan, (2) Pondicherry, (3) Spanish Peanut, (4) Small Japan, (5) Deshi or country variety, (6) Egyptian, (7) Queensland, (8) Virginia Creeper, (9) Tamboo, (10) Mozambique, (11) Big Erect, (12) Mauritius, (13) Madagascar[1]

Parts Used—Nut, oil and seeds

Constituents—Seeds contain a large proportion of albuminous matter and abound with starch and the seeds "afford on expression 40 to 50 per cent of a clear straw-coloured, non drying edible oil with a faint odour and a very mild agreeable

(1) Bom Govt Agri Dept. Bulletin.

taste It closely resembles olive oil both as regards taste and other physical and chemical properties A comparison of the constants of the two oils will reveal this similarity in a striking manner —

	Ground nut oil	*Olive oil*
Specific gravity at 15°C	0 9165 to 0 9175	0 916 to 0 918
Solidifying point	0 to 2°C	3 to 4°C
Refractive Index at 15°C	1 4731	1 468 to 1 4703
Saponification value	185 6 to 196	185 to 196
Iodine value	83 3 to 105	79 to 88 usually

Oil contains glycerides of palmitin and olein (palmitic and oleic acids), hypogaeic, lignoceric, linolic and arachidic (arachic) acids The nut meal and the kernel contain sugar, starch nitrogenous matter, fatty matter, moisture, fibre and ash Albuminous matter and ash are about four times as much as found in the kernel so the non decorticated nut contains 31 9 per cent of albuminous substance and 4 6 per cent of ash containing mineral salts *viz*, potash magnesia and phosphoric acid Ground nut cake contains about 45% albuminoids, ground nut flour contains over 50% protein and is richer in it than any other known vegetable substance and is very edible (Dr A T W Simeons) Ground nut protein is found to have a high biological value Experiments have also established the high digestibility co-efficient of ground nut protein It ranks with the microbial protein of yeast and closely approximates animal protein as found in milk eggs and mutton (Dr B G S Acharya) The percentage of oil in the kernels comes to 42 to 50% Clean ground nut oil cake contains over 50% of high grade protein, 13% more than mutton i e in other words every ton of oil cake is equivalent in nutritional value for a flock of 50 sheep or 50 000 eggs or 15 000 seers of milk in protein alone ! ! ! (Dr A T W Simeons) Besides protein the ground nut contains fat starch and minerals so that with the addition of a little extra starch and vitamin C, it is a complete food in itself (Dr A T W Simeons) The ground nut is also very rich in Vitamin B Complex particularly in Vitamin B1 Nicotinic acid and riboflavin which are the most important factors and which have a profound effect on the health and longevity of the people, and as the most important vitamin deficiency in India is of the B complex ground nuts can be used as an excellent food product (Dr A T W Simeons)

" sometimes it is being adulterated with ghee even Groundnut oil does not become easily rancid and has, therefore, been introduced into the Pharmacopoea of India as a basis for ointments In Calcutta it is used for adulterating sesame and other oils [1]

Arachis oil satisfies almost all the properties possessed by olive oil so that it can be used as a substitute for it particularly in India where Arachis oil is available in large quantities at a very cheap price in contra distinction to olive oil which is very expensive The substitution of arachis oil for olive oil is actually carried on in commerce to a very large extent Most of the specimens of pure lucca olive oil from France and Italy are not true olive oils but arachis oil purified and passed on as olive oil Thus arachis oil is derived from the groundnuts exported to the Continent from the Madras ports [2]

Cold pressed oil is almost colourless has an agreeable taste and smell and serves as an edible oil in cookery Oil obtained by hot expression is of a yellowish colour and is used in the manufacture of soap The residue is a valuable oil cake that is used for cattle feeding purposes [3]

The *oil* is regarded as an excellent aperient and emollient and is used in catarrh of the bladder

Groundnut meal or *flour* as food is nutritious being rich in all important constituents The meal is used in confections (sweetmeats) such as almond macaroons candies pastries and small cakes Mr Kincaid a missionary worker in a remote village of Kolhapur (Bombay Presidency) testified that the children of his school have thrived on a cake made of clean hand picked groundnut The villagers have overcome their prejudices and use it as a daily addition of 1/2 to 1/5 portion to their usual cereals Breads made from a mixture of wheat flour and groundnut flour are particularly useful to diabetics and growing children and many adults prefer these breads with a little salt India is estimated to produce about 1 1/2 million tons of groundnut Thus 7 lakhs of tons of the finest food can be made available from this crop The protein value would be equivalent to 3500 crores of eggs or 1000 crores of seers of milk or 350 lakhs of sheep The annual loss of starch fat minerals and vitamins is in addition and all due to the wrong use of this valuable nut (Dr

(1) & (3) Bom Govt Agri Dept Bulletin
(2) Chopra's I D of I " pp 58 & 59.

shelled peas are first roasted moderately (not scorched) so as to remove their thin brown coverings and the germs, after which they are ground to a pulp, which is then bottled and sealed with or with out being salted *Nut butter* will mix with water and is used as a substitute for cream From the peanut are produced other nut foods in England and America which are known as Protose, Nuttose, Bromose, Metose Nutmetose, etc The leaves branches and straw make good cattle food Groundnut cake is a very highly concentrated nitrogenous cattle food in moderate quantity, excellent for milch cattle and hard worked bullocks, and a very useful manure for sugarcane The hay is very nutritious, much increasing the milk of cows [1]

OILCAKE AS HUMAN FOOD, Archis hypogaea

Some of the oilcakes, such as the groundnut cake, the til seed cake, probably the linseed cake, can suitably be used as human food Other cakes contain a very high percentage fibre that is coarse which cannot be used for human consumption

Oilcakes deserve a permanent place in our national dietary from the point of view of improving its quality Our diet is said to be deficient in protein, which must be made good in every possible way Oilcakes are very rich sources of proteins that of groundnut containing as much as 48 6%, that of til seed 41 31% and that of linseed 35 70% They also contain enough of fat and thus form a valuable item of food

The quality of the proteins of the oilcakes in also fairly good According to Sir Robert M Carrison the protein of pulses are better than those of the cereals and the proteins of the nuts (of which oil cakes are the residue after oil is extracted out of them) are better still Dr D L. Sahasrabuddhe gives the following analysis of the proteins of the groundnut cake along with those of milk the soyabeans and the gram —

Aminoacids	*Groundnutcake*	*Milk*	*Soyabeans*	*Gram*
Arginine	13 26	4 84	5-12	11 85
Histidine	1 58	2 59	1 39	1-42
Lysine	4 69	5 95	2 71	7 42
Cystine	1 42	1 20		2 02
Tyrosine	4 80	4 50	1 86	2 95
Tryptophane	0-66	1 50	--	0-46

(1) Bom. Govt Agri Dept Bulletin

He observes, 'Groundnut protein is characterised by its higher content of Tyrosine and Arginine—two of the most important essential aminoacids Milk proteins are considered to be perfect and complete and it will seem that groundnut cake is nearer to milk than soyabean is "

Our people do occasionally eat groundnut and tilseed, but being very rich in fat they are hard to digest and therefore cannot be taken in any large quantity The cake is comparatively easy to digest and can very well form an item of regular diet Looking to the high protein and fat value of the oilcakes they are available at much cheaper rates than pulses and hence even poor people can afford to eat them

Such a practice will not be altogether new either It is widespread in Andhra where til seeds are crushed after the outer layer which is blackish in colour is removed The dirt is removed by soaking the til seeds with water in cloth or in a basket The oilcake which is whitish (Telaga pindi as it is called in Telugu) is used for preparing curries We came across a village near Amraoti in which there is a custom of the oilman regularly supplying til seed cake to the village people who eat it by cooking it along with some vegetable

If the oilcake is to be used for human consumption, the problem is that of cleaning the seeds completely from dust and sand Groundnut seeds being of bigger size are easily cleaned But smaller seeds like til or linseed are difficult to separate completely from sand of the same size They should therefore be washed in plenty of water in which the dust will be washed away and the sand will settle at the bottom. The best way of being sure of the cleanliness, as also of the freshness of the oilcake, is to get one's own seeds crushed in a ghani under supervision, after cleaning them properly

The preparations can be varied to suit the tastes of the consumers Good biscuits or sweetmeats can be made out of the cakes or they can be cooked along with vegetables or dhals The cakes keep well for a pretty long time if they are kept, after drying on fire, in closed tins or bottles

(Pages 81 to 83, of 'Oil Extraction' book by Jhaverbhai P Patel)

210 ARALIA PSEUDO-GINSENG, Benth

(N O—Araliaceae)

Action.—Aphrodisiac, stimulant.

Uses.—Used in dyspepsia, vomiting

(Chopra's "I D of I" pp 463)

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211 ARCTOSTAPHYLOS UVA URSI, Spreng

(N O—Ericaceae)

Action—Astringent, diuretic.

(Chopra's "I D of I" pp 463)

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212. ARDISIA COLORATA, Roxb

(N O.—Myrsineae)

Action.—Febrifuge.

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213 ARDISIA HUMILIS, Vahl.

(N O—Myrsineae)

Action—Stimulant, carminative

(Chopra's "I D of I" pp 463)

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214 AUTHISTIRIA CILIATA, Linn.

Sholapur.—Bongrut *Surat*—Bhathu *Dohad*—Bhati, *Mothi* bathu, Zini bathi *Broach*—Bhatharu

Habitat.—This tall annual grass is common in all parts of Bombay Presidency

Uses.—This grass is readily eaten by cattle when green

(Bombay Govt. Agri Dept. Bulletin).

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215 ANTHRISCUS CEREFOLIUM, Hoffm

(N O—Umbelliferae)

Ind Bazar—Atrilal

Habitat.—India.

Constituents.—Essential oil, glucoside apiin.

Action.—Diuretic, stomachic, deobstruent.

(Chopra's "I D of I" pp. 462).

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died The minimum lethal dose was found to be 1/40 grain of the actual poison in solution A dose smaller than this produced mild symptoms but the animal recovered completely in about 8 hours No haemorrhages were seen anywhere in the body on post mortem examination excepting a faint redness at the site of the injection A solution of 0 4 gm of the substance in 25 c c. of absolute alcohol is opalescent, 2 c c of this injected into a guinea pig produced death of the animal in 15 minutes The remaining portion of the solution was dried and weighed The approximate quantity of the drug in the alcoholic solution which killed the animal was found to be 0 13 gm. (1 95 grains) Two more guinea pigs of the same weight who received 1 c. c. remained ill for about half an hour and then recovered completely As the lethal dose calculated from the emulsion in water was 1/40 grain and in alcohol 1 95 grains, it is evident that the poisonous element is not the alcohol soluble portion only but some thing more than that The cause of death as a result of administration of the drug in experimental animals seems to be failure of the heart The heart is found on post mortem examination to be contracted and in systole

10 to 15 mgm of the water soluble fraction injected intravenously in a cat usually products a fall of blood pressure followed quickly by death due to auricular and ventricular fibrillation That the heart is primarily affected is shown by the fact that the cardiac failure usually precedes the failure of respiration The alcohol soluble fraction seems to be less potent than the watery extract

The drug is a fish and arrow poison Seeds are used as a febrifuge in dysentery

Uses.—The sap is used as an arrow poison by the Karens in Java Malaya and particularly in Burma. The poisonous properties of this tree are not widely known in the Deccan & Ceylon In the Concan and in Canara, the bitter seeds are used as a febrifuge and as a remedy in dysentery one-third to one half of a seed being given three times a day In the Travancore A. toxicaria is known as the sacking tree and is not regarded by the people as poisonous, the same is the case in Coorg where sacks and even garments are sometimes made from the inner bark

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217 APLUDA VARIA, Hack.

Dohad.—Moshi Dhanghi Khad *Thana*.—Poladi gavat *Charodi*.—Bhumbhuru. *Vernaculars*.—Ghaghara; Phulse; Tulse Paodi; Khavas; Bhickma, Kharvel; Tambati, Tambat; Chickwar Kurdia; Gugargadi, Poklia; Phulaer; Bhas; Makkha

Habitat.—This annual grass is common in Bombay Presidency.

Uses.—This grass is a fair fodder, which cattle relish when the grass is young, but for which they do not care when it is mature.

(Bombay Govt Agri Dept Bulletin)

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218 APOROSA LINDLEYANA, Baill

(N O.—Euphorbiaceae)

Sans.—Valaka *Tam*.—Vettil

Parts Used.—Root

Preparations.—Decoction of the root

Uses.—Decoction of the root is used in jaundice, fever, headache, seminal loss and insanity

(Chopra's 'I D of I" pp 463).

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219 ARECA CATECHU, Linn

(N O.—Palmae)

Sans.—Kramuka, Pooga, Phalam; Guvaka, Gubak; Kuvara *Eng*.—Areca or betel nut palm. *Hind*, *Guj*. & *Mah*.—Supari. *Bom*.—Sopari *Ben*.—Supari, gua *Tel*. & *Mal*.—Kazhangu; Pakavakka. *Tam*.—Kamugu, Pakku, Kuramukam; Paku kotai or Kottai-pakku. *Tel*.—Poka *Can*.—Adike. *Assam*.—Tambul. *Fr*.—Noix d'Arec. *Ger*.—Arekanuse, Betelnuse

Habitat.—Cultivated throughout tropical India. It flourishes in dry plateau of Mysore, Canara, Malabar, Southern India, Assam and Eastern Archipelago

Parts Used.—Seed or kernel and the extract, root and tender leaves; catechu

Constituents.—Watery extract yields betel nut catechu. "Kernels (seeds) contain catechu, tannin 15%; gallic acid, oily matter (fat 14 p c), gum and alkaloids, viz, arecoline 0·07%, arecaine 1%, arecaidine, and guvacoline, guvacine and choline occur in traces

only All these alkaloids are chemically related arecoline $C_8H_{13}NO$ is a colourless volatile resembling nicotine with a boiling point of 230°C & is methyl arecaidine and is prepared by esterifying arecaidine with methyl alcohol arecaine is prepared by the action of formaldehyde and formic acid on guvacaine guvacoline can be converted into guvacine by hydrolysis [1] Arecoline is the most important alkaloid and an anthelmintic principle forms white crystalline salts with acids i e hydrobromide which is official in several pharmacopoeias in Europe It is soluble in water alcohol and ether

Action —Fresh nut is somewhat intoxicating and produces giddiness in some persons Dried nut is stimulant astringent and taenifuge It increases the flow of saliva lessens perspiration sweetens the breath strengthens the gum and produces mild exhilaration The seed has an aromatic astringent and somewhat acrid taste On account of the readiness with which arecoline is absorbed it is usually considered too dangerous to be used as a taeniacide in pure condition and therefore the powdered nut is preferred [2]

Pharmacological action of arecoline resembles that of muscarine palletietine and pilocarpene It violently stimulates the peristaltic movements of the intestines and bowels acts on entozoa and produces a marked constriction of the bronchial muscles which can be overcome by adrenaline or atropine The terminations of the vagi in the heart are stimulated and the organ is depressed the blood pressure falls When dropped into the eye a 1 0 per cent solution constricts the pupil like physostigmine It is a powerful sialagogue and anthelmintic and stimulated the secretion of sweat in the same way as pilocarpine [4]

Preparations —Powder dose —10 to 30 grains fluid extract dose —10 to 30 minims tincture dose —1 to ½ drachms arecanut charcoal tooth powder Dry powdered seeds are given in doses of 1 to 4 drachms powdered fresh seeds are more powerful in doses of 2 to 4 drachms Arecoline hydrobromide is official in the German Pharmacopoeia and in the French Codex the dose is approximately 1/20 to 1/40 grain (0 0005 to 0 0015 gm) It occurs in taeneline which is a liquid preparation used in veterinary medicine dose 1 minim for every pound weight in dogs [5]

Uses.—*Kernel* (seed) of the fruit is one of the constituents chewed together with lime black catechu and the leaves of betel

(1) (2) (3) (4) & (5) Chopra's I D of pp 384 to 386

(Piper betel) and sometimes also with such articles as turmeric and tobacco leaf The popular belief is that decay of teeth is prevented, but owing to constant irritation the mucous membrane of the mouth and gums is inflamed causing loosening and loss of teeth, and sometimes oral carcinoma Young *nut* is useful in bowel complaints of men and animals, especially as a vermifuge for dogs Powder of the dried nuts in 10 to 15 grain doses with equal parts of sugar will check diarrhoea due to debility, it is also useful in ordinary disorders One-fourth tola of the powder rubbed into a paste with two tolas of fresh lemon juice makes an excellent vermifuge Sometimes it is more usefully given grated than in a fine powder About a tea spoonful is administered after the patient has fasted 12 14 hours either made upto a bolus with ghee or floating on milk the latter being the favourite method It generally acts an hour after administration and is efficacious in round as well as tape worms, 4 to 6 drachms of the powder stirred up with 2 or 3 ounces of milk is generally administered for the expulsion of the tape worm The arecoline hydrobromide is responsible for this action and has been used for colic of horses and in human medicine as a taeniacide and as a myotic Powell found betel nut and the juice of the leaves of Piper betel in doses of one ounce an efficient anthelmintic Chopra & Chandler (1928) believe that the chewing of betel nut and betel leaf does influence the number of hook worms harboured The result is not, however, attributable to any anthelmintic power of the juice which is not swallowed, but to the constant spitting which tends to eliminate the immature hook worms while making their way from the trachea to the oesophagus The chewing of tobacco has a similar effect, and in some places is credited with anthelmintic power [1]

Arecanut which is credited with astringent properties has been used with satisfactory results in the relaxed condition of the bowels which sometimes occurs in tropical climates Large doses e g, 6 drachms to one ounce of the powdered seeds however produce griping and irritation and loose motions may start as a result of such irritation [2] *Tincture* forms an astringent gargle when freely diluted with water (1 drachm of the tincture to 4 ounces of water) useful for bleeding gums and may be used as an injection for stopping watery discharges from the vagina also useful in checking the pyrosis

(1) & (2) Chopra's I D of I pp 284 to 286

of pregnancy *Nut* burnt to charcoal which is very little and powdered with or without an equal part of catechu and a quarter part of cinnamon forms an excellent tooth powder *Juice of tender leaves* mixed with oil is applied as an embrocation in cases of lumbago and a *decoction of the root* is a reputed cure for sore lips

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220 ARGEMONE MEXICANA, Linn

(N O—Papaveraceae)

Sans—Swarna Kshiri, Srigalakantaka, Haimavathi *Eng*—Yellow thistle, prickly or Mexican poppy *Hind*—Pila dhatura, Firanghee dhatura, Ujar kanta, Bharband, Kutila, Sialkanta *Ben*—Shialkanta, Shealkanta, Baro shialkanta *Guj*—Darudi *Duk*—Daruri, Feringee datura *Mah*—Kanta dhotra. *Tel*—Brahmdandi chettu, Datturi, Pichy kusama chettu *Tam*—Kudiyotti, Birama dandu, Brahmmadandu, Kurukkum chedi *Can*—Arasina ummatta, arsha unmatta, datturi gida *Mal*—Ponnummattum *Uriya*—Kanta kusham *Santal*—Gokuhla janum *Punj*—Kandiari, Sial kanta bhatmil, Satyanasa, Bherband, Katei Bhatkateya *N W P*—Bharbhurwa, Karwa kantela

Habitat—Common everywhere by road sides and fields in India especially from Bengal to the Punjab and in Simla 5000 feet, (originally brought from Mexico) and appearing in the cold season

Parts Used—Milky juice of the fresh plant, seeds and a mixed oil of fresh seeds and fresh root

Constituents—Leaves and capsules are said to contain an alkaloid resembling morphia but in 1863 Haines examined the extract of the whole plant and was unable to find any alkaloid in it [1] Later investigations, however, showed that it contained *berberine* and *protopine* but no morphine or argemonine as was reported by some workers [1] Seeds yield about 22% of an oil argemone oil "This oil contains upto 40 per cent free glycerides of fatty acids. Some crushed seeds were steam-distilled by K. Bhaduri of Calcutta, the distillate had a slight opalescence and a very pungent odour, but no oil came over Extraction of the crushed seeds with petroleum-ether gave 22 3% of a pale greenish yellow oil with a green flourescence The oil obtained by pressing the crushed seeds was deep brown, mild odour, tasteless d28 0 9117, d100 0 9007, n32D 43034, sapon.

(1) Chopra's "I D of I" pp 286 & 287

no 185 5 acetyl no 27 9 acid no 146 1 no 1067 R M no 0 61, Hehner no 94 02 glycerol 15 48% Maumene test 65 The oil very thin at first gradually thickens on keeping AcOH and valeric acid are present The mixed fatty acids pale in colour and thin showed d280 9065 d1000 8889 Sapone no 194 1 no 147 4 temp of turbidity 22° contains 8 14% of lauric acid no stearic acid is presents (Chemical Abstracts 0 3 1914 pages 1186-) Seeds yield about 22% of an oil carbo hydrates and albumen 49 per cent moisture 9 per cent and ash 6 per cent Seeds when incinerated yield ash containing alkaline phosphates and sulphates Dragendorff stated that the seeds contained an alkaloid which agrees with morphine in all its important reactions but this statement is not borne out by recent studies The plant contains large quantities of a yellow juice resembling that from gamboge containing small quantities of berberine Potassium Nitrate was identified among the salts naturally existing in the plant

Action Juice of diuretic alterative anodyne and hypnotic Seeds are laxative nauseant emetic expectorant demulcent and narcotico-acid Oil is a powerful alterative Oil from the seeds is a drastic purgative nauseant expectorant aperient and sedative combining the action of the castor oil and cannabis indica fresh root has an anodyne effect

Action and Uses in Ayurveda and Siddha—Tiktarasam pitt kapha haram rechanam bedhanam in krimi kandu anaham visham raktam kustam in disease of the eye and for prameham

Action and Uses in Unani—Hot 1° Dry 1° blood purifier expels souda malarial fever clears memory [3]

Uses—*Whole plant* abounds in a yellow glutinous milky juice which is used to relieve blisters heal excoriations and indolent ulcers (Watt) *Juice* is useful in malarious fevers of a low chronic type in dropsy jaundice and as alterative in syphilis gonorrhoea leprosy and other cutaneous affections including scabies also administered in conjunction with ghee in gonorrhoea etc along with the juice of Aristolochia bracteata one tola of the leaf juice taken mixed with one *kudiba* of cow's milk early morning on empty stomach is said to cure leprosy in 40 days An infusion of the juice was regarded by early physicians as a diuretic and was fairly extensively used [4]

(1) & (2) Medical Abstracts 20th March 1914 pp 1186-87
(3) Therapeutic Notes.
(4) Chopra's I D of I pp 286 & 287

its freeness from unpleasant, nauseous and acrid taste Its disadvantages as a purgative are firstly, that its action is not uniform even in its average dose which produces more than 15 to 16 motions at one time, and only 3 to 4 at another, and secondly, that it is generally accompanied by vomiting at the commencement of its operation Though the latter is not severe, yet it has a very unpleasant effect in a purgative medicine Hypercartharsis from the use of this oil is not generally attended with great debility and other dangerous symptoms, frequently observed under similar conditions from croton oil and some other purgatives [1] Smoke of the seeds relieves toothache useful also in caries of the teeth *Fresh root* bruised and applied to the part stung by scorpions gives relief *Powdered root* in drachm doses is found useful in tape worm and in chronic cases of skin diseases

N B—Oil seems to be a better preparation than the juice, which is an unstable compound

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221 ARGYREIA MALABARICA, Chois

(N O—Convolvulaceae)

Parts Used—Leaves

Action—Leaves are antiphlogistic

(Chopra's I D of I pp 463)

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221 A ARGYREIA MALABARICA, Chois

(N O—Convolvulaceae)

Tam—Paymoostej

Parts Used—Roots, leaves

Action.—Roots are cathartic.

Uses—Leaves are used to promote maturation of boils

(Chopra's I D of I pp 463)

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222 ARGYREIA SPECIOSA, Sweet.

See—Lettsomia nervosa

(N O—Convolvulaceae)

Sans—Vriddha daraka, Samudrapalaka *Eng*—Elephant creeper *Ben*—Bijtarka *Guj Mah, Bom* & *Hind*—Samudra-

(1)—Moideen Sheriff's Materia Medica of Madras

shokha *Hind* —Samandarka pat *Duk* —Samaoderka patta *Tel* & *Can* —Chandrapada *Tam* —Shamuddirapachchai

Habitat — Throughout India

Parts Used —Leaves and root

Constituents.—Tannin and amber coloured acid resin soluble in ether, benzole and partly soluble in alkalies

Preparations —Decoction of the root (1 in 20) dose —½ to 1 ounce, Powder

Action and Uses —*Root* is alterative and tonic, *powdered root* is given in milk in synovitis and syphilis *Leaves* are antiphlogistic and and used in skin diseases Under surface of the *leaf* is irritant and is used to hasten maturation and suppuration It sometimes acts as a vesicant. Upper surface is cooling and supposed to possess healing qualities As an alterative and nervine tonic *powdered root* is soaked seven times during seven days in the juice of the tubers of Asparagus racemosus and dried The resulting powder is given in doses of a quarter to half a tola with clarified butter for about a month It improves intellect strengthens body and prevents effects of age Root of this plant forms an ingredient of a compound powder known as *Ajmodadi Churna* which is useful in rheumatic affections and hemiplegia For its preparations see Ptychotis Ajowan

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223 ARISAEMA CURVATUM, Kunth

(N O —Araceae)

Uses —Used as poison

(Chopra s I D of I pp 463)

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224 ARISAEMA LESCHENAULTII, Blume

(N O —Araceae)

Sing —Wal kidaran

(Chopra s I D of I pp 463)

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225 ARISAEMA MURRAY, (Goaham) Hook

(N O.—Araceae)

Eng —Common Cobra Lily or Snake-Lily

Habitat.— Grows wild in Mahabaleshwar (Bombay Presidency)

(Bombay Govt. Agri. Dept. Bulletin)

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226. ARISAEMA SPECIOSUM, Mart

(N O—Araceae)

Punj—Kiralu

Uses—Antidote to snake poison

(Chopra's I D of I pp 463)

227 ARISAEMA TORTUOSUM Schott

(N O—Araceae)

Punj—Samp ki Kumb

Parts Used—Root

Action—Root is anthelmintic

Uses—Root is used as an anthelmintic for cattle

(Chopra's I D of I pp 463)

228 ARISTOLOCHIA BRACTEATA, Retz

(N O—Aristolochiaceae)

Sans—Pattra banga Dhumra patra Gridhrani *Eng*—Worm killer Birthwort *Bom*—Kidamari *Duk* & *Guj*—Gudhatee *Hind*—Kiramar *Can*—Sanajali hullu *Mal*—Atu tinlap Atutin tappala *Tam*—Adu tinna palai *Tel*—Gudide Gaddithaigadapata, Kadapara Gadathigadaparaku *Mah*—Gandhani Gavat *Uriya*—Paniti

Habitat—Grows along the banks of the Ganges and in Southern India [1] (Deccan Travancore Coromandel and Ceylon)

Parts Used—Herb seeds and leaves and almost every part of the plant [2]

Constituents—A nauseous volatile substance an alkaloid and salts especially potassium chloride

Preparations—Infusion (1 in 10), dose—½ to 1 ounce, powder of the seeds dose—30 to 90 grains

Action—Every part of the plant is extremely bitter [3] Purgative emmenagogue alterative antiperiodic and anthelmintic

Uses—An infusion prepared from about ½ an ounce of the dried plant in 10 ozs of water is regarded as anthelmintic and emmenagogue Dose 1 to 2 ozs Powdered dry root in doses of 1 2

(1) (2) & (3)—Chopra's I D of I pp 566

drachms will increase the contractions of uterus during labour and is used in Sind as a substitute for ergot."[1] Given with castor oil in colic and tormina, amenorrhoea, dysmenorrhoea, tedious labour, intermittent fever and worms. Also given in syphilis, gonorrhoea and skin diseases. Antidote to snake-poison.

229. ARISTOLOCHIA INDICA, Linn.

(N. O.—Aristolochiaceae)

Sans.—Ahiganda; Sunanda; Arkamula; Rudrajata; Ishwari. *Eng.*—Indian birthwort. *Hind., Ben. & Duk.*—Isharmul. *Bom.*—Sapasan. *Mah.*—Sapsanda. *Cutch. & Guj.*—Ruhimula. *Can.*—Eesvutberus. *Tel.*—Ishveraveru. *Tam.*—Perumarindu; Ichchuramula. *Mal.*—Eeshvaramulla; Ishvara-muri. *Guj.*—Sapsan. *Kon.*—Sapsikaddula. *Santal.*—Bhedi-janetet. *Arab. & Pers.*—Zaravandebitidi.

Habitat.—This twioe is found all over India.

Parts Used.—Root and rhizome (stems) and leaves.

Coostitueots.—It contains an aromatic oil, a colouring principle and an alkaloid, same as in A. bracteata.

Action.—Root is tonic, stimulant, emmenagogue, alexiteric and anti-arthritic. "Taste of root and stem is bitter with a slight smell like camphor."[2] Leaves are stomachic, tonic and anti-periodic.

Preparations.—Decoction (1 in 10), dose :—½ to 1 ounce; Tincture (1 in 8), dose :—½ to 1 drachm. Expressed juice of leaves, dose :—½ to 2 drachms.

Uses.—*Root* is valuable antidote to snake-bite and to bites of poisonous insects as scorpion, etc., it is used both externally and internally; it makes the part bitten insensible to the ill-effects of the poison. Rubbed with honey it is given in white leprosy: it is also useful in dropsy. Macerated with black-pepper corns it is given in cases of cholera and diarrhoea with much benefit. "*Decoction of the root* and the stem in doses of 1 to 2 ozs. is stimulant, tonic and febrifuge. With black-pepper and ginger, it is used as a carminative in diarrhoea and various forms of bowel complaints."[3] *Juice of the leaves* as also of the *bark* is chiefly used in the bowel complaints of children, cholera and diarrhoea and in intermittent fevers. "*Fresh juice of* the leaves is a favourite antidote to bites of poisonous snakes. *Root* has been used foo criminal abortion."[4]

(1), (2), (3) & (4)—Chopra's "I. D. of I." pp. 566.

230 ARISTOLOCHIA LONGA, Linn.

(N O—Aristolochiaceae)

Ind Bazar —Zarwand i tawil
Uses.— Used in cobra bite
(Chopra's ' I D of I pp 463)

231 ARISTOLOCHIA ROTUNDA, Linn

(N O— Aristolochiaceae)

Ind Bazar.—Zarawand i gird
Constituents.—Alkaloid aristolochine
Action.—Properties are same as A. Indica
(Chopra's I D of I pp 464)

232 ARISTOLOCHIA ROXBURGHIANA Klotz.

(N O—Aristolochiaceae)

Uses.—Used in bowel complaints
(Chopra's I D of I pp 464)

233 ARISTOLOCHIA SERPENTARIA, Linn

(N O—Aristolochiaceae)

Constituents.—Essential oil, bitter substance
(Chopra's ' I D of I pp 464)

234. ARNICA MONTANA, Linn.

(N O.—Compositae)

Action.—Stimulant Sedative resolvent
(Chopra's I D of I ' pp 464)

235 ARTABOTRYS SUAVEOLENS, Blume

(N O.—Annonaceae)

Tam —Manoranjitham. *Tel.*—Manoranjithamus. *Ben.*—Kanthali-champa.
Habitat.— South India.

Constituents.—Alkaloid artabotrine

Uses.—Used in Cholera.

(Chopra's "I. D. of I." pp. 464).

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236. ARTANEMA SESAMOIDES, Beoth.

(N. O.—Scrophularineae)

Sans.—Kokilaksha. *Tamil.*—Neermulli.

Parts Used.—Root; seeds.

Preparations.—Decoctioo.

Uses.—Decoctioo of root is given io rheumatism, diarrhoea, Stone, Syphilis, and ophthalmia. Seeds cure biliousness, improve vitality and favour cooception.

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237. ARTEMISA ABSINTHIUM, Linn.

(N. O.—Compositae)

Sans.—Indhana. *Eng.*—Worm-wood; Mugwort. *Hind.* & *Duk.*—Vilayathi Afsantin. *Guj.* & *Ben.*—Mastaru. *Mah.*—Serpana. *Tam.*—Machipattri. *Tel.*—Tartiha; Moshipatri. *Mal.*—Nilampala; Tirunitri-Pachcha. *Can.*—Uruvalu; Urigattige.

Habitat.—Kashmir, Nepal and mountainous districts of India.

Parts Used.—Dried herb, leaves and flowering tops.

Constitueots.—Volatile essential oil and an extractive matter '*absinthin*', tannin, resin, succinic acid, malates and nitrates of potassium etc., and ash 7 p. c. The volatile oil having a camphoraceous odour is obtained by distillation. It contains *thujone* or absinthol, turpenes 2 p. c., and a deep blue oil. *Absinthin* is an intensely bitter, white or yellowish brown glucoside very soluble in alcohol and chloroform, but slightly so in ether and water. Absinthin is obtained by precipitating the infusion with tannin.

Preparations.—Extract, dose :—1 to 4 grains. Oil, dose :—½ to 3 minims. Tincture (1 in 8), dose :—½ to 1 drachm. Infusion (1 in 10), dose :—½ to 1 ounce. Aromatic wine, a French liquor named Vinum aromaticum absinthium, containing marjorum, angelica, anise etc. Wormwood oil is procured by the distillation of the wormwood herb.

Action.—*Oil* is narcotic poison if long used. The herb possesses febrifuge, stomachic, deobstruent, diaphoretic, anthelmintic, antisep-

tic and slightly narcotic properties It is a good aromatic bitter stomachic tonic, and increases appetite and promotes digestion It has a remarkably tonic influence upon the brain, especially upon its higher faculties concerned with psychical function

Uses.—*Herb* steeped in hot vinegar is bound round a sprain or bruise, and also it or the expressed juice of the herb is applied to the head to prevent convulsions The former is also used as fomentation to the head in cephalalgia, to the joints in gout or rheumatism The herb is given in dyspepsia, hysteria, spasmodic affections as epilepsy, in nervous irritability and gastric nervous depression, also in mental exhaustion and in intermittent fevers As an enema its *infusion* is used as an anthelmintic A strong decoction of the herb is given as a vermifuge, and a weak one to children in measles. *Externally* it is used as fomentation in skin diseases and foul ulcers. Dose of the herb is 10 to 60 grains The oil is the flavouring ingredient of " absinthe liqueur

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238 ARTEMISIA MARITIMA, Linn
or A. brevifolia, Wall

(N O.—Compositae)

Sans —Gadadhar *Eng* —Wormseed (Santonin) *Hind* —Kurmala *Bom* —Kiramoniowa *Pers* —Shih, Sarqun, *Arab* —Afsantin el bahr *N W F P* —Spirah tarkhah

Habitat.—Many species grow abundantly in the high altitudes of the Himalayas from Kumaon to Kashmir, in the Kurram Valley of N W F Province and more abundantly and uniformly in Baluchistan Chitral and Afghanistan than in the Himalayas

Parts Used —Santonin extracted from flower buds and leaves Worm seeds are not really the seeds but the dried unexpanded flowers).

Constituents.—A volatile oil which has an odour resembling *caja put oil and camphor* Contain Santonin and an allied body artemisan. A comparative examination of the physical and chemical properties of the Indian Santonin with the standard imported Russian Santonin shows that it practically comes up to the Russian Santonin Plants of Kurram Valley were found to contain 1 75% Santonin.

Action.—Pharmacological action and toxicity of the Indian variety also correspond to those of the variety imported from Europe. Biological trials have also supported this action. The therapeutic efficacy (of the drug) was tested by clinical trials by giving Indian

240. ARTEMISIA PERSICA, Boiss.

(N. O.—Compositae)

Bom.—Pardesi dawano.
Action.—Tonic, febrifuge, vermifuge.
(Chopra's "I. D. of I." pp. 464).

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241. ARTEMISIA SACRORUM, Ledeb

(N O —Compositae)

Punj —Tatwen.
Uses.—Given to horses in head affections
(Chopra s "I D of I." pp. 464).

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242 ARTEMISIA SCOPARID, Waldst & Kito.

(N O —Compositae)

Punj – Jhan
Action.—Purgative
Uses —This is used as a purgative
(Chopra's I D of I." pp 464).

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243 ARTEMISIA SIVERSIAN'A, Willd

(N O —Compositae)

Bo n —Afsantin
Action —Tonic, febrifuge anthelmintic and emmenagogue.
(Chopra's "I D of I " pp. 464).

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244. ARTEMISIA VULGARIS, Linn

(N O.— Compositae)

Sans —Nagadamani *Hind* —Nagadouna *Ben.*—Nagadona
Constituents —Essential oil
Action — Anthelmintic, antiseptic, expectorant.

N B. :—The following species of Artemisia are uninvestigated :—
A amgdalinay, Dene
A. campbelli, HK f & T.
A caruifolia, Ham.

A desertorum, Spreng
A. dracunculus, Linn
A macrocephala, Jacq
A. minor, Jacq
A. mollissima, D Don
A moorcroftiana, Wall
A parviflora Roxb
A roxburghiana, Bess
A royleana, DC
A salsolides Willd
A stracheyi, HK f & T
A stricta, Edgew.
A tournefortiana, Rehb
A vestita, wall (HK Fl Br Ind)
(Chopra s "I D of I ' pp 464)

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245 ARTHROCNEMUM INDICUM, Moq
(N O—Chenopodiaceae)

Sans—Subhar *Ben*—Jadu palang *Bom*—Machola *Tam*—Umari

Uses—Useful in scorpion sting.
(Chopra s "I D of I pp 464)

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246 ARTHROPHYLLUM BLUMEANUM, Zoll & Mor
(N O—Araliaceae)

Constituents—Alkaloid

ARTOCARPUS BLUMEI—A species belonging to genus of Urticaceae, growing in Java and Malabar with edible fruit Fruit yields an oil which is used in cookery and in diarrhoea An ointment of the buds and leaves is applied to buboes and haemorrhoids
(Chopra's "I D of I " pp 464).

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247 ARTOCARPUS HIRSUTA, Lamk
(N O—Urticaceae)

Bom—Ran phanas *Tam*—Anjalli
Parts Used.—Leaves
Uses.—Leaves are used in bubos and swelled testicles
(Chopra's ' I D of I " pp 464)

248 ARTOCARPUS INCISA.

(N O —Urticaceae)

Eng —Bread fruit

Habitat.— Though this tree is a native of South Sea Islands, Moluccas and Java this is cultivated in the Bombay Presidency

(Bombay Govt Agri Dept Bulletin)

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249 ARTOCARPUS INTEGRIFOLIA, Linn

(N O —Urticaceae)

Sans —Panasa Skandaphala *Eng* —Indian Jack tree *Hind* —Katahara Kathahar Kanthal *Duk Guj, Kon, and Mah* —Phanas *Ben* —Kanthel Kantalgoch *Tel* —Panasa. *Tam* —Palachu, Pila pazham Pila *Mal* —Pilav, Kandakiphala *Can* —Halasu *Guj* —Manphanasa *Fr* —Jaquier *Ger* —Indischer Brodbaum

Habitat — Cultivated all over India

Parts Used Fruit seeds leaves, root and the milk juice of plant

Constituents —Analysis —[a]

	Unripe fruit	Ripe fruit	
	Materials used as vegetables in Indian dishes	Outer yellow fleshy pulp round the seed	Inner seed
Moisture	61 26	69 20	42 32
Ether Extract	0 88	0·28	0·44
Albuminoids	3·75	2 25	7 19
Digestible carbohydrates	26 21	26·08	41 95
Fibre	3 30	0 58	1 50
Ash	1 60	0 11	1 60

Dry stuff jackwood contains morin and a crystalline constituent *Cyanomaclurin* Seeds contain a large percentage of starch [b] Bark yields a gum Flakes of the fruit, if fermented and distilled, yield an alcoholic beverage, with a strong odour and peculiar flavour [b]

(a) & (b) Bom Govt. Agri Dept Bulletin

Action.—Ripe fruit is demulcent, nutritive and laxative. Unripe fruit is astringent.

Uses.—*Fruit* is most popular in India and is very delicious to taste. "It is seldom eaten by Europeans."[e] If eaten in large quantities it produces diarrhoea. It is best eaten on empty stomach especially in mornings. Unripe fruit is generally used "as a vegetable"[a] in the preparation of pickles; when cooked it makes a nice curry. "Seeds of the ripe fruit when roasted in hot ashes, are very palatable and nutritious, and in taste resemble somewhat Spanish chestnuts. When ground to flour, they very much resemble the Kashmir Singara-nut (water chestnut) flour."[e] *Milk juice* of the plant alone or mixed with vinegar and applied *externally* to glandular swellings and abscesses promotes absorption or suppuration; it is also used in snake-bite. Root is used in diarrhoea. *Tender* (*young*) leaves and the *root* are useful in skin diseases and decoction of the *root* and concretions forming from the exudations of the root are given in diarrhoea. *Leaves* are considered antidote to snake-poison. "The wood or its saw dust yields, on boiling, a decoction used as a yellow dye. The fruit is of two kinds—one soft, named *barka* or *rassal*, and the other hard, called *kapa*. The latter is much preferred for eating, while the *barka* is used mostly in making a kind of cake "fanas-poli." To some jack-fruit is delicious; to others it is abominable. Indians usually think highly of it, but Europeans dislike it owing to the smell of the ripe pulp. There are no less than forty or more species of jack-fruit, but only five in India are of economic importance. An alcoholic drink can be made from jack-fruit."[f]

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250. ARTOCARPUS LAKOOCHA.

(N. O.—Urticaceae)

Sans.—Lakucha. *Hind.* & *Bom.*—Dahua.

Found in Bengal where its acid and astringent spadix is eaten in curry. Seeds are purgative.

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251. ARTOCARPUS PARVIFOLIA.

(N. O.—Urticaceae)

A species found in Bengal and the East-Indies with edible fruit.

(e) to (f) Bom. Govt. Agri. Dept. Bulletin.

has partly been extracted. This is what is done in the case of expensive chocolate. In the case of cheap chocolate, however, the same end is attained by adding more sugar. If the chocolate-mass contains more tham sixty per cent. of sugar, it is impossible to mould it into different shapes, and pure cacao-butter must then be added.

In the preparation of chocolate-powder, or cocoa, as we are accustomed to call it, the partial extraction of the fat takes the place of the mixing with sugar. This extraction is effected by means of a powerful hydraulic press.

(From "The World's Commercial Products, pages 133, 136, 138 & 140).

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256. ASARUM ENROPOEUM, Linn.

(N. O.—Aristolochiaceae)

Sans.—Upana. *Hind. & Bom.*—Taggar.

Parts Used.—Roots and leaves.

Constituents.—Essential oil, glucoside, emetic, cathartic.

(Chopra's "I. D. of I." pp. 464).

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257. ASCLEPIAS ASTHMATICA.

(N. O.—Asclepiaceae)

Sans.—Moolinee; Gandhana. *Eng.*—Vomiting swallow-wort. *Hind.*—Jangli-pikwan. *Ben.*—Antamool. *Tel.*—Kurinja; Kukkapala; Verri-pala. *Tam.*—Nalpalai. *Can.*—Kirumanji; Adumuttoda. *Mal.*—Vallipal. *Mah.*—Pittamari; Pittakari; Kharaki.

Habitat.—Bengal to Burma, South India and Ceylon.

Parts Used.—Dried leaves and root.

Constituents.—Leaves and root contain an alkaloid "*tylophorine*" and an emetic principle. Tylophorine is sparingly soluble in water but very soluble in ether and alcohol.

Action.—Diaphoretic, expectorant, emetic, stimulant, alterative and laxative.

Preparations.—Powder and liniment.

Uses.—Root and leaves are regarded as a substitute for ipecac powder of B. P., i.e., the powder of dried leaves is emetic in half-drachm doses; in small doses i.e., 3 to 5 grains it is expectorant and diaphoretic. Roots are superior to leaves in action. They have an

additional laxative property, a good remedy in doses of 15 grains in cases of dysentery generally administered in *pouder* and in combination with a little gum acacia and a grain of opium A *liniment* prepared with the root is applied to the head in cephalagia and neuralgia In overloaded state of the stomach and in other cases requiring the use of emetics its powder acts efficiently It has been found useful in bronchitis and other chest affections in which Ipecac is generally employed

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258 ASCLEPIAS CURASSAVICA, Linn

(N O—Asclepiadeae)

Bom—Karki *Hind*—Kakatundi In Jamaica it is called 'blood flower' owing to its efficacy in dysentery West Indian colonists called it "bastard or wild ipecacuanha."

Habitat.—Bengal and many parts of South India, it is a weed from the West Indies introduced throughout the Tropics

Parts Used—Leaves, root and flowers

Constituents—It contains vincetoxin and an active principle named *asclepine* or *asclepiadin* a yellowish amorphous glucocide which is, when fresh soluble in water and of the action of emetin

Action—*Root* acts first as purgative and subsequently astringent It and the expressed juice are also emetic and styptic The root is said to act directly upon the organic muscular system and specially upon the heart and blood vessels causing dyspnoea, vomiting and diarrhoea

Uses—Root is a remedy in piles and gonorrhoea In Jamaica the plant is also used in dysentery

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259 ASCLEPIA GIGENTIA

See Calotropis Gigentia

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260 ASPARAGUS ADSCENDENS, Roxb

(N O—Liliaceae)

Bom., Hmd, Mah and Guj—Sufed or Safeta Musli. *Tel.*—Tsallo-Sataver *U. P*—Khairuwa. *Tam*—Tannirvittang *Mal.*—Shedeveli *Smh*—Hirtha wariya. *Arab & Pers*—Shaqaqule-hindi.

252 ARUM CAMPANULATUS

See Amorphophallus Campanulatus

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253 ARUM COLOCASIA.

See also Colocasia antiquorum

(N O—Araceae)

Sans—Katchu *Eng*—Cocco, Cacao *Hind*—Kachu, Chamkurakagadda *Ben*—Guri, Kachu *Guj*—Pantra or Pandala (leaves), Alvi (corms) *Mah*—Alu *Tel*—Sheemagadda. *Tam*—Sheemai kilangu *Can*—Kasave, Shami, Avigadde *Mal*—Chaemp *Kon*—Venti, Kasalu.

Habitat—Wild over the greater part of tropical India and also cultivated throughout India on account of its corms

Varieties—Two varieties are found in the Bombay Presidency—one with dark purple stalks and leaves, and the other in which these are green

Part Used—Petioles or leaf stalks and corms

Constituents—Tuber, leaves and stems contain needleshaped crystals insoluble in acetic acid but soluble in dilute nitric or hydrochloric acid Corms contain much starch.

Externally juice of the petioles is styptic, stimulant and rubefacient Internally the corm is laxative Physiological symptoms caused by *Arums* are due to the needle shaped crystals of oxalate of lime contained in leaves & stems

Uses Pressed *juice of petioles* is applied in arterial haemorrhages wounds etc., which heal by first intention after its application It is sometimes dropped in ear ache and otorrhoea It forms a good application to the stings of wasps and other insects Juice of the *leaf stalks* of the black species is used with salt as an absorbant in cases of inflamed glands, buboes etc. Juice of the *corm* is used in cases of alopeciae *Internally* as laxative it is useful in piles and congestion of the portal system. The corms afford an important article of diet

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254. ARUM INDICUM

See Alocasia indica

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255 ARUNDO BAMBOS.

See Bambusa arundinaceae.

N. B—ARUM COLOCASIA.

Chocolate is a mixture of cacao Arum colocasia with sugar, and as a rule with spices also Usually one part of cacao is mixed with one part (or 1½ part at most) of sugar. Cheap chocolate often cootains admixtures of starch, such as corn flour, wheat, rice, or potato starch, etc., powdered roasted acorns, chestnuts, earthnuts, chicory, ship biscuits, the ground shells of the beans and other woody substances, and even plaster have been employed as adulterants In England some brands of cacao contain starch, but this fact is, or should be, stated on the tin, so that it loses the character of adulteration, and moreover, the price is lowered in proportion The cacao of some of the most important factories in Holland has been found to contain twenty nine to thirty per cent of fat, fourteen to eighteen per cent of albuminoids, five to nine per cent of ash, four to five per cent of water, 0.6 to 1 5 per cent of theobromine, the rest consisting of starch Thus it is seen that the composition varies, but these figures may be taken as the limits which "pure" cacao-powder may not exceed

Cheap chocolate often contains the ground shells, but for the better kinds they are useless, as they may rightly be said to be adulterants, although it is true that they contain some theobromine and some fat, and taste like cocoa.

The spices, volatile oils, or vanilla which chocolate contains as a rule are only added to the chocolate-mass (i e cacao plus sugar) towards the end of the grinding process, in order to prevent a lose of perfume, which would certainly take place during a prolonged heating in the grinding and mixing machines Of course, the cacao mixed with sugar and spices, and in the case of some kinds of cheap chocolate with different kinds of meal, in different proportions. In general from fifty to sixty parts of sugar are mixed with from fifty to seventy parts of chocolate, with small quantities of the necessary spices either as powders or in alcoholic solutions of their volatile oils If chocolate, composed of equal quantities of sugar and cacao, is too fatty, in consequence of the large quantity of butter contained in the beans, to be easily moulded into the forms wanted, part of the mass is replaced by an equal quantity of cacao-powder of the same mixture of beans from which the fat

Habitat.—West Himalayas Punjab, from Murree to Kumaon, Gujerat, Bombay, Rohilkhand, Oudh and Central India

Parts Used.—Tuberous root or rhizome decorticated

Constituents.—Asparagin Albuminous matter, mucilage and cellulose Powdered root is found to contain watery extract, cellulose moisture and ash which is 3.6 p.c.

Action.—Nutritive tonic, galactagogue and demulcent Rhizome is bitterish in taste Colour of the tubers is white and they swell up with water Tubers have got excellent cooling and demulcent properties.[1]

Preparations.—Confection and Powder 'The dried tuberous roots obtained in the bazar are known as safed musli.[2]

Uses.—Tubers boiled in milk and sugar are used in spermatorrhoea, gleet and chronic leucorrhoea also in diarrhoea, dysentery and general debility It is used as a substitute for *Salep* A *compound powder* containing many ingredients is given as a nutritive tonic in doses of from 5 to 30 grains in milk in cases of seminal weakness and impotence

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261 ASPARAGUS FILICINUS Ham

(N. O.—Liliaceae)

Punj.—Allipalli

Parts Used.—Root

Action.—Root is tonic and astringent

(Chopra's I. D. of I.' pp. 465)

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262 ASPARAGUS GONOCLADOS, Baker

(N. O.—Liliaceae)

Ben.—Satamuli *Bombay.*—Shatavari *Tam.*—Kilavari

Parts Used.—Root

Action.—Root is aphrodisiac.

Uses.—Root is used in gonorrhoea

(Chopra's 'I. D. of I. pp. 465)

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(1) & (2)—Chopra's I. D. of I." pp. 366.

263 ASPARAGUS OFFICINALIS, Linn

(N O—Liliaceae)

Eng—Common asparagus, Aspatagus *Hind*—Marchuba, Paragus, Vilayati Karua, Nakdown, Margiyeh, Halyun *Ben*—Hikua *Arab*—Isfarez, Halyan *Pers*—Merchubeh

Habitat—This hardy perennial, a native of the sea coasts of Europe and some parts of Asia is grown in most parts of Northern India

Parts Used—Plant, root and ripe fruits (seeds)

Constituents—Root contains *asparagin*, a greenish yellow resin, sugar gum, albumen, chlorides, acetate and phosphate of potash, malates tyrosin, etc Berries contain grape-sugar and spargancin, a colouring matter Seeds contain a fixed essential oil, aromatic resin, sugar and a bitter principle spargin

Action—Asparagin stimulates the kindneys and imparts a strong smell to urine Generally the drug is a mild aperient, demulcent tonic, aphrodisiac, diuretic and sedative The green resin contained therein is said to exercise a sedative effect on the heart, calming palpitation of that organ

Preparations—Infusion (1 in 10), dose —1 to 2 ounces Powder, dose —1 to 2 grains

Uses—It is given in flatulency, calculous affections, dropsy, rheumatism and chronic gout In doses of 1 to 2 grains, combined with potash bromide it is given in cardiac dropsy and chronic gout The water in which asparagus has been boiled though disagreeable is good for rheumatism The immature shoots are greatly esteemed as a vegetable The produce with the exception of that grown in our hill stations, is not comparable with that of Europe

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264 ASPARAGUS RACEMOSUS, Willd
or A sarmentosus Willd, or A gonoclados Baker,
or A adscendens, Roxb

(N O—Liliaceae)

Sans—Shatavari, Shatamuli (*Shata*—hundred, *muli*—roots alluding to its numerous fusiform roots) *Hind*—Shakakul, Satavari *Ben* & *Can*—Satmuli, Halaru makkal, Jayibem *Guj*—Satavar *Mah*—Satavari mull *Tam*—Kalavari, Tannirvittankiz

hangu, Sadavari, Shimai Shadavari, Paniyanaku *Tel*—Philli taga Challa gadualu, Sadavari *Mal*—Shatavali *Kash* Sejhana *Sind*—Tilora *Assam*—Hatmuli *Bunn*—Kanyo mi *Pers*—Satavari *Smh*—Hatavari *Gualior*—Sitawar

Habitat.—This climber growing in low jungles is found all over India especially in Northern India

Parts Used—Roots and leaves

Constituents—Large amount of saccharine matter and mucilage

Action—Root is highly mucilagenous antidiarrhoetic, refrigerant, diuretic antidysenteric,[1] nutritive, tonic, demulcent, galactagogue aphrodisiac and antispasmodic

Action and Uses in Ayurveda & Siddha—Madhura rasam Madhura vipakam, seeta veeryam, polyuria, chronic fevers soma rogam white discharge, internal heat, tonic

Action and Uses in Unani—Hot 1° Moist 2° aphrodisiac stomachic, tonic, gonorrhoea [2]

Preparations.—Confection Decoction (1 in 20), dose—1 to 2 ounces Medicated oil and *Ghritas Shatavari ghrita* is prepared thus—Take of clarified butter 4 seers juice of Asparagus racemosus 4 seers milk 40 seers, boil them together and prepare a *ghrita* This is given with the addition of sugar, honey and long pepper as an aphrodisic tonic *Phalaghrita*—This is prepared with 4 seers of clarified butter and 16 seers each of the juice of Asparagus racemosus and cow's milk with the addition of a number of other medicines in small quantities in the form of a paste Its use increases the secretion of semen cures barrenness in women and removes disorders of the female genitals Dose—1 drachm twice a day A popular cooling and emollient medicated oil containing asparagus and called *Narayana taila* is used *externally* in rheumatism diseases of the joints stiff neck, hemiplegia and other diseases of the nervous system *Vishnu taila* an oil much used in nervous diseases and prepared with sesamum oil cow's or goat's milk and the juice of Asparagus racemosus with the addition of a number of substances in small quantities in the form of a paste, and *Prameha Mihira Taila* which is prepared with the juice of Asparagus racemosus sesamum oil decoction of lac whey and milk with the addition of a number of substances in the form of a paste are very useful applications

(1)—Chopra's I D of I pp 465 (2) Therapeutic Notes

They are rubbed on the body and more particularly on the pubic region in chronic gonorrhoea, stricture of the urethra and other diseases of the urinary organs

Uses —*Root* is employed in diarrhoea as well as in cases of chronic colic and dysentery "*Root* boiled with some bland oil, is used in various skin diseases [1] *Root* is boiled in milk and the milk is administered to relieve bilious dyspepsia and diarrhoea and to promote appetite, root is also used in rheumatism *Tubers* are candied and taken as a sweetmeat *Fresh root juice* is given with honey as a demulcent, *bark* is poisonous Boiled *leaves* smeared with ghee are applied to boils small pox, etc, in order to prevent their confluence Juice of this drug taken with milk is useful in gonorrhoea

N B —The plant is sometimes substituted for A adscendens as safed musli [2]

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265 *ASPARAGUS SARMENTOSUS Willd*

See—Asparagus racemosus

N B —As both these drugs seem to be akin to each other and their uses etc., are said to be similar, I have embodied all the Notes re above Drug on pages 566 & 567 of Chopra's Indigenous Drugs of India book, in the latter drug viz., *A racemosus*

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266 ASPHODELUS FISTULOSUS, Linn

(N O —Liliaceae)

Punj —Piazi
Action —Diuretic

(Chopra's I D of I pp 465)

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267 ASPHODILUS TENUIFOLIUS, Cavan

(N O —Liliaceae)

Punj —Piazi
Parts Used —Seeds
Action —Seeds are diuretic

(Chopra's "I D of I pp 465)

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(1) & (2) Chopra's "I D of I pp 466-567

268. ASPLENIUM ADIANTUM-NIGRUM, Linn.

Eng.—Black spleen wort

(Chopra's "I. D of I." pp. 465).

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269. ASPLENIUM FALCATUM, Willd

Bom.—Pana. *Tam*—Nela panna maravara.

Uses.—In enlargement of spleen, incontinence of urine, calculus, jaundice, malaria

(Chopra's "I. D. of I." pp 465).

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270. ASPLENIUM PARASITICUM, Willd

Bom—Moha pana. *Tam*—Kari-beli panna-maravara.

Uses.—Same as A falcatum

(Chopra's "I D of I." pp. 465).

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271 ASPLENIUM RUTA MURARIA, Linn.

Eng.—Wall-Rue

Action.—Expectorant

(Chopra's "I D of I." pp. 465).

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272 ASPLENIUM TRICHOMANES, Linn.

Tam—Myle conday

Action—Anthelmintic

(Chopra's "I D of I" pp 465).

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273. ASTERACANTHA LONGIFOLIA, Nees.

See Hygrophila spinosa

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274. ASTERIASTIGMA MACROCARPA, Bedd.

(N. O.—Bixineae)

Tam—Vellanangu

Parts Used.—Seeds

Preparations—Oil from seeds.

Uses—Oil from seeds is belived to be a valuable medicine.

(Chopra's "I. D. of I." pp. 465).

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275. ASTER TRINERVIUS, Roxb.

(N. O.—Compositae)

Uses.—*Useful in haemorrhage, malaria.*

(Chopra's "I. D. of I." pp. 465).

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276 ASTRAGALUS HAMOSUS, Linn.

(N. O.—Leguminosae)

Hind.—Purtuk.

Constituents.—A gum like tragacanth.

Action.—Emollient, demulcent.

(Chopra's "I. D. of I." pp 465).

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277. ASTRAGALUS MULTICEPS, Wall.

(N. O —Leguminosae)

Punj.—Kanderi.

Parts Used.—Seeds

Uses — Seeds are used for colic and leprosy.

(Chopra's "I. D. of I. ' pp. 465).

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278. ASTRAGALUS SARCOCOLLA, Dymock.

(N. O —Leguminosae)

Hind.—Anjira. *Bom.*—Gujar

Parts Used.—Gum.

Action.—Gum is aperient.

(Chopra's "I. D. of I." pp 465).

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279 ASTRAGALUS STROBILIFERUS, Royle.

(N. O —Leguminosae)

Pers.—Kon.

Constituents.—Gum like tragacanth

(Chopra's "I D of I " pp 465).

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280 ASTRAGALUS TRIBULOIDES, Delile.

(N O —Leguminosae)

Punj —Ogai
Action — Demulcent
(Chopra s "I D of I pp 465)

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281 ASTRAGALUS VIRUS, Oliver

See A gummifer

(N O —Leguminosae)

Eng —Gum Tragacanth *Hind* —Angira *Ben* —Katila
Habitat — Himalayan regions
Parts Used — Gum from bark
Action — Demulcent and emollient
Preparations —Mucilage and Powder This gum which exudes during the hot season through the bark of the tree in slender threads gradually hardens and forms tears or worm like pieces

Uses —This gum which is found in the bazaars forms the basis of some medicinal lozenges and styptic powder. It is very useful in cases of the irritation of the mucous membranes of the pulmonary and genito urinary organs It is chiefly used as a vehicle for more active medicines

INFORMATION SUPPLIED ON PRACTICAL COSMETICS

Q —Can you please recommend a good substitute for gum tragacanth ?

A —As you do not state the exact purpose for which the substitute is required, it is difficult to reply to your query, as a substitute which would serve for one purpose might be unsuitable for another. However, the following information regarding some of the more important substitutes for gum tragacanth should be helpful.

(1) Gum Karaya is a natural gum obtained from *Sterculia urens* Roxb It resembles tragacanth in some respects, but in making mucilages with it the use of spirit is unnecessary. The powdered gum readily goes into colloidal solution in tepid water, and the resulting mucilages are more transparent than those made with tragacanth The gum, however, is somewhat weaker than tragacanth, so that a higher proportion is required, which however, is more than offset by the lower price Owing to big variation in quality, preliminary experiment is necessary with each batch to determine the

proportion necessary to produce a mucilage of given viscosity The slight acetous odour of the gum may be overcome by the addition of a small amount of alkali (e g borax)

(ii) Gum carob from *Ceratonia Siliqua* Linn, is marketed as a cheap substitute for tragacanth but suffers from the disadvantage that mucilages of it have to be made by boiling which increases manufacturing costs The boiling is necessary to destroy an enzyme present which otherwise causes the viscosity of the mucilages rapidly to drop It does not, however, appear always to be effective and the much higher proportions of the gum required to produce mucilages having viscosities equal to those of tragacanth represents an additional drawback to the use of this gum

(iii) Sodium alginate derived from various species of sea weeds, has properties which commend it as a substitute for tragacanth and a brand specially suitable for cosmetic use has recently been placed on the British market under a trade name It dissolves in cold water to produce highly viscous solutions resembling those given by gum acacia but 1 6 per cent of sodium alginate produces a solution having at viscosity about the same as that of a 40 per cent solution of the latter gum The addition of a suitable calcium salt (e g, the citrate) precipitates calcium alginate in the form of a jelly and this procedure is serviceable when highly viscous products are required

(iv) Methyl cellulose although not a gum produces colloidal solutions which resemble those of gums in many important respects but are not liable to fermentation—a particularly valuable feature A brand suitable for cosmetic use is marketed in this country under a trade name, and there are several grades giving solutions of different viscosities The general method of preparing these is to treat the shredded product with boiling water and then cool, when solution takes place Heating cause coagulation but on re cooling solution takes place again (Perfumery and Essential Oil Record—Dec 1938, Vol 29 No 12, Page 477)

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282 ASYSTASIA COROMANDELIANA, Nees

(N O —Acanthaceae)

Sans —Lavana valli *Tam* —Medday Keerai

Uses — Juice of the plant is given in swellings, worms and rheumatism

(Chopra's 'I D of I pp 465)

283 ATALANTIA MONOPHYLLA, DC.

(N O —Rutaceae)

Sans —Atavi jambira *Eng* —Wild lime *Mah* —Makadlimbu. *Duk* —Malang nar *Tel* —Adavi nimma *Tam* —Kattu elumichham pazham *Can* —Kadu limbe *Mal* —Malenarakam *Kon* —Chor-nimbu Ida nimbu *Guj* — Dodi nimbu *Urija* —Nargumi

Habitat —East Bengal South India & Ceylon

Parts Used —Root, berries and leaves

Preparations — Decoction oil and liniment

Action & Uses —*Berries* are made into a nice pickle which forms a useful curry diet in fevers and ailments attended with loss of taste and appetite *Leaf juice* is an ingredient in a *compound liniment* used in hemiplegia *Berries* yield a warm *oil* which is a valuable application in chronic rheumatism and also in paralytic limbs, as a stimulant *Root* is antispasmodic and stimulant and used in snake bite *Decoction of the leaves* is applied in itch and other skin complaints

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284 ATRIPLEX HORTENSIS, Linn

(N O —Chenopodiaceae)

Mah —Chandanbatva

Habitat — Cultivated as a garden herb in the Bombay Presidency

Parts Used —Seeds

Constituents — Seeds contain saponin

Uses — Used as spinach

(Chopra s I D of I pp 465)

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285 ATROPA BELLADONNA, Linn

(N O —Solanaceae)

Eng —Deadly Nightshade *Hind* —Sag angur or Angurshefa *Ben* —Yebruj *Bom* —Girbuti

Habitat — Grows in great abundance in the Himalayan ranges extending from Simla to Kashmir and is found wild in Kunawar An unlimited supply of the root can be obtained from the northern Himalayas Also obtainable in the hilly regions of India Consider able quantities of the roots could be grown in various suitable situa tions in India.

Parts Used—Atropine alkaloid extracted from roots and leaves Fresh leaves and branches are used in the preparation of extract of belladonna

Constituents—Indian belladonna root contains a higher proportion of alkaloid atropine and hyoscyamine than the European varieties A number of specimens of the roots contained 0 81 per cent of total alkaloids, as compared with 0 45 per cent laid down in the British Pharmacopoeia, and the leaves contained 0 50 per cent as compared with 0 3 per cent

Action—Belladonna is a powerful drug It and its alkaloid atropine are largely used in western medicine as a sedative antispasmodic anodyne and mydriatic in diseases of the eye

Preparations—Foreigners and Indian manufacturing firms prepare many galenicals and alkaloids from the Indian belladonna roots and leaves,

Uses—Belladonna is a valuable antidote in poisoning by opium, muscarine, etc Extract of belladonna is used as an external application to relieve pain, and internally for checking excessive perspiration in consumption for the relief of coughs, and for many other purposes The extract prepared from the leaves causes the pupil of the eye to dilate and is used in ophthalmic surgery

Remarks—A variety known as lutescens with a low alkaloidal content has frequently been substituted and adulterated while exporting belladonna plants from India to foreign countries to the great disadvantage of Indian export trade '

(Chopra's *I D of I* pp 66 to 68)

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286 ATYLOSIA BARBATA, Baker

(N O—Leguminosae)

Sans—Mashaparni *Tam*—Peruvidukol

Parts Used—Roots

Uses.—Roots are used in *rheumatism, biliousness*, fever, consumption and swelling

(Chopra's ' I D of I ' pp 465)

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287 AVENA FATUA, Linn

(N O —Gramineae)

Hind —Kuljud

Uses —Used as poison

(Chopra's I D of I pp 465)

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288 AVENA SATIVA Linn or A Orientalis

(N O —Gramineae)

Eng —Oats *Arab* —Jai

Habitat —Britain and America Grown in military grass farms of Northern and Western India Available in Indian Bazaars, as also in many other countries

Parts Used —Seed or the grain and its meal (oatmeal)

Constituents —Fat starch sugar, albumin soluble and insoluble cellulose, mineral matter and moisture Outer portion of the grain contains phosphates Seed contains a principle called avenin the nitrogenous principle of Avena sativa and somewhat resembles legumin Ritthausen (Die Eiweisskorper, Bonn, 1872, 135) considers Norton's Avenin to have been a mixture of legumin or vegetable casein and a vegetable gluten containing sulphur to which he gives the name Gliadin , the legumin however predominating (Dispensatory of the United States of America, 21st Ed Page 209) (Quoted on page 82 of June 1936 Homoeopathic Progress , Calcutta) As 50 mg in 100 g fresh plant and 62 mg in dry

Preparations —In America a tincture is made from it Generally it is used as food in various forms—meal malt porridge, Blanc mange etc In Homoeopathic medical system tinctures are made from oat seeds or grains, and from fresh entire plant, respectively

Action —A most nutritious cereal containing a fair proportion of all the food-elements But it should not be used as the *sole* article of diet for a long time even with the addition of milk, on account of its tendency to produce skin eruptions due to the irritating qualities of 'avenin', one of its ingredients As tincture it is a nerve stimulant

Uses —It is most useful as a nutrient and is described as a perfect food. This is an unrivalled fodder crop for horses in India British grown oats are best Oatmeal *porridge* does not agree with

every one In cases where the bodily vigour is low and the body ill nourished, *creamed* Oatmeal, or Oatmeal *Blanc mange* is very valuable In the form of *tincture* (of the green oats) it is recommended for all liable to much nervous strain The dose is from 10 to 20 drops in a little hot water taken twice a day, in a dose of 40 drops as a saporific, as an antidote in morphinism alcoholism, diphtheric paralysis (in rather smaller dosage), also in dysentery (for nocturnal restlessness) oatmeal may be advantageously used *in lieu* of soap by dry skinned people Oatmeal can be baked into cake or biscuit ', but owing to the difficulty of rupturing the starch grains contained in it, except at very high temperatures, the meal does not lend itself to bread making The food known as Quaker Oats is also prepared from oat grains

289 AVERRHOA ACIDA

(N O —Oxalidaceae)

Ben —Nubarse, Hurriphal *Eng* —Country gooseberry *Mah* & *Guj* —Kanta avala *Hind* —Chelmeri, Harraphalvadi *Sind* —Kakadana *Mal* —Chirmi *Tel* —Racha Usherihe *Tam* —Arunelli *Port* —Chirambola *Sinh* —Ratanalli

Habitat —India

Parts Used —*Fruit, seeds and leaves*

Preparations —Decoction of leaves (1 in 10), Dose —½ to 1 ounce

Action and Uses —*Decoction of the leaves* is a good diaphoretic *Leaves* are mucilaginous and demulcent and given in gonorrhoea *Ripe fruits* are used as adjuncts to cough mixtures They are also pickled and preserved as *Amla Seeds* are cathartic.

290 AVERRHOA BILIMBI, Linn

(N O —Oxalidaceae)

Hind —Belambu, Tamarang *Ben* —Blimbi *Guj* —Blimbu, Kaalazounsi *Mah* —Bilamba *Tam* —Pilimbi Pullicha kai, Kachit tamarthakai *Can* —Bimblee *Mal* —Vilimbi *Kon* —Bimbula *Tel* —Bilimbikay, Pulusukayulu, Bilibilikayulu *Burm* —Bilim.

Habitat.—Cultivated in gardens in India and Burma.

Parts Used —Fruit.

Action —Fruits are astringent, stomachic, refrigerant, antiscorbutic and cooling Unripe fruit is intensely acid but sweetens towards maturity

Preparations —Syrup made from fruit juice

Uses —*Fruits* being acid in taste are generally employed in cookery along with other vegetables and grains to render them more palatable, digestible and assimilable, also useful in piles and scurvy, and also used in pickles *Juice of the fruit* made into a *syrup* forms a cooling drink in fevers The syrup is prepared thus —Take of the juice of the ripe fruit, 10 ounces (by straining through cloth), refined sugar 30 ounces, water 10 ounces Mix and heat all the ingredients on a slow fire till the sugar is dissolved and the liquid assumes the consistence of a thick syrup Among the Malayas the fruit is used like a cucumber or capet in Europe, it is also canned and preserved stewed fruit is excellent

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291 AVERRHOA CARAMBOLA, Linn

(N O —Oxalidaceae)

Sans —Karmaranga *Eng* —Chinese gooseberry *Bom* —Kara mara *Hind* —Kamrak *Ben* —Kamranga *Duk* —Karmal, Meeta kamarunga *Guj and Mah* —Kamarakha, Kumrak *Tel* —Karo monga, Tamaratamu *Tam* —Tamarattai *Mal* —Tamaratta *Can* —Darehuli *Kon* —Karmbala *Assam* —Kardai

Habitat —Cultivated in India, introduced from the new world by the Portuguese

Parts Used —Leaves root and fruit

Constituents —Ripe fruits contain a watery pulp which contains much acid potassium oxalate (oxalic acid)

Action —Laxative, refrigerant and anti scorbutic Ripe fruit is generally sour antiscorbutic and highly cooling

Preparations —Syrup made from the fruit juice

Uses —Two varieties known—sweet and sour The five angled *fruit* is eaten raw as well as used in curries and pickles It is cooked with other vegetables and grains to make them more palatable and easy of digestion Fruit juice made into a *syrup* will form an excellent cooling drink in relieving thirst during fevers and febrile excitement Ripe fruit is a good remedy for bleeding piles particularly the internal piles Previous to becoming quite ripe the

fruit possesses a flavour somewhat between that of sorrel and a green gooseberry When well ripened it has a strong and agreeable scent as nearly as possible like that of the quince as well as a very fine and peculiar flavour It has however even then a degree of acidity which renders it hardly fit to be eaten raw It does not bear cooking well as it then becomes tough and horny, but when the tough part of the fruit is removed the pulp affords a very delicious jelly

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292 AVICENNIA OFFICINALIS Linn

(N O —Verbenaceae)

Eng —White Mangrove *Ben* —Bina *Bom* —Tivar *Tam* —Kandal Nallamada *Tel* —Mada

Habitat — Growing in salt swamps on the seashore on both the East and the West coasts of South India

Parts Used —Bark

Action — Bark is astringent

Uses — Bark is used in small pox

(Chopra s I D of I pp 466)

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293 AVICENNIA TOMENTOSA, Roxb

(N O —Verbenaceae)

Hind & *Ben* —Bina *Eng* —Mangrove *Bom* —Cheria *Sind* —Timar

Parts Used —Root and bark

Constituents —Lapachol

Action —Root is aphrodisiac bark is astringent

(Chopra s I D of I pp 466)

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294 AZADIRACHTA INDICA, A Juss

See Melia azadirachta

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295 AZIMA TETRACANTHA, Lam

(N O —Salvadoraceae)

Sans —Kundali *Hind* —Kanta gur kamai *Ben* —Trikanta juti *Mah* —Sukkapat *Tam* —Sungam-chedi, Nallochangam. *Tel* —Tella upi

Habitat—Deccan Ceylon and Coromandal Coast

Parts Used—Leaves, root and juice obtained from root bark

Preparations—Decoction (1 in 10), dose—1 to 2 ounces Compound decoction made with the addition of some useful drugs, dose—2 to 3 ounces, twice a day in as much water

Action and Uses—A powerful diuretic given in rheumatism dropsy dyspepsia and chronic diarrhoea and as a stimulant tonic after confinement

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296 BALANITES ROXBURGHII, Planch or Baegyptica or B Indica

(N O—*Simaroubaceae*)

Sin Gouritvac Ingudi vraksha *Hind, Ben* & *Dul*—Hingan Hingol *Bom*—Hinger *Gwalior*—Hingot *Guj*—Hinger Lioria *Tam* Nanjunda *Mal*—Manchuta *Tel*—Garachettu Ringri

Habitat—A scraggy shrub or a small tree met with in the dry parts of India from Cawnpore to Sikkim Behar Gujrath and Deccan

Parts Used—Seeds, bark, leaves and fruit

Constituents—Bark yields a principle called *Saponin* Pulp of the fruit contains organic acid saponin mucilage & sugar

Action and Uses—*Seeds* are given in coughs and colic *Bark unripe fruit and leaves* are pungent, bitter, purgative and anthelmintic and used in worms in children *Fruit* is used in snake bite Oil expressed from the *seeds* is an application to burns, excoriations and freckles

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297 BALIOSPERMUM AXILLARE, Blume or MONTANUM, Muell

See Jatropha montana

(N O—Euphorbiaceae)

Sans Hind & *Ben*—Danti *U P*—Janglı jamalgota *Bom*,—Dantimul *Tam*—Naga danti *Tel*—Adavi amudan *Arab*—Habbussala *Pers*—Bedanjire Khatai *Lepcha*—Poguntig

Habitat—One of the commonest drugs of North and East Bengal reaching as far as Burma

Parts Used —Leaves, seeds and root

Action —Seeds are employed as drastic purgative, locally seeds act as stimulant and rubifacient

Uses —*Roots and Leaves* have similar properties and are used in the indigenous medicine in dropsy and general anasarca *Root and seeds are purgative* and are used in snake bite Leaves are used in asthma

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298 BALLATA LIMBATA, Benth

(N O —Labiatae)

Punj —Bui

Parts used —Leaves

Uses —Leaves are applied for inflammation of gums and ophthalmia

(Chopra's I D of I pp 462)

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299 BALSMARIA INOPHYLLUM

See Calophyllum apetalum

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300 BALSAMODENDRON MUKUL, Hook or B agallocha

(N O —Burseraceae)

Sans —Guggula, Kou shikaha *Eng* —Salaitree, Gum gugul, Indian Bedellium *Hind, Duk, Tel* & *Mah* —Gugal *Ben* —Guggul, Mukul *Can* —Guggula *Tam* —Gukkulu, Gukkal, Mai satchi Kungiliyam *Tel* —Maishakshi, Gukkulu *Guj* —Gugara, Gugal *Arab* —Mogla, Moql, Mokhil, Aphalatana *Pers* —Bai jahundana *Sinh* —Rata dummula

Habitat —Sind, Rajputana, Eastern Bengal, Berars, Assam, Khandesh and Mysore

Characteristics —When fresh the oleo gum resin is moist, viscid, fragrant and of a golden colour It burns in fire, melts in the sun, and forms a milky emulsion with hot water

Parts Used —Gum

Constituents —Volatile oil gum resin and bitter principle

and ulcerated throat A drachm of the tincture (20 per cent in 90 per cent alcohol) in 10 ounces of water makes a useful lotion and gargle It is used as a stomachic in chronic dyspepsia with dilatation and atony of the walls of the stomach Troublesome borborygmi are often relieved by the use of this oleo resin. As an intestinal disinfectant it is used in chronic catarrh of the bowels, chronic colitis tubercular ulceration of the bowels and diarrhoea It is believed to stimulate the appetite, improves the general condition, reduces fever, causes absorption of effused products and reduces secretion from diseased surfaces In pulmonary tuberculosis it stimulates expectoration and lessens and disinfects the sputum. In pleural effusions and in ascites of tubercular peritonitis it is said to be of great value In marasmus of children it is said to be of value and is also used in anaemia, neurasthenia, debility and allied conditions Gugul given in large doses every 4 or 6 hours is believed to be useful in laryngitis, bronchitis, pneumonia and whooping cough It is often combined with salicylate of sodium It is said to improve the general condition of the patient in leprosy, relieves lassitude, gives a sense of well-being, and relieves the nervous pains that are so very common in this disease In pyelitis cystitis and gonorrhoea it is useful after acute symptoms have subsided In chronic endometritis, amenorrhoea and menorrhagia it is particularly valued Administered in large doses it is said to be useful in leucorrhoea. Inhalations of the fumes of burnt gugul are given in hay fever, acute and chronic nasal catarrh, chronic laryngitis, chronic bronchitis and phthisis The beneficial effects of the drug in many of the above conditions can be explained by the presence of the oleo-resin which contains active aromatic substances [1] Gum obtained from another species—B Pubescens found in Sind, Karachi and Baluchistan is used as ointment in bad ulcers such as Delhi sores, combined with sulphur, catechu and borax. As plaster it is applied in hiccough on the pit of the stomach, where it acts instantly A preparation called *Yoga raja guggula* is a favourite one in rheumatism and it is composed of several ingredients Another preparation similar in composition is *Trayodasang guggula* which is made with 13 aromatic adjuncts and is recommended for use in rheumatism (lumbago) affecting the loins and the sacrum, In rheumatism affecting the joints and bones a preparation called *Adityaka guggula* is used Other preparations are

(1) Chopra's "I D of I" pp 288 & 289

Vatari rasa, Kaisara guggula, Sadanga guggula, Amrita guggula and Kanchanara guggula Triphala guggula is a simple household remedy most useful in gonorrhoea, dropsy, fistula, foul ulcers, syphilis etc It is prepared by taking of *guggula* 5, *triphala* 3, *pipali* 1 and honey sufficient to make a pill mass after mixing all together Dose—5 grs

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301 BALSAMODENDRON MYRRHA, Nees
or Commiphora myrrha
(N O.—Burseraceae)

Sans—Vola, Rasagandha, Saindhava, Samudraguggul *Eng*—Myrrh *Hind* & *Pers.*—Bol *Ben*—Gandharash *Can.*—Bola *Sinh*—Bolam. *Arab*—Murr *Mah* & *Cutch*—Hirabol *Bom*—Bhensa Bol *Duk* & *Guj*—Bol *Tam*—Vellaippa polam *Tel*—Balintrapolum

Habitat.—Indigenous to North Eastern Africa [1] Collected in Southern Arabia, Abyssinia Persia, Siam and sold in Indian Bazaars Myrrh of commerce is obtained from the resinous exudation of the tree B Myrrha. There are at least two or three varieties, two of them being known as Karam and 'Mutiya' [2]

Parts Used—Gum from the bark of the tree

Constituents—A volatile essential oil called myrrhol, an oxygenated ethereal essential (volatile) oil 5 to 10%, resin myrrh in 27 to 50%, which by fusion becomes converted into myrrhic acid, gum 30 to 60%, bitter principle—a glucoside, salts as Calcium phosphate and carbonate etc. The essential oil contains cumic aldehyde, phenols like eugenol and meta cresol, pinene, di pentene and limonene

Action—Stimulant, expectorant and emmenagogue, externally it is astringent Myrrh is in a soft oily state which soon hardens by exposure to air It is aromatic, of balsamic odour and bitter in taste Dose—5 to 15 grains

Uses—Myrrh is widely used in India and as it is a rare and costly product, it is very often adulterated with gums of Balsamodendron mukul which, on account of it close resemblance to myrrh, is known as 'false myrrh', mixed with equal parts of honey and rectified spirit and dissolved in rose water or infusion of rose petals (50 parts) is good for mouth wash and also for internal administra-

(1) & (2) Chopra's "I D of I pp 367, 367 & 466.

tion in stomatitis With borax it makes an application for parasitic stomatitis or thrush. Useful in dyspepsia and mixed with molasses or preferably with iron and vegetable bitters it is given in amenorrhoea, chlorosis. other atonic uterine affections, and as a *stimulating expectorant* in chest affections, especially in chronic bronchitis, asthma and phthisis. *Externally* it is used as an astringent, stimulating application in ulcerated conditions and a gargle for spongy gums and in ulcerated sorethroat. Dissolved in human or ass's milk it is dropped into the eye to cure purulent opbthalmia. It is useful as a dentifrice in caries of the teeth, either alone or mixed with other drugs; and used to prevent hair from falling off. In diphtheria the tincture of myrrh combined with glycerine is given *internally* every one or two hours with benefit. "Tincture of myrrh is useful in menstrual disorders and chlorosis of young girls." Three grains each of powdered myrrh and rhubarb with five grains of Ipomaea bederacea is a good stomachic and laxative.

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302. BALSAMODENDRON OPOBALSAMUM, Kunth.

(N. O.—Burseraceae)

Arab.—Akulla-balasan; Habel-balsana. *Hind.*—Kogan-i-balsan. *Eng.*—Balm of Gilead; Balm of Mecca. *Ind.*—Donhula Balashana (oleo-resin). *Bom.*—Habbul-balsan.

Habitat.—Arabia The gum or balsam is obtained in Indian Bazaars.

Parts Used.—Balsam or oleo-resin, fruit and wood.

Constituents.—Essential oil and a bitter substance.

Action.—Fruit is carminative, expectorant and stimulant. Balsam is astringent and demulcent.

Uses.—*Decoction* of wood and fruits (1 in 20) is used in doses of half to one ounce. Fruit is given in combination with gum acacia in chronic coughs, dysentery and diarrhoea. A *paste* of it is locally applied to indolent ulcers, recent cuts and bleeding wounds. Balsam is given in profuse mucous discharges from genito-urinary organs, as gonorrhoea, *gleet, leucorrhoea and chronic catarrh in* old persons

(Chopra's "I. D of I." pp. 46

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303 BALSAMODENDRON PLAYFAIRII, Hook

(N O —Burseraceae)

Bom —Meena harma
Parts Used —Saponin
Action —Expectorant
Uses —Used in rheumatism

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304 BALSAMODENDRON PUBESCENS, Stocks.

Bom —Bayisa gugula used in Delhi boils Similar to Balsamodendron mukul (Chopra)

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305 BALSAMODENDRON ROXBURGHII, Arn

(N O —Burseraceae)

Sans,—Kumuda *Ben* —Gugala *bom* —Gugal *Tam* —Gukul
Parts Used —Gum
Action —Gum is demulcent aperient, carminative and alterative
Uses —Used in snake bite and scorpion sting
(Chopra s I D of I ' pp 466)

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306 BALSAMODENDRON ZEYLANICUM

See Canarium commune

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307 BAMBUSA ARUNDINACEA, Retz and B apous & B orientalis & B spinosa

(N O —Gramineae)

Sans —Vansa , Tavakshiri or Tugakshiri (silicious concretion or the milky bark of bamboo) , Vamsa lavanum , Vaishnavi , Trinad wajab , Venu *Eng* —Bamboo *Hind* , *Ben* & *Duk* —Bans *Guj* —Wans , Kapura *Tel* —Bonga , Vedurubeeam , Vederuppu , Veduru. *Mal* —Moongil *Tam* —Mangal , Moongil , Moongilarisi , Moongi luppu *Can* —Bedru *Kon* —Vaso *Konkan* —Kalak *Mah* —Mandgay *Arab* —Tabashira , (concretion), Qasab (bamboo) *Fr* —Bambou Commun *Guj* —Gemeiner Bambos *Punj* —Magar *Santal* —Mat *Sinh* —Una *Assam* —Bnah *Burm* —Kyakatwa *Pers* —Nai , Tabasheer

Habitat.—Common in Central and South India, cultivated in Bengal and North Western India

Varieties —"Two varieties are available in the market, the blue and the white, both having a sweet taste "[1]

Parts Used —The interior stalks or stems (bamboo hollows) of female plant containing siliceous concretions (deposit) called *tabashir* (bamboo manna) in the interior of the stem of *B arundinacea*; young shoots, leaves, articulations, seeds and roots

Constituents —Tabashir ('bangsolochan') contains silica 90 p c, or silicum as hydrate of silicic acid, peroxide of iron, potash, lime, alumina, vegetable matter, "cholin, betain, nuclease, urease, proteolytic enzyme, diastatic and emulsifying enzyme, cyanogenetic glucoside."[2]

Action —Leaves are emmenagogue and anthelmiotic Tabashir (bamboo manna) is stimulant, astringent, febrifuge, tonic, cooling, antispasmodic and aphrodisiac.

"Action and Uses in Ayurveda and Siddha —Mathura rasam, kashaya anurasam, seetha veeryam, brahmanam, balyam, vrishyam, in trishna, kasam, swasam, jwaram, raktapittam, etc. *Leaves* —Mathura kashayarasam, seeth veeryam, kaphapittaharam, saram, chedanm, in Kushtam, raktavranam, soddhum or shodhanam *Shoots* —Katu rasam, kashaya anurasam, katu vipaka, guru, ruksham, kaphaharam, vatapitta karam, guru vidhahi, saram *Seeds* —Kashaya rasam, katu-vipakam, ushna veeryam, ruksham, saram.

Action and Uses in Unani.—Cold 2°, Dry 2°, tonic; tonic for heart and liver, sedative, of *irritation* of the body, in thirst, prevents safra, vomiting, palpitation, coma, safra fevers *Bergai Bhant* —Cold 3°, Dry 3°, diuretic, emmenagogue, balghami, cough "[3]

Preparations.—Decoction of leaves and of bamboo joints (1 in 20), dose —1 to 2 ounces Compound powder, dose —1 drachm. Pickles and Poultice

Uses.—*Young shoots* of the Bamboo made into a *poultice* is a most efficacious application for dislodgement of worms from ulcers *Juice* is poured on the vermin and the liquid mass applied and secured by a bandage *Leaf bud* is administered in decoction to encourage the free discharge of the menses or lochia after delivery when it is scanty. Used in leprosy, fevers, and haemoptysis, and also in cases

(1) & (2) Chopra's "I D of I" pp. 466, 568 (3) Therapeutic Notes

of children suffering from thread-worms. "*Leaves* are used in hema temesis and veterinary practice."[1] "*Young leaves*, in the form of a decoction combined with some aromatic substance, have also been used as an emmenagogue."[2] *Pickles* or curry prepared out of the tender shoots give much benefit to persons suffering from lack of digestion, as it promotes appetite and digestion. The silicious concretion (bamboo manna) as found in the joints of the female bamboo, it is useful in fever, cough, consumption, paralytic complaints, debilitating diseases,"[3] asthma, snake-bite, etc. A *compound powder* containing long-pepper, cardamoms, cinnamon, sugar in ½, ¼, ⅛ & 2 parts respectively for 1 of *Tabashir* as an alterative in phthisis and cachexia; dose is 1 drachm. *Grain* is eaten by poor classes. *Root* is given as a specific in eruptive affections. *Older drier stems* make very efficient splints for fractures etc. *Seeds* resemble *rice and* are eaten by the poor *Tender shoots* are also eaten like asparagus

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308. BARLERIA COURTALLICA, Nees, or Ness ?

(N. O.—Acanthaceae)

Sans—Chethasshacharam. *Tam*—Venkurunji.

Parts Used.—Root and leaves.

Preparations.—Decoction of root. Oil boiled with leaves.

(Chopra's "I. D. of I." pp. 466).

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309 BARLERIA CRISTATA, Linn

(N. O.—Acanthaceae)

Sans. & *Ben.*—Jhinti. *Punj.*—Tadrelu.

for human-milk. Decoction of root is used in rheumatism, pneumonia.

Uses.—Useful in snake-bite. Decoction is used as a substitute for human milk. Decoction of root is used in rheumatism, pneumonia. Oil boiled with leaves is used in ear and eye diseases.

(Chopra's "I. D. of I." pp. 466).

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310 BARLERIA DICHOTOMA, Roxb

(N. O.—Acanthaceae)

Action.—Stimulant, demulcent.

(Chopra's "I. D. of I." pp. 466).

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(1). (2) & (3) Chopra's "I. D. of I." pp. 466, 368.

311 BARLERIA LONGIFLORA, Linn

(N O—Acanthaceae)

Parts Used.—Root

Preparations— Decoction of root

Uses — Decoction of root is given in stricture, dropsy and stone

(Chopra s I D of I pp 466)

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312 BARLERIA NOCTIFLORA, Linn

(N O—Acanthaceae)

Uses — Decoction is used as a substitute for human milk

(Chopra s I D of I rp 466)

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312 A BARLERIA PRIONITIS Linn

(N O—Acanthaceae)

Sans—Vajradanti, Kurantaka, Koranta *Hind*—Catserina Katsareya *Ben*—Kantajati *Guj*—Kantaasherio *Mah*—Pivala koranta or koreta *Gwalio*—Piyabans *Tel* & *Can*—Mullu goranta *Tam* & *Mal*—Shemmulli *Kon.*—Gorti

Varieties——White, red yellow and blue coloured flowers

Habitat—This small spiny bush is met with in tropical India abundant in Bombay, Madras South India, Ceylon Assam and Sylhet

Parts Used—Whole plant especially leaves and root

Preparations—Paste decoction of leaves and medicated oil

Properties and Uses—*Juice of the leaves* administered in a little honey or sugar and water is a favourite medicine in catarrhal affections of children accompanied with fever and much phlegm, dose is two tablespoonfuls twice a day Juice of leaves of the white variety mixed with *jeera* is given in spermatorrhoea, juice applied to feet in the rainy season prevents their cracking or laceration. Juice mixed with honey is applied to the bleeding teeth It is also dropped into the ear in otitis *Leaves* of the yellow variety bruised or their juice with or without pellitory root is kept in the hollow of the aching tooth *Paste of the root* is applied to boils and glandular swellings with benefit *Medicated oil* is applied to unhealthy wounds Tooth powder is prepared from this plant The plant s parts are used in catarrh cough and anasarca

(Chopra s I D of I pp 467)

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313 BARLERIA STRIGOSA, Willd

(N O—Acanthaceae)

Ben—Dasi *Santhal Parganas*—Raila baha *Bom*—Wahiti

Parts Used—Root

Uses.—Roots are used in severe spasmodic cough

(Chopra s I D of I pp 467)

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314 BARRINGTONIA ACUTANGUALA, Gaertn

(N O—Myrtaceae)

Sans.—Dhatriphal, Hijjala *Hind*—Hijjal *Bombay & Guj*—Samudarphal *Assam*—Hindol *Uriya*—Kinjole *Mah*—Piyar, Sathphal, Dhatriphal *Ben*—Samandar, Hijal *Tam*—Samutra pullam, Kadapam *Tel*—Kanapa Kanagi, Kadanic.

Habitat—Throughout India, plentiful in the plains of Bengal

Parts Used—Seeds or fruits roots and leaves

Constituents— Glucoside, saponin barringtonin (Chopra s I D of I pp 467) starch proteid, cellulose, fat, caoutchouc, alkaline salts and an active principle allied to saponin, which is a watery solution forming a stable froth when shak

Action—Seeds are aromatic, carminative and emetic root is bitter similar to cinchona in properties, also cooling aperient and expectorant

Preparations—Powder and Paste

Uses.—*Seed* or *fruit* is given rubbed with the juice of fresh ginger in catarrhs of the nose and respiratory passages, and in colic to relieve flatus from the bowels Rubbed with water it is *externally* applied to the chest to relieve pain and cold and to the abdomen to relieve colic and flatulence A few grains (of the *powdered seed*) are given as an emetic to children suffering from catarrh to induce vomiting *Kernels powdered* and prepared with sago and butter are useful in diarrhoea Powdered seeds are used as snuff in headache *Juice of the leaves* is given in diarrhoea Seed or fruit rubbed with black pepper and lime juice into a paste, is given in 5 grains doses to relieve seminal weakness A powder composed of 5 parts of *Samudrapala* s of (Vitex negundo) and 6 of sugar is given in 10-grain doses with much benefit in cases of gonorrhoea Some part of the plant (seeds ?) is used as fishpoison

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315. BARRINGTONIA RACEMOSA, Blume.

(N. O.—Myrtaceae)

Sans.—Vishaya; Samudrapad; Samstravadi. *Ben.*—Samudraphal. *Kon.* & *Can.*—Nivar. *Tam.*—Sametrapalam. *Mal.*—Samudrapad. *Guj.* & *Hind.*—Nervishee. *Pers.*—Jadvar.

Habitat.—Sea coast—Konkan.

Parts Used.—Root and fruit or seed.

Preparations.—Infusion of root (1 in 10), dose.—2 to 6 drachms. Powder and Paste of the seeds.

Constituents.—Glucoside saponin barringtonin.

Action and Uses.—*Root* is similar to cinchona in medicinal virtues. It is deobstruent and cooling. *Fruit* is efficacious in coughs, asthma and diarrhoea. *Pulverised fruit* is used, like the preceding drug as a snuff in hemicrania and combined with other remedies it is applied *externally* in diseases of the skin. *Seeds* (fruits) are aromatic and useful in colic given in milk and also in parturition; in ophthalmia they are applied as collyrium in the form of thin *paste* prepared in pure cow's ghee.

(Chopra's "I. D. of I." pp. 467).

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316. BARRINGTONIA SPECIOSA, Forst.

See *Mammea asiatica.*

Burm.—Kyi. *Andaman.*—Dodda.

Action.—Narcotic, stupefies fish.

Constituents.—Glucoside saponin barringtonin.

(Chopra's "I. D. of I." pp. 467).

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317. BASELLA ALBA, Linn.

B. lucida; *B. cordifolia.*

(N. O.—Chenopodiaceae)

Sans.—Apoedika; Potaki. *Eng.*—Indian Spinach or Malabar Night-shade. *Hind.*—Poi. *Mah.*—Velbondi. *Bom.*—Velgond; Mayalubhaji. *Guj.*—Maya-ki-baji. *Ben.*—Rukhtopuri; Poi. *Tel.*—Bachali. *Tam.*—Pachalai; Vaslakire, *Mal.*—Pachala. *Can.*—Basale. *Kon.*—Vali.

Habitat.—Every part of India, especially in Lower Bengal and Assam.

Parts Used.—Entire herb Root leaves stalks and all

Constituents.—The plant contains a good deal of mucilage and iron

Action.—Diuretic, leaves are demulcent and cooling [1]

Preparations.—Spinage, Poultice Decoction and Mucilage

Uses.—It is used as a substitute for spinach It makes a wholesome and a most easily digested *spinage* and acts as a mild laxative *Leaves* are reduced to pulp and applied to boils ulcers and abscesses to hasten suppuration and are also used in urticaria [2] *Juice of leaves* together with sugar-candy is useful in the catarrhal affections of children and administered with much benefit in gonorrhoea and balanitis Leaf juice thoroughly rubbed and mixed with butter is a soothing and cooling application for burns and scalds *Infusion* of the dried leaves of Basella lucida makes a nice drink, and *mucilaginous liquid* obtained from the leaves and tender stalks is a popular remedy for habitual headaches it is applied to head about half an hour before bathing it will produce a cooling sensation and bring on sound refreshing sleep Basella cordifolia leaves are edible

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318 BASELLA RUBRA, Linn.

(N O.—Chenopodiaceae)

Sans.—Putika. *Hind.*—Lalbachlu *Ben.*—Rakto pui *Tam.*—Shivappu vasla kire

Habitat.—Throughout India, Ceylon and Tropical Asia.

Parts Used.—Leaves and roots

Uses.—Leaves are used in catarrhal affections and to hasten suppuration Decoction of the root relieves bilious vomiting

(Chopra's I. D. of I. pp. 467)

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319 BASSIA BUTYRACEA, Roxb.

(N. O.—Sapotaceae)

Eng.—Phulwara butter Indian Butter tree *Hind.*—Phalwara. *Nepal.*—Chuti

Constituents.—Kernels yield from 60 to 65% of fat whitish in colour and agreeable odour

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(1) & (2)—Chopra's I. D. of I. pp. 467

Action.—*Fat and butter of the kernels is emollient.*

Uses.—Fat of the kernels is used in rheumatism by Vaidyas and is even used for edible purposes. Butter is an excellent emollient application for itch, chapped hands etc., during winter, also as an ointment in rheumatism, paralysis, etc.

(Chopra's "I. D. of I." pp. 467).

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320. BASSIA LATIFOLIA, Roxb.

(N. O.—Sapotaceae)

Sans.—Madhhuka. *Eng.*—Indian Butter Tree; Mahwah tree. *Hind.*—Jangli Moha; Mahua. *Ben.*—Maua; Mahua. *Mah.*—Mowda. *Tel.*—Ippachettu; Eppi; Madhookamu. *Tam.*—Kat illupi; Kattu-irrupai. *Mal.*—Madhookam Illupai. *Can.*—Ippe-mara. *Pers.*—Ippicha; Mohecha; Darakhte-gulchakane-sahrai. *Guj.*—Mahuda.

Habitat.—Bombay Presidency, Central Provinces, Bengal and South Indian forests and Ceylon.

Parts Used.—Flowers, fruit, oil of the seeds, leaves and bark.

Constituents.—*Flowers* contain sugar, cellulose, albuminous substances, ash, water etc. *Dried flowers* contain from 50 to 60% sugar. *Seeds* contain 50 to 55% of fatty oil, fat, tannin, extractive matter, bitter principle probably saponin, albumen, gum, starch, mucilage and ash. "The composition of the fats present in the seeds as worked out by R. G. Pelly (1912) at the Imperial Institute:—The unsaturated acids yield an oxidation dihydroxy stearic acid with a M. P. of 130°C. No linolic acid could be found. The saturated acids have M. P. of 53°C. neutralisation value 205 and iodine value 12.7 per cent. On re-crystallisation from alcohol they yield nearly half their weight of stearic acid, some palmitic acid is also obtained. A saponin of the formula $C_{17}H_{26}O_{10}$ has also been separated from the seeds."[1] *Ash* contains silicic, phosphoric and sulphuric acids, lime and iron, potash and traces of soda. *Juice* contains caoutchouc, tannin, starch, calcium oxalate, gum, resins, formic and acetic acids and ash. *Oil is a mixture of 80 p. c. of stearin (separated crystals of stearic acid) and 20 p. c. of olein.* "*Leaves contain a glucosidic saponin different from that obtained from the seeds has been reported.* Traces of an alkaloid have also been found. A spirit is distilled from

(1) Bulletin of Imperial Institute, London.

the flowers *Flowers* contain a fairly good quality of sugar, enzymes and yeast Church gives the following figures of analyses for air dried flowers —Cane Sugar 2 2 p c, invert sugar 52 6 p c other substances soluble in water 7 2 p c cellulose 2 4 p c albuminoids 2 2 p c, ash 4 8 p c, water lost at 100°C 15 0°, undetermined 12 6 per cent [1]

Action —*Fresh juice is* alterative and the spirit distilled from the flowers is a powerfully diffusible stimulant and an astringent, tonic and appetiser *Flowers* are at once cooling, demulcent expectorant, tonic nutritive and stimulant Liquor obtained from the flowers by distillation contains a large amount of empyreumatic oil which is apt to cause gastric irritation in large doses Because of the tannin content, B latifolia acts as astringent Leaves have also astringent properties [2] Bark is astringent and tonic

Preparations —Decoction of flowers and concrete oil of seeds

Uses —Fruit is sometimes eaten Fruit or the seed produces an edible fat which is also used for manufacture of margarine etc. the kernels yield a thick *concrete oil* (Mahua butter) which is used by the Gonds and other Central Indian tribes for edible purposes and is frequently used as an adulterant of ghee [3] and is useful for application in skin diseases and to the head in cephalagia and is often applied in chronic rheumatism It acts as a laxative and may be used in habitual constipation and haemorrhoids [4] *Leaves* boiled in water form a good stimulant embrocation Ashes of the burnt leaves mixed with ghee are often used as a dressing for burns and scalds by Kavirajas and Hakims [5] *Bark in decoction* is a remedy for rheumatic affections rubbed on the body it cures itch. *Internally* the bark is employed in diabetes mellitus with much benefit [6] Residue cake after extraction of oil is used as an emetic; the smoke produced in burning the cake is reputed to kill insects and rats *Succulently developed flowers* form an important article of food especially in times of famine and are used for the manufacture of spirituous liquor and power alcohol on a large scale [7] *Decoction of the flowers* is useful in coughs, chronic bronchitis and wasting diseases [8] *Flowers* mixed with milk are useful in impotence due to general debility, one ounce with eight ounces of

(1) Bulletin of Imperial Institute, London
(2) (3), (4) (5) (6), (7) & (8) Chopra's "I D of I. pp 290 & 291

fresh milk is the dose. *Dried flowers* are used as a fomentation in orchitis for their sedative effect. Sugar, acetone and proof spirit are also made from various parts of the tree.

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321. BASSIA LONGIFOLIA, Linn.

(N. O.—Sapotaceae)

Sans.—Madhuka. *Hind.*—Mohua. *Ben.*—Mohuva. *Bom.*—Mahwa. *Sinh.*—Mee. *Tam.*—Illupai; Iluppai. *Tel.*—Ippi.

Habitat.—A tree abounding in milky juice possessing practically the same properties and of the same species as B. latifolia, and is entirely a South Indian plant commonly grown in Mysore, Malabar and along the west coast."[1]

Constituents.—"Seeds contain 40 p. c. of fatty oil, called 'bassia oil', of which about one-third is olein and two-thirds palmitin. More recent investigations show that about 55 to 57.8 p. c. of fat is contained in the seeds. About 60 p. c. of this fat is composed of olein and linolein and 40 p. c. is stearin and palmitin. After the oil extracted, a sapo-glucoside called 'mowrin' is obtained from the residue. This has been isolated as a pale-yellow powder soluble in all proportions in water and in methyl and ethyl alcohols. *Fruit* contains saccharose 4.6 to 16.2 p. c. and maltose about 2.39 p. c. Besides these, they also contain a lot of tannin and enzymes."[2] "A poisonous saponin, mowrin, bitter substance."[3]

Action.—"'Mowrin' is fairly toxic and has a specific action on the heart and circulatioo, similar in many respects to that of the drugs of the digitalis group. Because of the tannin content, B. longifolia acts as astringent."[4] "Bark is astriogent and emollient; flowers are stimulant and anthelmintic."[5]

Uses.—"Both B. latifolia and B. longifolia are used for practically the same purposes; they are largely employed as a lotion in chronic ulcers, as a gargle in bleeding and spongy gums, and in acute and chronic tonsillitis and pharyngitis. A drachm of the liquid extract in 10 ounces of water makes a useful gargle."[6] "Flowers are used in snake-bite."[7] Fat is used in rheumatism by Vaidyas.

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(1), (2), (4) & (6) Chopra's "I. D. of I." pp. 290 & 291.
(3), (5) and (7) Chopra's "I. D. of I." pp. 247.

322. BASSIA MALABARICA, Bedd

(N. O.—Sapotaceae)

Tam.—Illuppi.

Habitat.—Commonly grown in Malabar and West Coast of India.

Parts Used.—Fruits, oil from the seeds; flowers.

Uses.—Fruits are used in rheumatism, biliousness, consumption, asthma and worms. Oil from the seeds is used in rheumatism and for improvement of the hair. Flowers soaked in water are used in kidney complaints.

(Chopra's "I D of I." pp. 467).

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323. BATATAS PANICULATA.

See Ipomoea digitata.

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324 BAUHINIA MACROSTACHYA, Wall.

(N. O.—Leguminosae)

Ben.—Gunda gilla

Uses.—Used in skin diseases

(Chopra's "I. D of I." pp. 467).

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325 BAUHINIA PURPUREA, Linn.

(N O.—Leguminosae)

Sans.—Kanchan *Hind.*—Koliar. *Ben.*—Rakta kanchan. *Punj.*—Koiral. *Tam.*—Mandareh.

Action.—Bark is astringent; root is carminative; flowers are laxative.

(Chopra's "I D of I." pp. 467)

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326. BAUHINIA PURPUROSA.

See Bauhinia variegata.

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327 BAUHINIA RACEMOSA, Lam

(N O—Leguminosae)

Sans—Svetakanchan *Hind*—Kanchnal *Mah*—Apta *Ben*—Banraj *Punj*—Kosundra *Tam*—Areka *Can*—Banne

Habitat—North Kanara of Bombay Presidency

Parts Used—Leaves and gum

Uses—Green leaves are liked by cattle Gum is used medicinally Leaves are used in headache and malaria.

(Chopra s I D of I pp 467)

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328 BAUHINIA RETUSA, Ham

(N O—Leguminosae)

Hind—Kandla *Punj*—Kural

Parts Used—Gum

Action.—Emmenagogue, diuretic

Uses—Gum is used for sores

(Chopra s I D of I pp 467)

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329 BAUHINIA TOMENTOSA, Linn

(*N O—Caesalpiniaceae*)

Sans—Phalgu Aswamantaka *Hind* & *Gwalior*—Kachnar, *Ben*—Kanchan *Bom* & *Guj*—Asundro *Mah*—Pivala kunchan *Tel*—Adavimandaramu *Tam*—Kanchini, Tiruvatti *Mal*—Kattatti. *Can*—Kadatti *Kon*—Chamel *Madras*—Esamaduga

Habitat—Throughout India & Ceylon

Parts Used— Whole plant—root bark leaves buds, young flowers, seeds and fruit

Constituents—Tannin

Action.—Plant is antidysenteric and anthelmintic. Fruit is diuretic. Seeds are tonic and aphrodisiac.

Preparations—Decoction, Infusion and Paste.

Uses.—*Decoction of the root bark* is useful in inflammation of the liver, and as a vermifuge *Infusion* is a useful gargle in aphthae. *Dried leaves,* buds and young flowers are prescribed in dysentery. *Seeds may be eaten for their tonic* and aphrodisiac action and made

into a *paste* with vinegar as an efficacious application to wounds inflicted by poisonous animals, snakes and scorpions *Bruised bark* ground with rice water into a paste is *externally* applied to tumours and wounds such as scrofulous

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330 BAUHINIA VAHLII W & A

(N O — Leguminosae)

Hind —Jallaur *Ben* —Chehur *Tam* —Adda

Parts Used —Seeds and Leaves

Action —Seeds are tonic and aphrodisiac, leaves are demulcent & mucilaginous

(Chopra's I D of I ' pp 467)

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331 BAUHINIA VARIEGATA, Linn.

See—Bauhinia racemosa.

(N O —Caesalpiniaceae)

Sans —Kovidara, Kanchanara *Hind* & *Gualior* —Kachnar *Ben* & *Mah* —Rakta kanchan *Guj* —Kovidara *Tel* —Daevakan chanamu *Tam* —Shemmandarai, Segapu munthari *Mal* —Chuvan na mandaram *Can* —Kempu mandara

Habitat —Sub-Himalayan tract and the forests of India and Burma

Parts Used —Bark, roots, buds, gum, leaves, seeds and flowers

Constituents —Bark contains tannin (tannic acid), glucose and a brownish gum

Action.—Bark is alterative, tonic and astringent Root is carminative and flowers are laxative

Preparations —Emulsion, Pill, Paste, Gargle and Decoction (1 in 10), dose —½ to 1 ounce

Uses.— A *gargle* made from the *bark* with the addition of extract of acacia pods and pomegranate flowers is a remedy in salivation and sorethroat and a *decoction of the buds* in cough, bleeding piles, hæmaturia and menorrhagia. *Bark* rubbed into an emulsion with rice water and administered with the addition of ginger in scrofulous enlargement of the glands of the neck. A paste made of the bark together with dried ginger is also applied to scrofulous tumours.

Decoction of the bark is a useful wash in ulcers and skin-diseases and a remedy in diarrhoea *Dried buds* also are useful in diarrhoea, worms, piles and dysentery Decoction of the *root is* given in dyspepsia and flatulence, it is also an anti fat remedy and therefore valuable for corpulent persons *Flowers* with sugar is a gentle laxative A preparation known as *Kanchanara guggula* made of the following ingredients is useful in scrofulous tumours ulcers skin diseases gonorrhoea, dropsy, etc —Take of the bark of Bauhinia variegata 10 parts, the three myrobalans, ginger, black pepper, long pepper, bark of Crataeva nurvala, Cardamoms Cinnamon and *Tejpatra* leaves each one part Powder them all add *Guggula* 15 parts to make a pill mass This is given in doses of half a tola every morning with a decoction of Sphaeranthus *mollis* or of *Triphala* or of *Catechu* This plant is used in malaria, and is also an antidote to snake-poison

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332 BEGONIA REX, Putzeys.

(N O —Begoniaceae)

Uses — This is a substitute for rhubarb Juice is poisonous to leeches

(Chopra s I D of I pp 467)

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333 BELAMCANDA CHINESIS, Leman

(N O —Irideae)

Parts Used.—Roots

Action —Roots are aperient, resolvent and antidote to snake-poison

(Chopra s I D of I pp 467)

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334 BENINCASA CERIFERA, Savi.

(N O —Cucurbitaceae)

Sans —Kushmanda *Eng* —White Gourd Melon, White pumpkin *Hind* & *Mrd.*—Golkaddu *Duk* —Petha *Ben* —Kumra, Desi or Chal kumrha. *Guj* & *Mah* —Kohala. *Tel*—Boodigummadi, Budithi or Pulla, gummidi *Tam* —Kalyan pooshini. *Mal* —Kumbalam *Can* —Bilay or Boodi Kumbala, Sandigumbala. *Kon* —Kuvalay

Habitat.—Cultivated in gardens throughout India, resembles pumpkin in appearance.

Parts Used.—Seeds, fruit and fruit juice

Constituents.—Fixed oil 44 p. c., starch 32 p. c., an alkaline cucurbitine, an acrid resin, proteids, myosin, vitellin, sugar 4 p. c.

Action.—Fruit is nutritive, tonic and diuretic, also alterative, styptic and a valuable anti mercurial. Seeds derived of the outer covering are vermifuge (against tape worms and lumbrici) and diuretic. Confection is alterative, tonic, diuretic and restorative

Preparations.—Confection and *ghrita*

Uses.—Seeds are useful in tænea. Fresh juice of the fruit is administered as a specific in hæmoptysis and other hæmorrhages from internal organs, while a slice is applied to the temple, and is often used as a vehicle to administer pearl ash for the cure of phthisis in the first stage. It is also useful with or without the addition of liquorice in insanity, epilepsy and other nervous diseases. It is a good antidote for many kinds of vegetable poisons; mercurial and alcoholic poisonings. In diabetes the juice of the cortical portion 4 ounces with powdered saffron and red rice bran 100 grains each is given morning and evening with strict diet. Fruit is cooked in curries and also made into pickles, preserves, condiments, sweetmeats or confections. The preserve is given in piles and in dyspepsia as an antibilious food. It is a highly nutritious food in wasting diseases as consumption. It is prepared in ghee and sugar with the addition of *pipali sunta* white cumin seeds, coriander seeds, cardamoms and cinnamon in the proportions of 1 part of each to 10 parts of white gourd. A preparation known as *Khanda Kooshmanda* or Confection of Squash or White gourd, made with several useful ingredients is administered in hæmoptysis, phthisis, marasmus, cough, asthma, ulceration of the lungs, hoarseness etc., in doses of 1 to 2 tolas according to age and strength. *Vasa Kushmanda Kanda*, another preparation is used in cough, asthma, phthisis, hæmoptysis, heart disease and catarrh. Yet another preparation "*Kushmanda Ghrita*" is given in insanity, epilepsy and other nervous diseases in doses of 1 to 2 tolas. *Kushmanda Ghrita* a teaspoonful with 2 ounces of hot milk, and a teaspoonful of sugar given every morning, gives great relief in epileptic fits.

heart or deafness and it may be used during the attack of fever Tincture is specially valuable in cases of enlargement of the liver and spleen It is much recommended in fevers accompanied by bilious symptoms and diarrhoea A crude extract known as *Rasaut* (in Hindi), *Rasavanti* or *Rasanjana* and prepared from the root bark is used as a local application in affections of the eyelids and in chronic ophthalmia in which it is painted over the eyelids occasionally combined with opium rock salt and alum ' This is a common household remedy in India in the form of a decoction also 'Rasaut' which contains large quantities of the crude alkaloid, tried in the treatment of oriental sore has given some good results '(a) In bleeding piles it is administered in doses of 5 to 15 grains with butter Its *solution* (1 in 32 of water) is used as a wash for piles Its *ointment* made with camphor and butter is applied to pimples and boils A simple *decoction* of it, with honey is given in jaundice With the addition of embellic myrobalan, the decoction is useful in painful micturition from bilious or acrid urine *Externally* the decoction of the root bark is used as a wash for unhealthy ulcers to improve their appearance and promote cicatrization *Rasaut* mixed with honey is useful application to aphthous sores abrasions and ulcerations of the skin Following are a few useful formulas —

(1) Take of Indian barberry 5, *Rasavanti* (barberry extract) 2 Cyperus notundas 3, Semecarpus anacardium 2, Bael fruit 5, Adhatoda Vasika 5 and Chiretta 5 parts Mix and make a decoction in the usual way, when ready add honey 4 parts Dose —½ to 1 drachm Given in Leucorrhœa, Menorrhagia etc

(2) Take of Indian barberry 5, Oxalis corniculata 4 and Honey 3 parts Mix and make a pill mass Dose —grains 4 to 6 Given in painful micturition acid urine, etc

(3) Take of *Rasavanti* Aconitum Heterophyllum, bark of Holarrhena Antidysenterica, each 1 part and flowers of Woodfordia floribunda 3 parts Mix and make a powder Dose —1 drachm. Given in bilious diarrhoea, indigestion, etc.

(4) Take of extract of Barberry 2, Opium 2, Alum 3, Rocksalt 4 and Chebulic Myrobalan 2 parts Mix and make a paste Applied locally to inflammatory swellings and as a collyrium for the eyes in conjunctivitis

(a) Chopra's I D of I pp 292 & 293

(5) Take of *Rasavanti* 5 grains, Kernel of *Nim* seeds 2 grains, Raisins 10 grains Beat all together into a mass and make it into three pills Dose—One pill to be taken at bed time in case of piles

(6) Take of Barbery root 6 ounces and water 2 pints Boil down to 1 pint Dose—2 ounces three times a day, as a diaphoretic and bitter tonic

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336 BERBERIS ASIATICA, Roxb

(N O—Berberidaceae)

Hind—Kilmora *Nepal*—Mate Kissi, Chitra

Habitat—Grows in dry valleys of the Himalayas, in Bhutan, Gharwal, Bihar and on the Parasnath Hill, Afghanistan

Constituents—Contains 'berberine' in fair quantities The root bark is rich in bitter principles

Action—Stems are diaphoretic and laxative Root bark is a tonic and antiperiodic Root has a bitter, sharp, hot taste (Ayurveda), Root is antiperiodic, diaphoretic and antipyretic

Uses—Medicinal uses of this species are similar to those of B aristata Fruits or berries are given as a mild laxative to children *Stems are recommended in rheumatism Instead* of the root bark, the root itself is employed as its action was believed to be as powerful as quinine and decoction made from the root was said to bring down fever The dried extract of the root known as 'rasaut' or 'ras' is used as a purgative for children, as a blood purifier and as an external application in conjunctivitis *in combination with opium As a local application it is used for* indolent *ulcers* It has also been recommended for gastric and duodenal ulcers

(Chopra's I D of I ' pp 467 & 293)

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337 BERBERIS LYCIUM, Royle

(N O—Berberidaceae)

Hind—Kashmal, Chitra *U P*—Kushmul *Bom*—Dathalad *Pers*—Zirishk (fruit)

Habitat—Grows in dry hot places in Western Himalayas from Garhwal to Hazara

Parts Used—Root, stem, branches, leaves

Action —O Shaughnessy describes this plant as a febrifuge, carminative and gently aperient

Uses —Medicinal extract from the root known under the name of Rasaut is a very highly esteemed drug in the indigenous medicine In haemorrhoids the plant is used both locally and internally. 'Rasaut' is prescribed in doses of from 10 to 30 grains with butter in bleeding piles as a bitter tonic, and as a febrifuge Mixed with butter and alum Rasaut is used as an external application for the eyelids in acute conjunctivitis With camphor and butter it forms the constituent of an ointment used against acne, pimples and indolent ulcers It has been found useful in enlargement of the liver and the spleen Some physicians consider it to be useful in the treatment of gastric and duodenal ulcers Local injections of Berberine sulphate tried by Drs Chopra, Varma, Karamchandani, Das Gupta Dikshit & Lakshmidevi, in the treatment of oriental sore, have given very good results The following technique has been recommended —1 to 2 c c of a 1 per cent solution of the sulphate is infiltrated into the margins of the sore by means of a fine hypodermic syringe Four or more punctures are made and care is taken to see that the infiltration is evenly spread Injections are given once a week and the sore is dressed with ordinary surgical dressings As a rule not more than three injections are required to bring about a complete cure but a large number of injections may have to be given until the desired results are obtained It must be remembered however that if there are multiple sores on the body it is not advisable to infiltrate more than two sores a day and not more than four sores a week, especially if the sores are of a large size

Solutions of berberine sulphate are stable and can be preserved in sterile tubes with rubber caps, so that the requisite amount can be withdrawn with a syringe whenever required for administration Messrs May & Baker have put on the market readymade solutions of berberine under the trade name, 'Orisol'

N B —There is some difference of opinion as to whether 'rasaut should be regarded as a special preparation from the root of B lycium only, or from B asiatica or the two together Most of the preparations offered for sale are derived from a mixture of the two plants

(Chopra's "I. D of I" pp 293 & 468).

338 BERBERIS NEPALENSIS, Spreng

(N O—Berberidaceae)

Punj—Amudanda, Chiror *Nepal*—Chatri, Milkisse

Habitat.—Grows commonly on the Outer Himalayas, from the Ravi eastward to Khasia and the Naga Hills and also in the Nilgiris [1]

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339 BERBERIS VULGARIS, Linn

(N O—*Berberidaceae*)

Eng—True Barberry *Punj*—Zirishk Kashmal, Chachar *Pers*—Bedana *Arab*—Ambar baris

Habitat.—A member of the same species met with in Himalayas from Nepal and Tibet to Afghanistan with similar virtues and uses.

Constituents—Berries contain *malic, tartaric and citric acids* Berberine, a yellow alkaloid is obtained from the bark parenchyma of stalks and roots Berberine, oxycanthine and berbamine

Action—Berberine *produces leucocytosis in animals also inflammatory* haemorrhagic affections of the kidney and severe damage to the ganglial cells of the central nervous system (Mosse & Tautz) *astringent, diuretic, antibilious & refrigerant*

Uses.—Berberine is used in disorders of the bile and urinary passages, especially in biliary and renal calculi congestions of the abdominal and pelvic cavities and rheumatism. It is specially valuable in scarlet fever and brain affections Largely used in the Punjab as a diuretic for relief of heat, thirst and nausea. In small doses it is a tonic, in large doses it acts as a purgative It was formerly used in jaundice [1] *Juice of Barberis* was esteemed by Paracelsus as an acid drink Osiander also used it as an excellent and refreshing thirst quencher In the old Egyptian medicine it played an important part

Chemistry of Berberine—Berberine $C_{20}H_{19}NO_5$ is one of the chief constituents of the following plants —

Berberis aristata, B asiatica, B coriacea, B lycium, B nepalensis, B vulgaris,

Argemone mexicana, Coptis teeta Toddalia aculeata, Coscinium fenestratum, Hydrastis canadensis,

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(1) Chopra's "I. D. of I." pp. 294 & 468.

Berberine is an intensely yellow and bitter alkaloid It is widely distributed in the root and bark and is the main source of the yellow colour of these plants Berberine crystallises from water in long, silky, reddish yellow needles with $5\frac{1}{2}$ H_2O, from chloroform it forms triclinic tablets containing 1 $CHCl_3$ the acetone compound, B C_3H_6O, forms reddish yellow tablets Berberine melts at 144°C and when acidulated with sulphuric acid in a test tube and brought in contact with chlorine water it gives a blood red ring at the junction It precipitates with nearly all the alkaloid precipitants

Berberine base dissolves in 4 5 parts of water at 21°C A number of salts such as the carbonate sulphate, hydrochloride etc have been prepared They all have a yellow colour and are very sparingly soluble in water except the acetate and the phosphate which have a solobility of 1 in 15 parts of water The solubility of the sulphate is 1 in 150 but the acid sulphate is more soluble the hydrochloride is soluble 1 in 400 parts of water The solubility in water increases on warming the solution or on the addition of alcohol and benzol

(Chopra s I D of I pp 296)

Pharmacological Action of Berberine—Berberine is not a very toxic alkaloid its minimum lethal dose for rabbits being about 0 1 gm per kilogram of body weight when administered subcutaneously When administered intravenously to cats and dogs under lurethane anaesthesia its toxicity is about 0 025 gm per kilogram of body weight Post mortem examination of animals which are given lethal doses of the drug shows a marked congestion of the lungs and a wide dilatation of the auricle Berberine is absorbed fairly rapidly when given by subcutaneous and intramuscular injections and does not set up any marked local reaction even when a 10 per cent solution is injected When the alkaloid is given by the mouth it can be detected in the urine within a few hours showing that it is absorbed from the gastro-intestinal tract and is excreted through the kidneys A portion of it is however oxidised in the body

Berberine has a stimulant action on the movements of the gastro-intestinal tract The contract ons of the stomach in an unanaesthetised cat are increased by subcutaneous injections of berberine In travenous injections of small doses of the alkaloid in anaesthetised animals, e g, the cat and the dog show stimulant action the movements of the small intestines Perfusion experiments with pieces of

tion with opium As a local application it is used for indolent ul cers It has also been recommended for gastric and duodenal ulcers

Malaria —Berberine and its compounds are reputed to have effective antiperiodic properties and have been used by Indian physicians in the treatment of malaria for a long time Lt Col Chopra has used berberine sulphate in patients suffering from malaria at the Carmichael Hospital for Tropical Diseases, Calcutta The drug was administered in 3 to 5 grain doses three times a day for three consecutive days, but there was no change in the paroxysms and microscopical examination showed no change in the number of malarial parasites

In a series of 9 cases which were tested, in no instance was there any change in the signs and symptoms of the patients All infections whether those with P malariae, P vivax or P falciparum remained unaffected by the alkaloid Quinine administration in these patients had the desired therapeutic effect It will be seen, therefore, that the belief that berberine is useful in malaria is not founded on facts

There is still another use of berberine in malaria not as a curative agent but as a diagnostic measure It is said to liberate the parasites into the circulation so that, whereas blood films taken before the administration of berberine are negative, those taken after it are positive Sabastine (1926) used berberine as a provocative agent for the diagnosis of latent malaria Percy Andre (1927) advocated the hydrochloride in cases of malarial splenomegaly Chopra (1927) showed that injections of pentavalent compounds of antimony produce an increase in the volume of the spleen and the liver Besides this the rhythmic contractions of these organs are stimulated The spleen is known to act as a filter to remove micro organisms such as bacteria and protozoa from the blood stream and malarial parasites occur in large quantities in this organ Berberine has been shown to increase the volume of the spleen and to increase its rhythmic contractions It will, therefore, expel malarial parasities into circulation in the same way as Chopra and Das Gupta (1928) have shown that injections of antimony compounds expel the leishmania

Oriental Sore —The most important use of berberine is, however, in the treatment of oriental sore Jolly in 1911 first tried 'rasaut', which contains large quantities of the crude alkaloid, in

Parts Used —Bark, root and leaves

Constituents —Leaves contain a volatile essential oil, resembling the oil of Aegle marmelos a resin and a crystalline principle glucoside named *Koenigin* seeds yield an oil, whose properties are not yet ascertained

Action —Leaves bark and root are tonic and stomachic Root is slightly purgative

Preparations —Infusion and decoction

Uses — Infusion of the *root bark* or of the *leaves* is useful in vomiting Green tender leaves are eaten raw for the cure of dysentery When boiled in milk and ground they form a good application to poisonous bites and to eruptions Decoction of the leaves is given with bitters as a febrifuge in fevers Leaves are popularly used for flavouring curries and condiments

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341 BERTHOLLETIA EXCELISA

(N O —Myrtaceae)

Habitat.—Seeds of this plant, called Brazil Nuts, grow wild in the forests of Brazil In India they are grown in southern parts of Konkan

Uses.—They are a useful food medicine in cases of constipation and piles One pound of the nuts yields eight ounces of kernels and these contain five ounces of oil, remaining substances consist of proteids and some mineral matters Brazil nuts are laxative, therefore not more than two ounces of the kernels should be eaten at one meal If they are well masticated they will not disagree Kernel of the nut is an excellent substitute for suet and may be used for cakes and fruit puddings in the proportion of 1 part of the kernels to three parts of flour Bean and Brazil nut *puree* is made by cooking beans, passing them when tender, through a sieve and adding to them kernels of the nuts (1 to 8 parts of the beans) and reboiling the whole for half an hour

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342 BETA BENGALENSIS, Roxb

(N O —Chenopodiaceae)

Sans —Palanki *Hind* —Palak. *Ben* —Bit palang

Action.—Seeds are cooling and diaphoretic

Parts Used —Bark, root and leaves

Constituents.—Leaves contain a volatile essential oil, resembling the oil of Aegle marmelos a resin and a crystalline principle glucoside named *Koenigin* seeds yield an oil, whose properties are not yet ascertained

Action —Leaves bark and root are tonic and stomachic Root is slightly purgative

Preparations —Intusion and decoction

Uses — Infusion of the *root bark* or of the *leaves* is useful in vomiting Green tender leaves are eaten raw for the cure of dysentery When boiled in milk and ground they form a good application to poisonous bites and to eruptions Decoction of the leaves is given with bitters as a febrifuge in fevers Leaves are popularly used for flavouring curries and condiments

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342 BETA BENGALENSIS, Roxb

(N O —Chenopodiaceae)

Sans —Palanki *Hind* —Palak *Ben* —But palang

Action.—Seeds are cooling and diaphoretic

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343 BETA MARITIMA, Linn

See B vulgaris

Sans—Palanki *Hind*—Palak. *Ben*—Bit Palang *Eng*—Country spinach, beet root

Action—Seeds are cooling and diaphoretic.

Uses—Leaves are used in burns and bruises

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344 BETA VULGARIS, Linn

(N O—Chenopodiaceae)

Eng—Garden Beet, Common Beet, Beet, Beetroot *Hind*—Chukander

Habitat.—A native of the sea coasts of the Mediterranean, now extensively cultivated in Europe and America, and is known as sugar beet It is also cultivated in gardens in many parts of India for the sake of its flesh roots and leaves There are two kinds—white and red

Parts Used—Roots and leaves

Constituents—The beets owe their medicinal uses to an active principle *' betin"*

Action.—*Betin* is an active emmenagogue, it also acts as resolvent on the vitiated secretions of stomach and bowels, Dose is from 2 to 4 grains given thrice a day White beet is laxative and diuretic, red beet is emmenagogue

Preparations.—Infusion or decoction of the root & Betin, the alkaloid

Uses.—*Juice of the root* is sniffed up the nose for headache and toothache, juice of the white beet is good for liver Applied to the temples it stops inflammation of eyes Mixed with oil and alum it is good for burns A decoction of the root is given in doses of half to one tumblerful at bedtime or early morning an hour before breakfast, in cases of habitual constipation and haemorrhoids with much benefit The red beet is valuable in uterin diseases *Externally* the decoction with a little vinegar added heals the itch, cleanses scurf and dandruff from the head and is excellent for all kinds of ulcerous and running sores *Dietetically* the beets (roots) baked or boiled are used as a salad in England and as a common table vegetable in France,

Germany and India *Leaves* of the white variety are used as a pot herb and substitute for spinach

(Chopra s I D of I ' pp 468)

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345 BETULA ALBA, Linn.

(N O—Cupuliferae)

Eng—White birch bark

Habitat—Though a native of Russia, this is cultivated in India

Constituents—Bark contains about 10% of tannin, and in addition a small quantity of a pleasant smelling volatile oil

Uses—Oil is used in chronic eczema. Leaves are used in rheumatism and dropsy

(Chopra s I D of I pp 468)

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346 BETULA ALNOIDES Ham

(N O—Cupuliferae)

Uses—Used in snake bites

(Chopra s I D of I pp 468)

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347 BETULA BHOJPATTRA Wall & B UTILIS

(N O—Cupuliferae)

Sans & *Beng*—Bhurjapatra *Hind*—Bhujpattra *Bom*—Bhoja patra

Constituents—Betulin essential oil

Action—Bark is antiseptic

(Chopra s I D of I pp 468)

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348 B DENS TRIFIDA, Buch

(N O—Compositae)

Uses—Used in chronic dysentery & eczema by the Chinese

(Chopra s I D of I pp 468)

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349 BIOPHYTUM CANDOLLEANUM, Wt

(N O —Geraniaceae)

Habitat.—Occurs in higher elevations of about 7000 feet in South India especially on the Western & Eastern Ghats

(Chopra s I D of I pp 468)

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350 BIOPHYTUM INTERMEDIUM, Wt

(N O —Geraniaceae)

Habitat.—Occurs in higher elevations of about 7000 ft in South India especially on the Western & Eastern Ghats

(*Chopra s I D of I pp 468*)

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350 A BIOPHYTUM SENSITIVUM or SENSILIUM, De

(N O —Geraniaceae)

Hind —Lajalu *Bom* —Lajri

Habitat.—A common weed found in wet lands in stony places in the plains of South India, especially on the Western and Eastern Ghats

Uses —Used in gonorrhoea and lithiasis

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351 BIXA ORELLANA, Linn

(N O —*Bixineae*)

Eng —Arnotta plant or Annatto (orange-red dye) *Hind* —Senduria, Gowpurgee *Ben* —Latkan, Watkana. *Assam* —Joland har *Uriya* —Gulbas *Chittagong* —Sowasi *Duk* —Shabke-pandeka Jhad *Bom & Mah* —Kesari, Shendri. *Tel* —Jaffrachettu *Tam* —Jaffra maram. *Mal* —Korangumunga *Can* —Kappumunkala, Ranga mali *Fr* —Rocou *Ger* —Achter Orbanbum.

Habitat.—Cultivated throughout India.

Parts Used —Seeds, seed pulp and root bark

Constituents — Seeds contain a yellow colouring matter, bixin [1]

Action —Pulp surrounding the seeds is astringent Seeds and roots are cordial, astringent and febrifuge. Root bark is anti periodic and antipyretic Fruit is astringent and purgative [2]

Preparations —Powder of the seed, pulp and decoction

Uses.— *Root bark* and the *seeds* form a very good remedy for gonorrhoea Root bark is of much use in uncomplicated intermit tent, remittent and continued fevers, as also the seeds in the form of decoction, it may be given during absence as well as presence of fever in intermittent cases *Seed pulp* is used by American Indians, to paint their body all over to prevent mosquito bites It is used as a remedy for dysentery Reddish waxy pulp covering the seeds is dissolved in water dried to the consistency of putty and made up into rolls and folded in leaves, and dried still more and made into cakes Yellow colouring matter contained in the seeds is employed as a dye Leaves are used in jaundice and snake bite [3]

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352 BLASTANIA GARCINI, Cogn

(N O —Cucurbitaceae)

Occasionally met with all over South India

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353 BLEPHARIS EDULIS, Pers

(N O —Acanthaceae)

Hind —Utanjan *Bom* —Utangan

Constituents —Crystalline bitter principle

Action —Resolvent diuretic, aphrodisiac and expectorant

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354 BLEPHARIS MOLLUGINIFOLIA, Pers.

(N O —Acanthaceae)

Common in South India

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355 BLUMEA AMPLECTENS, Dc

(N O —Compositae)

A common weed found in South India

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(1), (2) & (3) (Chopra's "I D of I" pp 468)

356 BLUMEA BALSAMIFERA, Dc and B *densiflora*

(N O —Compositae)

Sans —Kukundara, Kukkura dru (Dog bush) *Hind* —Kukronda, Kakoranda *Bom* —Bhamarnda *Ben* —Kukur soka, Kuksungh *Mal* —Sombong, Banga-chappa *Burm* —Pung ma theing *China* —Nagi

Habitat.—Tropical Himalayas, from Nepal to Sikkim, western part of Deccan plateau, and very abundantly in Burma B densiflora is a small bushy plant found in various parts of Assam the Khasia Hills and Chittagong

Parts Used.—Leaves and sometimes the herb

Preparations.—Both the species contain a volatile oil of the odour of worm wood, and a camphor known as *Nagi* camphor, it has the same physical properties as Borneo Camphor, but differs in optical properties

Action.—Astringent and anthelmintic sudorific, carminative and expectorant [1]

Preparations—Decoction of dried herb, powder of leaves

Uses.—*Externally*, fresh *juice* of the leaves is dropped into the eyes in chronic purulent discharges *Internally* the *decoction* is given for worms, in dysentery and chronic uterine discharges It is particularly useful in the disease of the nose called Ahwah peculiar to Bengal, and accompanied by strong fever, heaviness in the head, and pains in the neck, shoulders and loins *Powder* of leaves is given internally in two drachm doses mixed with butter, and is also used as a snuff

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357. BLUMEA BIFOLIATA, Dc.

(N O —Compositae)

Habitat.—A common weed found in South India

(Chopra's 'I D of I' pp 468)

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358 BLUMEA DENSIFLORA, Dc.

(N O —Compositae)

Burm —Pung ma theing

Constituents.—Essential oil, camphor

(Chopra's "I. D of I." pp 468)

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(1) Chopra's "I D of I" pp 468

359 BLUMEA ERIANTHA, Dc
(N O —Compositae)

Bom —Nimurdi
Action —Carminative sudorific

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360 BLUMEA LACERA, Dc & B aurita
(N O —Compositae)

Sans —Kukurandru *Hind* —Kukurbanda Divalimuli Kakronda *Ben* —Kukursunga, Kuksung *Bom* —Jangalimuli, Nimurdi *Mah* —Bhamaburada *Guj* —Kalara Chancharamari *Arab* —Kamaphilusa *Tam* —Nirak kurandai, Kattumullangi
Habitat — Found in Eastern part of India
Parts Used —Whole plant.
Constituents —See preceding species
Action —Aromatic astringent stomachic antispasmodic, emmenagogue and diuretic
Uses — Similar to those of the preceding ones It is very useful in various catarrhal affections It is used to drive away flea as it is highly odorous (Thirty species of Blumea are uninvestigated)

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361 BLUMLA WIGHTIANA, Dc
(N O —Compositae)

A common weed in South India

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362 BOCAGLA DALZELLII, Hkf & Thoms

Bom —Andi
Constituents —Glucoside
Action — Leaves are bitter and pungent
Uses — Leaves are used in fermentation
(Chopra s I D of I pp 468)

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363 BOERHAAVIA DIFFUSA, Linn
or B erecta or B procumbeno or B repens
(N O —Nyctagineae)

Sans —Punarnava, Shothughni (cure for dropsy) *Eng* —Spreading hog weed *Hind* —Beshakapore, Gadhapurna, Thikri, Sant

Ghoshal, who used an aqueous extract of the whole drug in his experiments came to following conclusions —The active principle is a diuretic chiefly acting on the glomeruli of the kindneys through the heart, increasing the beats and strength, and raising the peripheral blood pressure in consequence On the cells of the tubules it exerts little or no action, and if any, it is initial and comparative On the respiration it has little or no action, any action is probably due to the fatty principle found in the weed On liver, the action is principally secondary, and in combination with other drugs On other organs the drug has practically no effects [1] In the experimental work by Lt Col Chopra and his co-workers, the hydrochloride of alkaloid was used and their conclusions were as follows —

It has little or no irritant action on the intact skin and mucous membrane Subcutaneous injection does not set up any marked local reaction it has a somewhat depressing action on the tone and peristaltic movements of isolated pieces of the intestine from the rabbit, Intravenous injection of the alkaloid stimulates the respiratory movements in experimental animals, but there is no relaxation of bronchial muscles such as occurs with adrenaline The blood pressure shows a distinct and persistent rise which is probably due to the direct action of the drug on the heart muscle The diuretic effects were investigated in the cat and the dog, intravenous injections in such animals where the flow of urine is being recorded by a cannula into the ureter showed a marked increase in the flow of urine That the diuresis was not entirely due to the rise of blood pressure was shown by giving 1/20 c. c of 1 in 1000 adrenaline solution intravenously it was observed that, although there was a much bigger rise of blood pressure, the diuresis was comparatively much less marked It may be concluded, therefore, that the effect of the alkaloid is probably chiefly on the renal epithelium That the alkaloid is not very toxic was shown by the fact that large doses given to animals produced no untoward effects. [2]

Preparations.—Powder, paste oil, decoction or infusion (1 in 20) and electuary

Uses.— The white variety is efficient in oedema, anaemia, heart disease, cough and intestinal colic. (Dhanwantari Nighantu) The red variety is beneficial in oedema haemorrhage, anaemia and biliousness. In 'Rajnighantu the white variety is recommended in diseases

(1) & (2) Chopra's "I D of I pp 300 to 305

of the nervous system, and in 'Bhavaprakash' in heart disease and piles Charaka used it in the form of an ointment in leprosy and skin diseases, and as a decoction in stone in the kidney and in oedema Local applications of the root paste have been recommended in oedematous swellings Sushrata mentions its use in snake-poisoning and rat bite infection Chakradatta used it in the treatment of chronic alcoholism and various other writers recommended it in phthisis, insomnia, rheumatism and diseases of the eye The Tibbi physicians lay stress on its use in asthma, jaundice and ascites, and mention its diuretic properties They also use it as a vermifuge and febrifuge and in urethritis [1]

Lt Col Chopra and his co workers carefully tried in a series of 34 cases, the liquid extracts made both from the dry and fresh plant (white variety) in patients suffering from oedema and dropsy due to various causes, and found them to be equally efficacious. One c. c. of the extract was equivalent to 1 gm of the dried plant and this was given in doses ranging from 1 to 4 drachms The amount of the alkaloid in such doses worked out to be 0 35 to 1.40 mgm or roughly 1/40 to 1/160 grain The total amount of potassium base (not salts) in similar doses would be 1 5 to 6 0 grains and of this potassium nitrate would be ½ to 2 grains Excepting an occasional purgative no other drugs were given whilst the extract was being administered In cases of ascites due to early liver and peritoneal conditions the drug appears to be very beneficial It produced a very marked and persistent diuresis and in some cases the ascites entirely disappeared The diuretic effect though not so marked, was produced even when the abdominal fluid was not removed by preliminary tapping and the kidneys were working under a disadvantage If the tension inside the abdomen was high and the urine was scanty and albuminous the drug failed to produce an effect unless the ascites was previously relieved A number of the patients on whom the drug was tried were either complicated with Kala azar or the dropsical condition was not marked until the treatment with antimony injections was given simultaneously It may be argued that the beneficial results in these cases were entirely due to the effect of antimony injections but it was found that such marked diuresis is as a rule, not caused by antimony alone In some of the cases the amount of urine was two to three times the normal quantity secreted

(1) Chopra's "I D of I" pp. 300 to 303

in healthy individuals, and this increase was maintained even when the ascites and oedema had disappeared and after the antimony injections were stopped As a matter of fact ascites in cases of Kala azar is not a common condition and when it appears is usually terminal The drug acts best when the dropsical condition is associated with healthy kidneys as in Kala azar or ascites caused by dysenteric conditions Diuresis though it does occur in patients with copious albumin in their urine is often not so marked As regards dropsy due to cardiac conditions its effect does not appear to be very marked In such cases digitalis or the ephedrine group of drugs are much more efficacious In ascites with advanced structural changes in the liver kidneys and peritoneum, only temporary benefit can be expected but even in such cases the condition is greatly improved In a certain number of cases the quantity of urine decreased somewhat after prolonged administration of the drug for a period of 4 to 6 weeks and it was thought that perhaps this was due to the toxic effect of the drug To test this point, 2 to 3 drachms of the extract were given 3 times a day for over 2 months to several cases It was observed that the quantity of urine passed did not materially alter and in some cases the diuretic effects were maintained even after the drug was discontinued In one case, the diuresis was maintained for nearly six weeks after the administration was stopped When the liquid extract is used the presence of a large amount of potassium salts no doubt reinforces the action of the alkaloid The drug appears to exert a much more powerful effect on certain types of ascites, i e, those due to early cirrhosis of the liver and chronic peritonitis (Hale White) than some of the other diuretics known [1] The drug is an antidote to snake venom

The drug is given in conditions where there is lessened secretion or where increased secretion of kidney is wanted, thus in all renal affections stopping secretion of kidney, in ascites either from cirrhosis of liver or heart or kidney As it increases the systole of the heart it is useful in all stenosed conditions of the valves Where there is dropsy and ascites due to weakness of heart this drug does much good by relieving the circulation through the kidney In pleurisy and some such conditions of accumulation of fluid in the cavities, the drug is useful as it increases the quantity of urine *Juice of the leaves* is used in hepatic disorders as jaundice, with honey

(1) Chopra's I D of I PP 300 to 305

it is dropped into the eyes in chronic ophthalmia *Root* is used in *powder* in drachm doses or *decoction* or *infusion* as *laxative* As diuretic it is useful in strangury, gonorrhoea and other internal inflammations, in moderate doses it is successful in asthma, in large doses it produces vomiting on account of its emetic properties In dropsy the *decoction* of the root is administered together with powdered chiretta, ginger and about 25 grains of nitrate of potash; it is also applied externally In mild cases a dish of the fresh herb boiled, salted and eaten with bread (*chappaties*) together with any other medicinal treatment does give much relief Following is the method of preparing an Ayurvedic remedy known as "*Punarnavas taka*" —Take of *punarnava* root, nim bark, leaves of Trichosanthus dioica, ginger, Picrorrhiza kurroa, chebulic myrobalan *gulancha* and the wood of Berberis asiatica, quarter of a tola each, water 32 tolas; boil together till reduced to one-fourth This decoction is given in general anasarca with ascites, cough, jaundice difficulty of breathing etc (Chakradatta) An *oil* called "*Punarnava Taila*" prepared from the root and a number of useful aromatics in the form of a paste is rubbed on the body in general anasarca complicated with jaundice (Sarakaumudee) Bhavaprakash gives an electuary under the name of *Punarnava leha* It is prepared with a decoction of the root and a number of other ingredients and is used in strangury or scanty urine A *paste* made of the root together with Colchicum Solanum nirgum, Tamarind stone stag's horn and dried ginger all equal parts is an application to rheumatic and gouty painful joints Root of the *B repens* is an ingredient in the preparation of *surma* an application to eyelids

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363 A BOLETUS CROCATUS, Batsch

See Agaricus ostreatus Fungus

Ind. Bazar —Phausamba

Uses —Used in excessive salivation, diarrhoea and dysentery

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364 BOMBAX MALABARICUM, De or B heptaphylla.

See also Eriodendron anfractuosum

(N O —Malvaceae)

Sans —Rakta shalmali, Mahavriksha, Panchpatni *Eng* —Silk Cotton Tree *Hind* —Nurma, Deokapas, Huttian, Shimal. *Ben* —Ruktasimal, Shimul *Tel* —Mundlaboorugachettu Poor, Kondab-

uraga, Patti *Tam*—Elevam, Mul ilavan *Can*—Boorugada mara. *Duk*—Lal katyan *Mal*—Mullulavamarum, Samparuthi, Poola. *Kon*—Savarikappusu. *Bom*—Shembal Savari *Guj*—Ratoshemalo *Mah*—Tambdi savaru *Gualior*—Semal moosali

Habitat—Throughout the hotter forest regions of India Cultivated also in gardens

Parts Used—Gum seed, leaves, fruit or capsule, tap root, bark, cotton and flower

Constituents—Seeds yield a good non drying oil Gum called *Mocharas* or *Supari ka phul* contain tannic and gallic acids

Action—Gum is astringent and styptic Tap root especially of the young plant is demulcent, tonic, slightly diuretic and aphrodisiac. Bark is demulcent, diuretic, tonic and slightly astringent Bark and the root are emetic Roots known as *Musla* or *Semul Musla* have stimulant and tonic properties Flowers are laxative and diuretic

Uses.—Fine Shalmali choomam is used as a surgical dressing after cleaning, of wounds *Gum* is useful in doses of 20 to 40 grains in diarrhoea, dysentery menorrhagia and other affections in which astringents like kino and catechu are useful *Leaves* ground and mixed with milk are given for strangury *Petals* squeezed and soaked in human or cow's milk form a soothing application for conjunctivitis of infants. Leaves ground into paste are applied to skin eruptions *Tap root* is used for gonorrhoea and dysentery Dry *young fruits* are beneficial in calculous affections and chronic inflammation and ulceration of the bladder and kidneys including strangury and all other forms of dysuria except those depending on mechanical causes Fruits are also useful in weakness of the genital organs and in most of the disorders in which gentian and calumba are resorted to *Seeds* have good effect in gonorrhoea, gleet, chronic cystitis consumption and catarrhal affections especially when combined with half the quantity of cumin and anisi seeds and an eighth part of siliceous secretion of Bamboo *Cotton* is employed *externally* for its mechanical properties (softness and elasticity) in padding splints and covering burnt and inflamed surfaces Dry *flowers* with poppy seeds, goat's milk and sugar are boiled and inspissated and of this two drachms are given three times a day in haemorrhoids *Bark* is used externally in inflammations and cutaneous eruptions in the form of a paste The drug is used in snake-bite also. In the dysentery of children the following Ayurvedic preparation is used.—Take of *mocharasa* flowers of Woodfordia flori

bunda. root of Mimosa pudica and the filaments of the lotus, equal parts, in all one tola, powdered rice one tola, water 11 tolas and boil together to the consistence of a gruel (Bhavaprakasa). In the dysentery of adults a decoction of *bela* fruit in goat's milk is given with the addition of powdered *Mocharasa* and *Indrayava* seeds (Chakradatta) Following are a few very useful home remedies —(1) Take of *Mocharasa* 1, and *Indrayava* 2 parts, Mix and make a powder Dose —5 grs given in dysentery It is swallowed with a draught of the decoction of *Bela* (2) Take of *Mocharasa* 2, poppy seeds 3, *Utakan taka* or *Brahmadandi* dried leaves 4, seeds of Mucuna pruriens 3, Asparagus adscendens 5, *Satavari* 4 and gum of Pistacia Lentiscus 5 parts Mix and make a powder Dose —10 to 15 grains Given in seminal debility (3) Take of *Mocharasa,* Bael fruit, kernel of mango-seed or stone each 1 drachm and opium 5 grains Mix and make a powder Dose is from grains 20 to 40 Useful in dysentery and dysenteric diarrhoea

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BOMBAX PENTADRUM *See Erodendron anfractuosum*

362 BONNAYA VERONICAEFOLIA, Spreng.

(N O —Scrophulamneae)

Habitat —Abound in paddy fields of South India

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363 BORAGO OFFICINALIS

Habitat — Grows in hill stations in India, this is an annual, a native of Europe

Uses.— Leaves and flowers are used frequently as an ingredient by Europeans, in claret cup

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364 BORASSUS FLABELLIFER, Linn.

(N O —Palmae)

Sans —Tala *Eng* —Palmyra palm, Brab tree *Hind* —Taltar, Tal, Tari *Guj* —Tad *Ben* —Tal *Mah* —Tad, Talatmad *Kon* —Talatmaddo *Tel* —Tatichettu. *Tam* —Panaimaram. *Mal* —Talam, Pana *Can* —Talimara *Pers* —Darakhte-tari. *Santal* —Tale *Sinh* —Tal *Burm* —Tan

Habitat —Grows on dry soils or sandy localities along river banks, throughout tropical India especially in South India

Parts Used — Root flowering stalk, juice, bark and fruit

Constituents — Gum fat and albuminoids

Action —Root is cooling and restorative, juice is diuretic, cooling, stimulant and antiphlogistic when fresh, pulp from the unripe fruit is diuretic, demulcent and nutritive, terminal buds are nutritive and diuretic

Preparations —Palm juice and palm wine, confection, sago from the trunk poultice pulp ashes of the flowering stalk and decoction

Uses — It is from the juice of this tree that toddy, jaggery and country-sugar are prepared in large quantities in Southern India Sugar candy produced in the manufacture of sugar from the palm is used in cough and pulmonary affections Fresh saccharine juice obtained by excision of the spadix (young terminal buds) early in the morning is cooling and is a stimulant beverage, also acts as a laxative taken regularly for several mornings, it is useful for inflammatory affections and dropsy, also in gastric catarrh and to check hiccup, as diuretic it is useful in gonorrhoea Decoction of the root is also used in gastritis and hiccup [1] Slightly fermented juice called *Tari* (toddy) an intoxicating liquor, is a favourite drink among the labouring classes is given in diabetes With aromatics it is a good tonic in emaciation or phthisis *Milky fluid* from the immature fruits is a sweet and cooling drink, and checks hiccup and sickness *Toddy poultice* prepared by adding fresh drawn toddy to rice flour and subjected to a gentle fire till fermentation takes place, then spread on a cloth forms a valuable stimulant application to inflamed parts gangrenous and indolent ulcers, carbuncles etc Yellow *pulp* surrounding the ripe nuts is sweet but heavy and indigestible *Ashes* of the flowering stalk are useful in enlarged spleen *Bark* of the tree burnt reduced to charcoal and pulverised makes a good dentifrice, decoction of the bark with a little salt added to it is a good astringent gargle for strengthening gums and teeth The palm yields a fruit which is eaten with much relish

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(1) & (2) Chopra's I D of I pp 568

365 BORREIRIA HISPIDA, K Sch

(N O —Rubiaceae)

Tamil—Thathara.

Habitat.—A weed found in dry cultivated fields

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366 BOSWELLIA GLABRA, Roxb

B *thurifera* or B *serrata*.

(N O —Burseraceae)

Sans—Kapitthaparni Konkanadhoopam, Salakhi, Guggul *Eng*—Indian olibanum or Frankincense *Fr*—Boswellie-dentelee *Ger*—Indrscherweihrauch baum. *Hind*—Lobhan, Gugal *Ben*—Guggul, Luban, Salai Kundre *Guj*—Dhup-gugali *Mah*—Pahadi dhup, Visheshdhup *Tel*—Parangi sambrani *Tam*.—Kundrikam *Mal*—Sambrani *Can*—Guggula *Kon*—Vishesha dhoop *Duk*—Kundur *Bom*—Gandhabiroz

Habitat.—Mountainous tracts of Central India and on the Coromandal Coast.

Parts Used.—Gum resin and oil

Action.—Resin is of a bitter balsamic odour when burnt and is used as refrigerant, diuretic, [1] aromatic, demulcent, aperient alterative [2] emmenagogue and ecbolic Oil called Olibene, is stimulant

Uses.—The fragrant *resin* is largely consumed as an incense in houses especially during religious ceremonies, as astringent in the form of ointment it is useful in chronic ulcers diseased bones, buboes etc in which it promotes absorption. The resin rubbed in cocoanut *oil or lemon juice is an application to foul ulcerations* The *gum is* used in rheumatic and nervous diseases scrofulous affections urinary disorders and in skin diseases generally combined with aromatics, mixed with ghee it is prescribed in gonorrhoea and in syphilitic cases, with cocoanut oil it is applied to sores and it stimulates the growth of hair, *internally* it acts as stimulant expectorant in pulmonary diseases in bronchitis etc. Mixed with gum acacia it is used as a corrective for foul breath If taken for a length of time in one ounce doses it is said to reduce obesity *The oil in 10 to 20 minim doses*

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(1) (Chopra's "I D of I pp 469)

is useful in gonorrhœa taken in demulcent drinks. Dose of the gum-resin is from 5 to 40 grains used in aphthæ, placenta previa, amenorrhœa, dysmenorrhœa, sore nipples, gonorrhœa and ringworm. As a slight hepatic stimulant it is used in jaundice not caused by mechanical obstruction and also in some chronic cases of diarrhœa, dysentery, dyspepsia and hæmorrhoids.

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367. BOSWELLIA SERRATA, Roxb.

(N. O.—Burseraceae)

Sans.—Shallaki. *Hind.* & *Ben.*—Luban.

Constituents.—Essential oil.

Action.—Diaphoretic, diuretic, emmenagogue.

(Chopra's "I. D. of I." pp. 469).

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368. BOTRYCHIUM LUNARIA, Sw.

Uses.—Used in dysentery.

(Chopra's "I. D. of I." pp. 469).

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369. BOUCEROSIA AUCHERIANA, Denc.

(N. O.—Asclepiadeae)

Action.—Bitter, tonic, febrifuge.

(Chopra's "I. D. of I." pp. 469).

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370. BOUCEROSIA UMBELLATA, W. & A.

(N. O.—Asclepiadeae)

Tam.—Kallimulayan.

(Chopra's "I. D. of I." pp. 469).

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371. BRAGANTIA TOMENTOSA, Blume.

(N. O.—Aristolochiaceae)

Action.—Emmenagogue.

(Chopra's "I. D. of I." pp. 469).

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372. BRAGANTIA WALLICHII, R. Br.

(N. O.—Aristolochiaceae)

Parts Used.—Root, leaves.

Action.—Sedative.

Uses.—Used in snake-bite.

(Chopra's "I. D. of I." pp. 469).

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373. BRAYERA ANTHELMINTICA, Kunth.

(N. O.—Rosaceae)

Hind.—Cusso.

Parts Used.—Dried flowers and tops.

Constituents.—*A*-and *B*-Kosin and Kosotoxin.

Action.—Anthelmintic.

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374. BRASSICA ALBA, Rabenh.

(N. O.—Cruciferae)

Sans.—Svetasarisha; Siddhartha. *Eng.*—White mustard. *Hind.* & *Guj.*—Sufedrai. *Pers.*—Sipandane-sufaid. *Ben.*—Dhop-rai. *Mah.*—Mohori-pandri. *Tam.*—Kadugu. *Mal.*—Vella-kadugu. *Tel.*—Avalu. *Burm.*—Kungziyan. *Cing.*—Rataba. *Fr.*—Moutarde Clanche. *Ger.*—Weisser-senf.

Habitat.—Extensively cultivated in India; indigenous to Western Asia.

Parts Used.—Seeds; powder of seeds and oil.

Constituents.—White seeds contain a bland fixed oil 23·25 per cent, a crystalline substance called "*sinalbin*,"; sinapin sulphocyanide, lecithin, mucilage (only in testa); myrosin a ferment; proteids, ash 4 per cent, consisting of the phosphates of potassium, magnesium and calcium.

Action.—Mustard flour is nervine stimulant, emetic and diuretic. In small doses it promotes digestion and removes flatus. In large doses it is stimulant, emetic and narcotic-poison when given with hot water. Volatile oil is stimulant, rubefacient and vesicant.

Preparations.—Poultice, plaster, and liniment, all for external uses; a medicated oil, called *Siddhartha ghrita*, which is used internally, dose:—half drachm.

Uses — Seeds are used externally like the ordinary mustard. Flower of this mustard made into a paste with water is applied as a stimulant *poultice or plaster* to the epigastrium in obstinate vomiting, cholera, etc.; to the chest in spasmodic whooping cough with difficulty of breathing and to the calf of the leg in cases of delirium, apoplexy etc. The interval of keeping the mustard plaster or poultice should not exceed 20 minutes. In cases of delicate women and children, thin muslin cloth should be laid between the skin and the poultice. The plaster and poultice are prepared in cold water. Mustard *seeds* are generally added to the foot-bath usually employed in cases of high fever; as hip-baths they are used in uterine derangements especially amenorrhoea, and dysmenorrhoea; in headache, cerebral congestion, in cardiac and chest pains mustard baths are locally applied, *liniment* is applied to swollen joints Oil from the white mustard is a good edible oil Seeds are beneficial when administered internally in cases of nervous diseases such as epilepsy, hysteria and are recommended to be given with *Brahmi ghrita* in such cases. Medicated oil called *Siddhartha ghrita* so administered in cases of epilepsy and hysteria has given benefit, dose —half a drachm. Often cultivated by Europeans to be used as a dry salad with cress It is only eaten in its very young state. Seeds are used in the preparation of the condiment called "mustard."

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375. BRASSICA BOTRYTIS.

Eng.—Knol Khol, Khol rabi. *Mah.*—Naval Kol.

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376 BRASSICA CAMPESTRIS, Linn

Var : B. sarson & B. Rapa, Linn.

(N. O —Cruciferae)

Sans —Raktasarshapa. *Eng.*—Rape seed; Turnip. *Hind.*—Shulgam. *Mah.*—Shiras, Shalgham.

Habitat & Varieties.—Belongs to the cabbage species Two varieties are grown in the Bombay Presidency; one called "*Gaj Sareh*" has white seeds, and the other "*Karo Sareh*" has black seeds and hairy leaves The variety Sarson; oil yielded by seeds of this on pressure is largely used in cookery. Oil of B. rapa is also called

' Rubsen Oil ' Though the seeds of B campestris, B rapus and B. rapa are very similar in shape and in colour colza seeds yield a greater proportion of oil

Parts Used —Thick fleshy underground stem or root, tender leaves and seeds

Constituents —About 35% of oil is obtained by expression from seeds Green tops contain potash Crude rape oil is dark brown in colour, but is refined into a clear yellow oil that possesses a characteristic harsh taste

Action —Turnip is aperient and diuretic, oil derived from the seeds is rubefacient

Uses — Mashed and mixed with bread and milk it makes an excellent poultice for indolent sores Green tops provide an excellent spring medicine Tender leaves and roots are generally used as a culinary vegetable in the form of soup, sauce, etc. Rapeseed oil, to a small extent, is used in cooking In India it is also mixed with Fuller s Earth and applied to the body, which strengthens before bathing, as a very good, cool substitute for soap Oil is used in skin diseases Pressed cake is suitable for feeding cattle, extracted cake is used for manure Used also in snake bite

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377. BRASSICA CAULOCARPA.

Eng —Cauliflower *Mah* —Fulvar

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378 BRASSICA JUNCEA, Coss

(N O —Cruciferae)

Sans—Rajika *Eng* — Common Indian or ' Brown" Mustard *Hind* —Rai , Sarson *Guj* —Sarsva , Rai *Ben* —Raisarisha , Sarisa. *Kash* —Asur *Tel*—Avalu *Tam* —Kadugu. *Can*—Sasivey *Mal* —Kaduka *Mah* —Pivali Siras , Mohari , Rayan *Smh* —Abba. *Kon* —Sasam

Habitat—Cultivated in many parts of India.

Parts Used —Seeds and oil.

Constitueots.—Seeds contain about 20 to 25 per cent of oil. An essential oil is also produced by the action of water.

Action —Whole plant possesses bitter aperient and tonic properties Oil is stimulant and counter irritant A hot mustard bath is an emmenagogue [1]

Uses — This Common Indian mustard is largely employed medicinally along with black mustard (Brassica nigra) [2] Mustard oil extracted from seeds is used as an *external* stimulant application in chest affections especially of children. It is also used for culinary purpose as a chief ingredient of the '*phodni*' or spiced boiled oil used to flavour most curries and vegetables [3] Oil combined with camphor forms an efficacious embrocation in muscular rheumatism stiff neck etc Mustard poultice of the *seeds* powdered and mixed with hot water or cold water forms an efficient counter irritant application i e as a blister in many inflammatory neuralgic affections in abdominal colic and obstinate vomiting *In no case the plaster should be in contact with the skin for more than ten minutes* [4] Seeds are also used in curries and relishes A teaspoonful or more of the powdered seeds mixed with water is given as an emetic in cases of drunkenness or in cases of poisoning and when it is desired to empty the stomach without causing depression of the system In cases of dengue fever also it is used with much benefit Leaves and green pods are eaten as vegetables

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379 BRASSICA NIGRA, Linn & Koch

(N O —Cruciferae)

Sans —Sarshapah *Eng* —Black mustard *Hind* —Kalorai, Banarsi rai Makra rai *Pers* —Sar shaf *Ben* —Krishnrai *Sind* —Ahur *Guj* —Rai *Tel* —Avalu. *Tam* —Kadagu *Mal* —Kaduka *Can* —Karisasivey *Mah* —Mohori *Bom* —Rai sarson *Hind* & *Kumaon*.—Kalisarson *Fr* —Moutarde noire *Ger*.—Schwarzary senf *Kon* —Kalen sasam

Habitat.—Largely cultivated in India for the fixed oil which it yields.

Parts Used —Seeds oil and leaves

Constituents.—Black mustard contains Myrosin a glucoside and Sinigrin (potassium myronate) 0 5 p c, which acted upon by water form sulpho-cyanide of allyl, which is the volatile oil of mustard It

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(1), (2) (3) & (4) Chopra s I D of I pp 569

also contains fixed oil 25 per cent sinapine sulpha cyanide, lecithin, mucilage, proteids and ash 4 per ceot Fixed oil obtained by expression contains glycerides of oleic, stearic and erucic or brassic acids It is yellowish green, oon drying, slightly odorous and of a bland mild taste It solidifies oo cooliog

Preparations —Mustard is the flour obtained by grinding the seeds Finest mustard is obtained from the small reddish brown seeds of B nigra, the larger yellow seeds of B alba yielding inferior qualities When ripe the seeds are threshed from the plants, ground between robers and pounded the resulting flour being sifted into various grades

Action —Externally oil is stimulant and mild counter irritant. Internally seeds are emetic In moderate doses they are digestive and laxative Seeds are also stimulant, rubefacient and vesicant '1 Leaves are pungent and stomachic

Uses — Powdered *seeds* combined with that of white mustard in the form of mustard flour is used as a simple vesicant and rubefacient. Mustard plasters are used in gout, sciatica, urticaria etc. Mustard poultices are useful in febrile cases and in inflammatory swellings, such as parotitis. Mustard is largely used as a digestive condiment *Leaves* are used as a pot herb *Expressed oil* is used as a diet, *externally* (locally) it is usefully applied in mild attacks of sorethroat, internal congestion and chronic mucular rheumatism Mustard is used in snake bite also

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380. BRASSICA OLERACEA, (var Bullatta gemmifera) or B sativa & B botrytus or B florida.

(N O —Cruciferae)

Eng —Cabbage, Brussels Sprouts *Hmd* —Kobi *Mah* —Knolkhol *Guj* —Pangoli *Tel* —Kosuguddae *Tam.*—Kovippu (Cauliflower) *Can* —Kobi gaddi *Hmd* —Phulkobee (Cauliflower).

Habitat, & Varieties —All the varieties of cabbage, cauliflower, Broccooli and Nolecole are produced from the wild cabbage—the Colewort which grows wild on hills In India they grow abundantly in high places like Khandala, Mahabaleshwar etc. ' A large number

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(1) Chopra s I D of I pp 46

of varieties of this the European cabbage, are grown in gardens of Bombay Presidency, such *as acephala*, Scotch Kail, borecole, *bullata*, the savoy cabbage, *gemmifera* Brussels Sprouts, *capitata* red and white cabbage (Drumhead and pointed head cabbage), *caulocarpa* the knolkhol or khol-rabi *botrytis* the cauliflower [1]

Constituents—Fresh vegetable contains 92 00 per cent moisture, and the completely dried material contains Ether Extract 3 00 per cent, Albuminoids 19 50 per cent (contg Nitrogen 3 12 per cent), soluble carbohydrates 61 38 per cent, woody fibre 8 87 per cent and Ash 7 25 per cent (contg sand 0 12 per cent) respectively [2] Cabbage contains a considerable amount of sulphur

Brassica Botrytis (Eng—Cauli flower) —The fresh vegetable contains 90 00 per cent moisture, Ether Extract 3 30 per cent Albuminoids 36 40 per cent (contg Nitrogen 5 80 per cent), soluble carbohydrates 41 30 per cent, woody fibre 10 50 per cent and Ash 8 50 (contg 0 100 per cent sand) per cent respectively [3]

Brassica Caulocarpa (Eng.—Knol khol) —The fresh vegetable contains 92 80 per cent moisture Ether Extract 3 19 per cent, Albuminoids 27 75 per cent (contg Nitrogen 4 44 per cent) soluble carbohydrates 47 12 per cent woody fibre 9 30 per cent and Ash 12 64 per cent (contg sand 0 139 per cent) respectively [4]

Uses—Juice of red cabbage (B Cumana or B Pubbra) made into a syrup is recommended for chronic coughs, bronchitis and asthma Raw cabbage (heart) after being thoroughly cleansed, can be eaten with advantage for worm troubles The smell in cooking cabbage is due to its sulphur contents Juice of white cabbage cures warts In Ireland cabbage leaves are used for sorethroat being tied round it Cabbage as well as cauliflower is mostly employed as culinary and dietetic article

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381 BRIDELIA MONTANA, Willd

(N O—Euphorbiaceae)

Hind—Kargnalia. *Assam*—Kausho

Action.—Anthelmintic, astringent

(Chopra's I D of I pp 469)

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(1), (2) (3) & (4) Bombay Govt Agri Dept Bulletin

382. BRIDELIA RETUSA, Spreng.

(N. O.—*Euphorbiaceae*)

Can.—Mulluhonne ; Mullugojal. *Mah.*—Asan. *Tam.*—Mulluvengai. *Hind.*—Khaja.

Habitat.—Growing in the North Kanara district of Bombay Presidency.

Action.—Astringent.

Uses.—Young foliage is liked by cattle. The succulent leaves have rich feeding value.

(Chopra's "I. D. of I." pp. 465).

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383. BRUNELLA VALGARIS, Linn.

(N. O.—*Labiatae*)

Punj.—Austakhadus. *Bom.*—Ustukhudus.

Constituents.—Bitter principle and essential oil.

Action.—Expectorant, antiseptic.

(Chopra's "I. D. of I." pp. 469).

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384. BRYONIA CALLOSA, Rottl.

(N. O.—*Cucurbitaceae*)

Action.—Anthelmintic.

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385. BRYONIA EPIGOEA, Rottl.

(N. O.—*Cucurbitaceae*)

Sans.—Mahamula ; Kadamba. *Eng.*—Bryoms. *Ben.* & *Hind.*—Rakas-gaddah. *Duk.*—Garajphal. *Pers.*—Lufa. *Tel.*—Nagadonda ; Akashagadda. *Tam.*—Akashakarudan. *Can.*—Akashgaruda-balli. *Mal.*—Kollan-kova-kizhauna ; Nagadonda. *Guj.*—Kadavi-nai-no-Kando.

Habitat.—A herbaceous climber met with in many parts of India from Punjab to Ceylon.

Parts Used.—Root.

Constituents.—A bitter glucoside "bryonin" ; starch, resin and mineral matters.

Action.—Alterative, tonic, anthelmintic, and aperient.

Constituents —Albuminoids 28 p c, mucilage 2 5 p c, oil, fibre and ash which is 3 5 p c Edible seeds furnish "cheroonjee or chironji" oil

Action —Demulcent & alterative, fruit is sweet and laxative, seeds are heating

Uses — Seed is palatable and nutritious when roasted It yields a gum useful in diarrhoea *Gum* with goat's milk is given for intercostal pains It is also used to flavour preserved preparations of milk such as *barfi, barundi, pheda, halwa* of the white gourd, preserved cocoanut sweets as *Khobripak* in Bombay Presidency *Kernel* is employed as a tonic, sometimes substituted for almond Kernels pounded into an ointment are applied in skin diseases to cure itch etc also to remove spots and blemishes from the face Oil extracted from kernels is used as a substitute for almond oil in medicine and confectionery It is also applied to glandular swellings of the neck *Fruit* is used by Hakims in tonic medicines and for applying to the tongue when inflamed or very hard It cures pimples, prickly heat and itch An emulsion is made of it, which contains almonds, dates without stones, seeds of cucumber and sesamum made into a paste in milk or water Dose is 2 to 4 drachms A powder made of the same ingredients, but without the use of milk or water, is prepared It is given in doses of ½ to 2 drachms in milk to cure neuralgic headaches and fainting

Bursera paniculata—See Canarium commune

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395 BUTEA FRONDOSA, Roxb & Koen

(N O —Papilionaceae)

Sans —Kinsuka, Palasa. *Eng* —Bastard Teak, (gum) Butea gum, Bengal kino *Hind* —Palas, Tesu, Chichra, Dhara, (gum) Chuniagond, Faras, Kankera, Tasu (dye) *Kon* & *Mah* —Palash, (flower) Murkampoo *Ben* —Palas, (gum) Kamarkas *Gwalior* —Beej Pak. *Guj* —Khakara *Pers* —Palah, Darakhate palasha *Tel* —Paladulu, Mooduga, Moduga (dye) *Tam* —Palasam, Murkampoo (dye), Murukkanmaram *Can* —Muttagamara, Muttuge (dye), *Mal* —Pilacham, Murukka maram *Fr* —Butee feu llue

Habitat.— Mountainous districts of India extending in the North West Himalayas as far as the Jhelum, and common all over Bengal and Southern India; Burma

Parts Used — Gum, seeds, flowers, bark and leaves

Constituents — Gum and bark contain kino tannic and gallic acids, 50 p c, soluble *mucilage* and ash 2 p c, on dry distillation it yields pyro-catachin Seeds contain fat (oil) 18 p c, water soluble albuminoid substances 19 p c, and glucose 6 p c, small quantities of a *resin* Leaves *contain a glucoside*. The *fat exists* in the form of a fixed oil called *moodooga* oil or Kino-oil The composition of this oil has been worked out by M C Tummin Katti and B L *Manjunath, Bangalore, (1929)* ' the physical and chemical constants of the oil are —Sp gravity 0 89 at 25°, refractive index 1 4650 at 25°, saponification value 174, iodine value 67 2, unsaponifiable *matter* 2 3 p c [1] *Acids isolated from the* oil —*Unsaturated* Oleic and linolic Saturated Palmitic and lignoceric acids fraction of mol wt 354 and 383 The orange-red flowers yield a yellow die

Action.—According to Chakradatta, the gum is astringent Seeds are laxative and anthelmintic Leaves as well as the flowers are tonic, astringent, aphrodisiac, depurative and diuretic

Preparations — Powder and Paste of seeds, Poultice

Uses — *Bark* furnishes a very important exudation which hardens into a red brittle resin known as *butea gum* or Bengal kino or *magugo* largely used as a *substitute for the Kino* ' in India and to a limited extent in Europe also '[2] Medicinally it is an excellent astringent similar to catechu but mild in operation and hence is better adapted to children and delicate females useful in diarrhoea and dysentery the dose of the powdered gum is from 10 to 30 grains, the addition of a few grains of cinnamon and a little opium (¼ to 1 grain) increases the efficacy In large doses of 30 to 40 grains the gum is useful in cases of phthisis and haemorrhage from the stomach and bladder Solution of the gum is applied to bruises and erysipelatous inflammations ringworms etc, as an astringent application *Fresh juice* is also applied to ulcers and relaxed, congested and septic sore throat internally it is given in diarrhoea, dysentery and phthisis As anthelmintic and aperient, Bhavaprakash recommends *raw seeds* to be given in powder, 10 to 20 grains or as paste with honey added (because the seeds are very unpleasant to take and often produce retching pain in the abdomen and occasionally vomiting and giddiness ')[3] thrice daily for three successive days (especially for ascaris

(1), (2) & (3) Chopra's I D of I pp 205/306

round worms) and followed on the fourth day by a dose of castor oil For this, the seeds are soaked in water, shells removed and kernel is powdered after being dried Some medical men consider that the seeds can be advantageously substituted for santonin against round worms "*Externally* the powder is a remedy for ringworm, it may be applied better in the form of a paste being pounded with lemon juice, also for herpes (Dhobis itch) *Externally* the leaves are used to disperse boils pimples buboes tumourous haemorrhoids, etc., and *internally* in flatulent colic, worms and piles *Flowers* also are useful Boiled in water and applied as poultice they disperse swellings and promote diuresis and menstrual flow, they are applied in orchitis Water in which flowers are boiled is given internally with nitre added in cases of difficult micturition in ½ to 1 ounce doses *Bark* is given with ginger in snake bites A weak decoction of the bark is useful in catarrh cold and cough Bark in pieces mixed with sugar candy and chewed relieves abnormal thirst Gum combined with other astringents and rock salt is recommended by Chakradatta, as an external application for pterygium and opacities of the cornea "*Moodooga oil* is said to be practically inert and does not possess any anthelmintic activity Active principle of the nature of alkaloid, neutral principal or glucoside could not be isolated from the seeds "

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396. BUTEA PARVIFLORA

(N O—Papilionaceae)

Is a climbing shrub found throughout India, distinguished by its very small flowers and whose gummy exudation is used in colic and hysteria.

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397 BUTEA SUPERBA, Roxb.

(N O—Papilionaceae)

Sans—Lata Palasa. *Ben*—Kimsuka or Palas lata. *Hind*—Kesu or Palas lata *Tam*—Kodi murukkan *Bom*—Palas-wel. Is a remedy for the poisonous bites of animals, its root is being used in combination with several other drugs, flowers yield a yellowish dye The *gum kino* of B superba 4 parts mixed with 1, 2 & 3 parts respectively of red sandal wood rock salt and chebulic myrobalans made

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(1) & (2). Chopra "I D of I" pp 305/306

into a powder, is recommended to be applied to pterygium and opacities of the cornea by ancient writers.

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398 BUXUS SEMPERVIRENS, Linn.

(N. O.—Euphorbiaceae)

Kash.—Chikri. *Punj.*—Papri.

Constituents.—Alkaloids buxine, para-buxine, buxinidine, buxinamine.

Action.—Wood is diaphoretic. Leaves are bitter, purgative and diaphoretic. Bark is febrifuge.

Uses.—Leaves are used in rheumatism and syphilis.

(Chopra's "I. D. of I." pp. 469).

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399. CACCINIA GLAUCA, Savi.

(N. O.—Boragineae)

Ind. Bazar.—Gaozaban.

Action.—Alterative, tonic, diuretic and demulcent.

Uses.—Used in syphilis and rheumatism.

(Chopra's "I. D. of I." pp. 470).

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400. CADABA FARINOSA, Forsk.

(N. O.—Capparidaceae)

Arab.—Asal; Sarah.

Parts Used.—Leaves.

Constituents.—An alkaloid.

Action.—Purgative, anthelmintic, antisphilitic, emmenagogue and aperient.

(Chopra's "I. D. of I." pp. 470).

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401. CADABA INDICA, Lamk.

(N. O.—Capparidaceae)

Eng.—Indian Cadaba. *Tam.*—Velivi; Viluttu; Manthak-Kaoroonthá. *Tel.*—Ada mocinika; Chekoradi; Chimarudu. *Arab.*—Asal; Sarah.

Habitat.—Western India, Karnatak and Ceylon.

Parts Used.—Leaves and flower buds

Constituents —Leaves contain a bitter alkaloid soluble in ether and alcohol, and two organic acids (one resembling cathartic acid), also nitrates and carbonates of lime Ash contains alkaline chlorides, sulphates and carbonates

Action — Stimulant, antiscorbutic and aperient, also emmenagogue and antiphlogistic.

Preparations – Decoction, Poultice and Oil

Uses — *Decoction of the leaves* (1 in 10) in doses of 2 to 4 ounces is given as anthelmintic for round worms *Juice of C trifoliata* (*Sans* —Balaya *Tam* —Manudukkurundu, Viluthi *Tel* — Chakonadi) is given in dyspepsia in children A decoction of the leaves combined with castor oil and turmeric is found useful in amenorrhoea and dysmenorrhoea With myrobalans and ginger or with senna and epsom salts it is given as purgative and antiphlogistic in syphilis scrofula and rheumatism *Externally*, leaves are used with the leaves of Odina wodier to relieve rheumatic pains and as *poultice* to boils to promote suppuration Leaves are used in preparing *medicated oil*

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402 CAESALPINIA BONDUC, Roxb

(N O —Caesalpiniaceae)

Sans —Latakaranja, Putikaranja, Kuberakshi *Eng* —Moluccа Bean Bonducella nut Physic nut, Fever nut *Hind* —Katkaranj, Katkaliji, *Mah* & *Bom* —Sagur ghota *Ben* —Dahara, Nata karanja, Natarphal *Duk* —Gutchha *Tel* —Gatchkaya, Yalakhi *Tam* — Kazhar Shikkay, Gajega Kalarkodi, Mulal, Kalangu *Mal* — Kalanchikuru *Can* —Gajikekayi *Kon* —Gajago *Guj* —Kakachia, Gajga. *Pers* —Khayahe iblis (Devil s testicle) *Fr* —Bonduc jaune Guilandina bonduc

Habitat.— A climbing shrub common throughout India, near the sea coasts, especially all over Bengal Bombay and whole of Southern India

Parts Used —Seeds or nuts, root bark and leaves

Constituents.— The cotyledons of the seeds contain, besides starchy matter, 25 13 p c of a fixed oil, 1 925 p c of a nonalkaloidal bitter principle soluble in alcohol and chloroform and called *Natin*,

Percentage of nut-oil yield is 60 80 , kernel yield 20% Glucoside from the oil-extracted kernel contains most of the sulphur of Bonducella nut It has a poisoning effect on the nickel catalyst The acids present are in the form of glycerides of oleic, linoleic, palmitic and stearic acids (S N Godbole, D R Paranjpe and J G Shrikhande, Nagpur)

Action.—Nuts and root bark are antiperiodic, antispasmodic, bitter tonic, anthelmintic and febrifuge Powdered seeds are tonic, febrifuge and antiperiodic Leaves are deobstruent and emmenagogue Root is a gastric tonic. "Ruphius called the seeds Frutex globulorum and says that they have anthelmintic properties and the leaves, roots and seeds are emmenagogue and febrifuge Seeds are considred in India and Persia to be 'very hot and dry' Fixed oil expressed from the seeds is emollient Yellowish white kernel contained in the shell is very bitter'[1] 'The non glucosidic bitter principle was passed through the usual pharmacological test but it was found to be inactive'[2]

Preparations—Powder, Oil and Ointment

Uses—*Seeds* or *nuts* and the *root bark* are valuable in simple, continued and intermittent fevers, asthma, colic, etc. Dose is 10 to 30 grains of the powdered seeds or kernel with an equal quantity of powdered black pepper seeds are febrifuge and anti periodic, and used in chronic fevers[3] Of the root bark the dose is 10 to 15 grains *Powdered seed* smoked in a *hucca* cures colic, mixed with warm butter milk and asafoetida it acts as tonic in dyspepsia *Burnt seeds* with alum and burnt arecanut is a good dentifrice useful in spongy gums gum boils etc A *cake* made of 30 grains of powdered kernel, the contents of an egg and fried in ghee is a valuable remedy, taken twice a day in cases of acute orchitis, ovaritis and scrofula. *Ointment* made from the roasted seeds with castor oil forms an excellent application to hydrocele acute orchitis and glandular swellings Seeds are useful for dispersing swellings, restraining haemorrhage and keeping off infectious diseases, are also roasted and powdered, and given internally in hydrocele and in leprosy A decoction of the roasted seeds is used against consumption and asthma."[4] Dr M C Tummin Katti, Bangalore, writes that the bitter principle 'Bonducin' in definite M P was administered to 8 cases of malarial patients out of which 6 recovered *Tender leaves* are efficacious in

(1) to (4) Chopra's "I D of I ", pp 307 308

disorders of the liver and the *oil* expressed from them is useful in convulsions, palsy and similar nervous complaints. Tender leaves boiled with castor oil or ghee and thickly applied on painful and swollen testicles are found to be very efficacious. Fixed oil expressed from the seeds is a remedy in discharges from the ear; is used as an embrocation in rheumatism, and to remove freckles from the face as a cosmetic.

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403. CAESALPINIA BONDUCELLA, Fleming.

(N. O.—Caesalpiniaceae)

Sans.—Kuberakshi. *Hind.*—Kat-karanj. *Ben.*—Nata-karanja. *Bom.*—Sagar-gota. *Tam.*—Gajega. *Kon.*—Gajago.

Action.—Antiperiodic, tonic.

Constituents.—A bitter substance, bonducin.

Uses.—Used for the same purpose as C. conduc; also in snake-bite.

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404. CAESALPINIA CORIARIA, Willd.

(N. O.—Caeselpiniaceae)

Bom.—Libi-dibi. *Tam.*—Shumak.

Parts Used.—Pods.

Action.—Pods are astringent, antiperiodic, tonic.

Uses.—Used in intermittent fever.

(Chopra's "I. D. of I." pp. 470).

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405. CAESALPINIA DIGYNA, Rottl. or C. oleo-perma

(N. O.—Caeselpiniaceae)

Hind.—Vakeri-mul. *Ben.*—Umul-kuchi. *Bom.*—Vakeriche-bhat; vakeri-mula. *Tam.*—Nuni-gatcha. *Tel.*—Nooniglika.

Habitat.—Eastern and Western Peninsula, Assam, Bengal, (especially in Chittagong), Burma, Eastern Himalayas and Ceylon.

Parts Used.—Roots.

Constituents.—Pod-cases have been found to contain all the tannin.

Action.—Astringent

Uses—Root in powder is given internally in doses of 1½ drachms mixed with milk, ghee, cumin and sugar in phthisis and scrofula, the powder is useful as astringent in diarrhoea and other chronic fluxes When sores exist it is applied externally as well A kind of tuberous swelling which is found on the root is preferred In some parts of Burma the root pounded and mixed with water is drunk as a febrifuge which has an intoxicating effect

(Chopra's I D of I' pp 470)

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406 CAESALPINIA NUGA, Ait

(N O—Caesalpiniaceae)

Tar—Kakumullu

Parts Used—Roots

Action.—Roots are diuretic, tonic

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407 CAESALPINIA PULCHERRIMA, Swartz

(N O—Caesalpiniaceae)

Ben—Krishnachura *Tam*—Ratnagandi, Mayilkonnai *Tel*—Thurai

Habitat.—Common garden plant in India

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408 CAESALPINIA SAPPAN, Linn.

(N O—Caesalpiniaceae)

Sans—Ruktamukta Pattanga *Eng*—Sappan wood, Brasiletto *Pers Ben Arab & Bom*—Bakam *Hind*—Bakam, Bakkom (dye) *Duk Guj and Mah*—Patang *Tel*—Bukkapuchettu, Bakam chakka, Vurthingi, Varattangi (dye) *Tam*—Parthangi, Vetteku, Vurthingi (dye) *Mal*—Chappanam *Can*—Sappanga, Pathangee (dye)

Habitat.—Small thorny tree found throughout Eastern and Western Peninsula.

Parts Used.—Wood

Constituents.—Red colouring matter—sappan red, gallic and tannic acids Sappan red resembles haematoxylin and is soluble in ether, alcohol and water, contains carbon 67 11 p c, hydrogen 5 43

p. c. and oxygen 27.46 p. c. Active principle resembles haematin and is said to be identical with brasilin. Resinous extract of Sappan contains a crystalline principle which, if distilled and fused with potash yields resorcin, essential oil.

Action.—Wood is a powerful astringent, emmenagogue.

Preparations.—Decoction or infusion, Paste and Extract. *Extract* from Sappan wood is made as follows.—The wood is either cut into pieces or pounded and then boiled in water from 5 to 8 hours. 12 chittaks of the wood are boiled in 25 seers of water till 10 seers remain. The solution is put aside, and the same wood is again boiled in another 25 seers of water down to 10 seers. These two resulting solutions are then mixed up and allowed to cool.

Uses.—Medicinally the wood is recommended as a substitute for logwood. It is used in infusion or decoction as an emmenagogue and also in atonic diarrhoea, dysentery, etc., also employed in some forms of skin disease, especially lichen, in the form of paste. *Gulal* which is made of arrowroot and the red colouring of Sappan wood is used in otorrhoea by being blown into the ear.

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409. CAJANUS INDICUS, Spreng. & C. bicolor and C. flavus.

(N. O.—Papilionaceae)

Sans.—Adhaki, Tuberika, Tuvari, Soopyah. *Eng.*—Pigeon Pea, Cadjan Pea, Congo Pea. *Hind.*—Tor, Arhar dal. *Punj.*—Pea. *Ben.*—Arhar. *Guj.*—Tuver, Dangri. *Mah.*—Tur. *Kon.*—Tor. *Tel.*—Kandulu. *Tam.*—Adagi, Tuvarai. *Mal.*—Adhaki, Tuvara Catjan. *Can.*—Togari.

Habitat.—Extensively cultivated throughout India, especially Southern India, as an article of food. White-seeded variety extensiv cultivated in Gujarat, and red or brown seeded variety genera cultivated in other parts of the Bombay Presidency.

Varieties.—Khandesh Red, Nadiad Red, Baramati White, B galore Red, Salam Red, Bangalore Variegated, Sambalpur Ar

Parts Used.—Seeds or beans and leaves.

Constituents.—This pulse which has three varieties viz. yel red and white, contains food elements.—nitrogenous matter or

fatty matter,, starch or carbohydrates, nutritive salts and watery matter.

" Analysis of Unsplit grains with husk :—

		Deccan.	*Gujarat*
Moisture	...	6.96	6 32
Ether Extract	...	2·50	1.50
* Abuminoids	...	19.57	20.75
Soluble carbohydrates	...	60.77	60.77
Woody fibre	...	6.70	6.40
**Ash	...	3.50	4.26
		100.00	100.00
Contalning Nitrogen *	...	3.13	3.32
Sand **	...	nil	nil

An Analysis of *tur* (split grain with husk removed) showed the following result .—

In Deccan Tur —Moisture 6 00 ; Ether Extract 1 60 , Albuminoids 21 12 (cont'g Nitrogen 3 38) ; Soluble carbohydrates 66 88 ; Woody fibre 1 10 and Ash 3 30 (contg Sand 0.43) per cent.

In Gujarat Tur —2. 52 ; 1 35 ; 22 89 (cont'g Nitrogen 3 66) ; 66 31 , 1 00 and ash 2 93 (cont'g Sand nil) per cent, respectively.

In Caunpore Tur .—6 64 ; 1 60 ; 19 93 (contg nitrogen 2 87) ; 67.47 , 1.40 , 2 96 (cont g sand trace).

Caunpore Tur White .—10 87 ; 1 46 ; 14 25 (cont'g nitrogen 2 28) , 63 68 ; 6 22 ; 3 50 (cont'g sand 0.05).

Caunpore Tur Red :—10.94 ; 1.03 ; 16 62 (cont'g. nitrogen 2 66) ; 62 92 , 4 76 ; 3 73 (cont g sand 0 05)."[1]

Action.—Pulse is nutritive ; but, 'hot & dry'. Of the 3 varieties, C. flavus (pigeon pea) is the best.

Uses.— " Green pods of tur are eaten as a vegetable. Ripe pulse is split and eaten boiled in a variety of ways Yellow split pulse or *dal* is in common use, being made into porridge and mixed with vegetables and is little less valuable than gram. "[1] This *pulse* is easily digested and therefore suitable for invalids ; but is regarded as hot and dry as it produces costiveness. It is largely used in preparing a *soup* widely appreciated by diaries, *but this soup is contra indicated in the " Pitta" and " Vayu Pitta" forms of diarrhœa. Leaves* are used in diseases of the mouth. Pulse and leaves ground into a *paste*, warmed

(1) Bom. Govt Agri. Dept Bulletin

and applied over the mamma has the effect of checking the secretion of milk. Tender leaves are chewed in cases of aphthae and spongy gums. *Expressed juice* of the leaves is given with a little salt in jaundice. A poultice made with the seeds will reduce swelling. The drug is used in snake-bite also. "Outer husk of the seed with part of the kernel, sold under the name of *chuni* (Marathi) is a favourite food for milch cattle. Leaves and pod shells are a valuable addition to innutritious fodder."[1]

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410. CALAMINTHA CLINOPODIUM, Benth.

(N. O.—Labiatae)

Arab.—Asaba-el-fatiyat.

Action.—Astringent, carminative and heart-tonic (Chopra's "I. D. of I," pp. 470).

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411. CALAMUS AROMATICUS ASIATICUS,

See Acorus calamus.

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412. CALAMUS DRACO, Willd.

(N. O.—Palmae)

Eng.—Dragon's blood. *Hind.* & *Bom.*—Hiradukh'.

Parts Used.—Dragon-gum.

Action.—Stomachic and astringent.

(Chopra's "I. D. of I," pp. 470).

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413. CALAMUS EXTENSUS & CALAMUS ROTANG, Linn.

(N. O.—Palmae)

C. Rotang.—*Sans.*—*Vetasa*; *Hind., Ben.* & *Bom.*—Bet. *Mah.*—Berisu. *Tel.*—Jatayurkuli. *Tam.*—Bettam. *Can.*—Betasu.

Habitat.—Former met with in Sylhet and the latter in tropical India (Central Provinces, Deccan, Karnatak and South India) and Ceylon.

Action.—Pulp of the *ripe fruit* surrounding the seeds is astringent.

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(1) Bombay Govt. Agri. Dept. Bulletin.

Uses.—Young shoots are eaten as a bitter tonic vegetable. The drug is used in snake-bite also.

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414. CALAMUS TRAVANCORICUS, Gedd.

(N. O.—Palmae)

Sans.—Vethra. *Tam.*—Pirambu.

Parts Used.—Tender leaves.

Uses.—Tender leaves are used in biliousness, worms, dyspepsia and ear-disease.

(Chopra's "I. D. of I." pp. 470).

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415. CALANTHE.

(N. O.—Orchideae)

Habitat.—This orchid is common on the hills as well as a avourite in green houses of cool places, in South India.

(Chopra's "I. D. of I." pp. 470).

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416. CALENDULA OFFICINALIS, Linn.

(N. O.—Compositae)

Punj—Zergul.

Constituents.—Salicylic acid, bitter substance-calendulin, essential oil.

Action.—Astringent, styptic.

(Chopra's "I. D. of I." pp. 470).

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417. CALLA AROMATICA, Roxb.

(N. O.—Aroideae)

Kuchoo gundubee.

Action.—Stimulant.

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418. CALLICARPA ARBOREA, Roxb.

(Chopra's "I. D. of I." pp. 470).

(N. O.—Verbenaceae)

Ben.—Khoja; makanchi. *Bom.*—Ghivala.

Parts Used.—Bark.

Action —Bark is aromatic, bitter, tonic, carminative

(Chopra's I D of I pp 470)

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419 CALLICARPA LANATA, Linn

or C wallichiana or C. cana or C. tomentosa

or C. Americana

(N O —Verbenaceae)

Ben —Masandari, Muttura *Hind* —Bastra. *Bom* —Aisar *Mal* —Tondi, Teregam *Tam* —Katkomal *Mah* —Pondi, Karavati, Isvar

Habitat —Deccan and Ceylon

Parts Used —Root, bark and leaves

Preparations —Decoction of the root and bark (1 in 20), dose — 1 to 2 drachms

Action —Refrigerant hepatic stimulant demulcent and emollient

Uses —Decoction of the root is given in cases of fever and to remove hepatic obstruction, also given in herpetic eruptions and skin diseases and used as a wash for aphthae in the mouth

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420 CALLICARPA MACROPHYLLA, Vahl

(N O —Verbenaceae)

Ben —Mathara *Punj* —Sumali

Uses —Used in rheumatism

(Chopra's I O of I pp 470)

(N O — Polygonaceae)

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421 CALLIGONUM POLYGONOIDES Linn.

Punj & *Bom* —Timi

(Chopra's I D of I pp 470)

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422 CALLITRIS INOPHYLLUM, Linn.

(N O —Guttiferae)

Sans —Punnaga *Hind* —Sultana champa *Ben* —Punnag

Bom —Undi *Tam* —Punnagam

Uses —Oil of seeds is a specific for skin diseases.

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423 CALLITRIS QUADRIVALVIS, Vent

(N O —Conifereae)

Uses.—Used in chronic diarrhoea.

(Chopra's I D of I " pp 470)

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424. CALLITRIS TOMENTOSUM, Wight

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425 CALOPHYLLUM INOPHYLLUM, Linn.

(N O —Guttiferae)

Sans.—Punnaga, Namaeruak, Panchakaeshera. *Eng*—Alexandrian Laurel ; Pannay tree *Hind*—Surpan, Surpunka, Sultan Champa. *Ben.*—Punnag *Bom*—Undi *Duk*—Oondi *Mah*—Undag, Punnag, Surangi, Nagchampa *Tel*—Pumagamu, Ponna vittulu, Ponnachettu *Tam*—Punnagum, Punnaviral. *Mal*—Cherupuna, Ponnakum, Betan *Can*—Surahonnae, Namaeru. *Cutch*—Udi. *Smb.*—Domba. *Kon*—Undee phal *Burm*—Pongnyet.

Habitat.—Near the sea-coast throughout India.

Parts Used.—Bark, seeds and leaves, bitter oil from the seeds and resin or gum

Constituents.—A resin of parsley odour and oil. Resin resembles myrrh and is soluble in alcohol Kernel of the seeds yields a dark yellow oil

Action.—Bark is astringent, its juice is purgative The oil is rubefacient and irritant, but on the mucous membrane of the genito-urinary organs it is a specific. Its use is only external Gum is emetic and purgative

Preparations.—Liniment and paste Paste is made by mixing together pounded seeds of *undi* seeds of cachew nut, borax and gamboge

Uses.—Oil expressed from the seeds (60 per cent) and known in Europe as the Domba Oil is a highly esteemed external application in rheumatism, also in gonorrhoea and gleet, it is also applied to scabies (itch) *Gum* exuding from the wounded bark is a remedy for wounds and ulcers *Bark* is used in *decoction* in internal haemorrhages and as a wash for indolent ulcers *Leaves* soaked in water

ure applied to inflamed eyes. Gum mixed with strips of bark at eaves is steeped in water and the oil which rises to the surface is an pplication to sore eyes. Oil expressed from the keroels of the seeds is used as a stimulant application in rheumatism

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426. CALOPHYLLUM WIGHTIANUM, Wall.
or C. decifient.

Is another species of the same genus known in Bombay as *Sarapuna* and in Madras as *Cherupinnay* and met with on the Western Ghats from Konkan to Travancore. The drug contains resin and bitter oil, and in action it is antiphlogistic and anodyne. Oil of the seeds is used in leprosy and cutaneous affections. Uses of this plant and its various parts and products are similar to those of the above Species.

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427. CALOTROPIS GIGANTEA, R. Br.
Syn—Asclepias gigantea.
(N. O.—Asclepiadaceae)

Sans—Arka; Alarka; Mandara; Surya pattra. *Eng.*—Gigantic Swallowwort; Mudar. *Hind.*—Madar; Ak. *Ben.* & *Bom*—Akanda. *Pers.*—Khok; Khark. *Guj*—Akado. *Mah.*—Ruvi; Akda; Akra. *Tel.*—Mandaramu; Ekke; Jilledu; Arkamu. *Tam.*—Badabadam; Erukku; Yercum. *Mal.*—Erikka. *Can*—Ekkemale. *Sind.*—Byclospa *Fr.*—Arbre-a-Soie.

Habitat & Varieties.—*This shrub abounding in milky juice, is found chiefly in waste lands in Lower Bengal, Himalayas, Punjab, Assam, Madras, South India, Ceylon, Singapore, Malay Islands and South China. C. procera and C. gigantea, both pass by the name of "Madar"; C. procera is the smaller of the two. "Two varieties of the plant are described by Sanskrit writers, viz; the white-flowered or "alarka" (probably C. procera) and the purple or red-flowered or "arka" (C. gigantea)."*[1]

Parts Used.—Root, root-bark, leaves, inspissated juice and flowers.

Constituents—Various principles of the Calotropis bark and sap are—"'Madar alban', 'Madar fluvil', closely resembling the alban-

(1) Chopra's "I. D. of I." pp. 309-311.

and fluavil found in gutta percha, [1] black acid resin, Caoutchouc (free), yellow bitter resins (active principles) Akundarin and Calotropin Quantitative experiments by Drs Hill and Sarkar have shown that the root bark from the older plants has a higher percentage of acrid and bitter resinous matters than that from the younger plants Therefore the older the plant the more active is its bark in its effects

The root barks of C gigantea & C procera are similar in appearance and occur in short pieces 1/8 to 1/5 inch thick and are said to contain no alkaloids [2]

Collection and Storage—For medicinal purposes the root bark should be selected from plants as old as possible in the hot or dry weather and the bark should not be removed as soon as the root is dug out but 24 hours afterwards the thick, rough corky, epidermis of the bark should be scraped off before the root bark is reduced to powder

Action—This drug is acting like digitalis on the heart The physiologically active substance is found in the milky juice of the plant The taste of the root barks of both varieties is mucilaginous and bitter and the odour is peculiar [3] Flowers are considered digestive stomachic and tonic [4] Hakims declare the juice as caustic a purge for phlegm, depilatory and the most acrid of all milky juices Root bark and juice have emetic diaphoretic alterative and purgative properties Root bark is alterative (promotes secretions) tonic, antispasmodic expectorant and in large doses emetic, as alterative 3 to 10 grains thrice daily and as emetic 30 to 60 grains This drug increases secretions (especially the evacuation of bile) and has a sedative action on the muscular fibres of the intestines (especially the colon and the rectum) allaying all pain tenesmus and irritation and thus relieving all dysenteric symptoms In syphilitic affections it is regarded as a great remedy so much so that it is called vegetable mercury In intermittent fevers it is used as antiperiodic and diaphoretic. Flowers are digestive tonic and stomachic, given internally in small doses the drug stimulates the capillanes and acts powerfully upon the skin it is therefore likely to be useful in elephantiasis and leprosy The benefit derived from the administration of the flowers in asthma is probably due to their nauseant action (Dr K. C. Bose) Milky juice is a violent purgative and gastro-intestinal irritant. It is used for criminal purposes for producing abortion or

(1) to (4) Chopra's "I D of I pp 309-311

causing the death of new born infants, by forcing it down the throat or applied locally, usually a stick smeared with the juice is pushed up into the os uteri and left there until uterine contractions are induced In some parts of India it is also used as a cattle poison [1] [2] All parts of the plant are considered to have valuable alterative properties when taken in small doses [2] Dose —Inspissated juice 1 2 grs Root bark 1 5 grs Juice of the leaves 1 to 5 drops

Action and Uses in Ayurveda and Siddha —Saram. Indications —Kushtum, visham, kandu, vranam, gulmam, arsas, kapodaram. *Flowers* —aphrodisiac, lagu, dipanam, pachanam, in aruchi, swasam, kasam *Red flowers* —Madhura rasam, tikta rasam, kaphaharm, grahi, in kushtam, arsas, krimi, in raktapittam, gulmam, sodam. *Milk* —ushnam, tikshnam, lagu, snigdam, virechanam, indication in kushtam

Action and Uses in Unani—Hot 4°, Dry 4°, caustic, balgham, piles, aches, skin, dropsy, anthelmintic Leaves and branches —Hot 3°, Dry 3°, resolvent, paralysis anasthesia, toxic asthma.[3]

Preparations—Paste or emulsion, Pills and powder of root and leaves Ash and fluid extract of leaves and Oil

Indian Preparations and their Uses —

(1) An oily preparation (*Arka taila*) made by boiling together 8 parts Sesamum oil, 16 parts Calotropis juice, and one part turmeric, is useful in eczema and eruptive skin diseases In scorpion and insect bites it relieves the pain and burning As a depilatory it is used by women for removing hair from parts of body It is a useful local application for the relief of painful joints and swellings, and for ringworm of the scalp In combination with the wood of Berberis asiatica it is used as a caustic for closing sinuses and fistula in ano

(2) Dried flowering tops 2 to 4 grains pounded and boiled with molasses, are given every morning as a remedy for asthma Fine powder of root bark is prescribed in cases of syphilis, lepra, hectic fever, etc. Dose from 3 to 5 grains three times in the day, gradually increased 2 drachms dried root bark are to be infused in half a seer of warm water In syphilis and lepra it is taken in dose of half a chattak (1 oz.)[1]

(3) Take equal parts of the branches, leaves, milky juice and flowers Press them well and make pills (of the size of a pea) and

(1) & (2) Chopra's "I. D of I" pp 309-311
(3) Therapeutic Notes.

dry them in the sun One pill given every morning in various kinds of skin diseases

(4) *For want of virility* —Take 125 flowers, dry and powder them, then mix with one tola each of cloves, nutmegs, mace and pellitory root, and make into pills of 6 massas each. One pill may be taken daily dissolved in milk. (Dymock)

Uses— An intoxicating liquor is said to be prepared from the juice of the plant. The sacred 'Soma' juice of the ancient Sanskrit writers has by many botanists been associated with a species of plant, belonging to a tribe not very far removed from Calotropis The plant is said by the Arabs and Persians to yield a sugar or manna, but no definite information regarding this property is available The manna said to be obtained from the plant is known in the bazar as 'Sakkur el ushar' and is said to be produced through the parasitic action of Larinus ursus [1] The drug is used in leprosy, constitutional syphilis, mercurial cachexia, syphilitic and idiopathic ulcerations, dysentery, diarrhoea and chronic rheumatism Root bark is useful in skin diseases, elephantiasis, enlargement of abdominal viscera, intestinal worms, cough ascites and anasarca etc. Root bark reduced to a paste with sour conjee (rice vinegar) is applied to elephantiasis of the legs and scrotum. Milky juice of C. gigantea and Euphorbia neriifolia, are made into tents with the powdered wood of Berberis asiatica, for introduction into sinuses and fistula in ano, it is also recommended for ringworm of the scalp, painful joints, swellings etc., to destroy piles, and is applied to ulcers to hasten their healing Mixed with honey it is used in aphthae of the mouth and with a piece of cotton wool it is inserted into hollow carious teeth to cure tooth ache, Hakim Mir Abdul Hamid strongly recommends it in leprosy, hepatic and splenic enlargements, dropsy and worms Milky juice is regarded as a drastic purgative and is generally used as such in combination with the juice of Euphorbia neriifolia [2] Dried juice is insoluble in water, it may be administered in the form of pills Root tied up for tertiary (intermittent fevers) or malarial fevers cures fevers rapidly Charaka recommended its root bark in piles, and leaves to cover boils. Sushruta mentions its use in ear ache, asthma, dog bite Vagbhatta used it in toothache Chakradatta used it in elephantiasis hydrocele and scorpion bite. Bhavaprakasa used it in enlargement of

(1) & (2) Chopra's "I D of I" pp 309-311

spleen Powder of the root bark is an excellent substitute for ipecacuanha in dysentery, in doses of 5 to 10 grains it may be safely substituted for ipecac, though double that quantity is generally required, with opium it forms a good representative of the official Dover's powder, in chronic rheumatism it is given suspended in mucilage and water, with black pepper twice a day in jaundice, given in half a seer of whey of milk with half a drachm of sodium carbonate, jaundice is cured within a week. Powdered root bark is smoked like tobacco in syphilis Bark, root and dried milky sap may be used in small doses in certain cutaneous affections, such as leprosy and secondary syphilis Root bark is administered to promote secretions, and is useful in enlargements of the abdominal viscera, intestinal worms, cough, ascites, anasarca, etc Powder of the root in 3 to 5 grains promotes gastric secretion and acts as a mild stimulant and may be given with carminatives in dyspepsia, it is also given as a febrifuge Tender and fresh leaves may be used along with ghee or tailams to cover inflamed areas according as the wound requires *Samana* or *Sodhana* treatment Fresh leaves slightly roasted, are also used as application to painful joints, swellings etc. Oil in which leaves have been boiled, is applied to paralysed parts Tender leaves are also useful in ascites and enlargement of the abdominal viscera —they are mixed with quarter the quantity of rock salt, roasted in closed vessels so that the fumes may not escape, and the ashes thus produced are given with whey A fluid extract of leaves (1 in 1) given in doses of 10 to 20 grains and in 1 to 5 drops in intermittent fever during intermission will cut off the paroxysm more effectually than quinine A powder of dried leaves is dusted on wounds and ulcers to destroy excessive granulation and to promote healthy action or mixed and boiled with sweet oil and turmeric added, it is applied to eczema, other skin eruptions, old sores and ulcers, and to paralysed parts This drug is employed to cure all kinds of fits epilepsy, hysteria, lock jaw, convulsions in children, paralytic complaints cold sweats, poisonous bites and venereal complaints. *Flowers* are used in cough, catarrh, asthma and loss of appetite. Dried flowers in 1 to 2 grain doses with sugar are given in leprosy, secondary syphilis and gonorrhoea with milk diet

428. CALOTROPIS PROCERA, R Br.

(N O —Asclepiadaceae)

Sans —Alarka *Hind* —Madar, Safed Ak, Ak *Ben* —Akanda *Punj* —Shakar al lighal *Mah & Bom* —Mandara *Tam* —Vellerku *Sind* —Ak *Afgh* —Spalwakka *Indian Languages* —Spulmei, Spal mak Pashkand (Trans Ind)

Habitat —North Western and Central India, from Sind, and the Punjab, Upper Bengal Bihar and Bombay, and the drier climate of the Deccan This is the smaller white-flowered variety

Parts Used.—Root, root bark, leaves, juice and flowers

Constituents (Chemical Composition) —The active principle is believed to be a yellow bitter substance which makes but a very minute percentage of the plant s tissue The latex contains a rennet ferment, which like those present in the fig papaw, etc., coagulates boiled milk more rapidly than raw milk and is very resistent to heat. Its action is inhibited by mercuric chloride, but not by salts of the alkali metals (J Ch S A II pp 977) The physiologically active substance is found in the milky juice of the plant, in which it may be preserved for years without fermentation The milk coagulates upon long standing or by the addition of alc or Me_2CO D—1062 reacts alk The white resin like ppt becomes hard in the air After washing, with alc H_2O and Me_2 Co there remains an ash free substance $C_{16}H_{27}O$ The resin free serum reacts alk, upon heating the protein is coagulated With HCL HNO_3 picric acid and salts of heavy metals, it gives a turbidity with NaOH a gelatinous ppt, and with alc $(NH_4)_2SO_4$ or NaCl a pptn of albumose-like protein compounds The active substance is found in the serum after freeing from resin, protein and sulphates Upon concentration it appears as a black, resin like mass, with a smell like coniine which causes head ache It is soluble in H_2O and dil alc, with green fluorescene Et_2O ppts from alc, a yellow—N—free mass, hygroscopic, reacts neutral, colour of H_2SO_4 solution is red The same product is obtained by centrifuging and conc of the serum and extraction with alc. or $CHCl_3$ The pharmacological action of the juice upon warm or cold blooded animals is like that of digitalis 0 02 0 04 G of the purified principle, injected subcutaneously, kills a rabbit in 30 minutes, a guinea pig in 15 minutes With pigeons, there results vomiting, in frogs 1 3 mg causes systolic arrest of heart action in 6 minutes. (Ch. Abs August 10, 1913, pp 2663)

The authors of the Pharmacographia state that by following the process of Duncan, 200 grammes of the powdered bark of C. gigante yielded nothing like his mudarine, but 2 4 grammes of an acrid resin soluble in ether and alcohol The latter solution reddens litmus, the former on evaporation yields the resin as an almost colourless mass When the aqueous liquid is separated from the crude resin, and much absolute alcohol added, an abundant precipitate of mucilage is obtained, and the liquid now contains a bitter principle, which after due concentration may be separated by means of tannic acid Similar results were obtained by exhausting the bark of C procera with dilute alcohol The tannic compound of the bitter principle was mixed with carbonate of lead, dried, and boiled with spirit of wine This after evaporation furnished an amorphous, very bitter mass, not soluble in water, but readily so in absolute alcohol The solution is not precipitated by an alcoholic solution of acetate of lead By purifying the bitter principle with chloroform or ether, it is at last obtained colourless This bitter matter is probably the active principle of Calotropis, we ascertained by means of the usual tests that no alkaloid occurs in the drug The large juicy stem, especially that of C. gigantea, ought to be submitted to an accurate chemical and therapeutical examination List's *Asclepione* (Gmelin's Chemistry XVII, 368) might then be sought for (Op Cit 2nd Ed, p 426), Drs Warden & Waddell (1881) commenced an examination of Madar root bark in Calcutta and obtained a substance crystallising in nodular masses, which they thought would prove to be the *Asclepione* of List, (Gmelin's Handbook XVII, p 368), but subsequently (1885), upon Warden continuing the investigation of the drug in the Chemical Laboratory of the Gesundheits Amt, Berlin he found the substance supposed to be Asclepione to have a composition corresponding with the formulae $C_{17}H_{28}O$, whereas List's *asclepione* is represented by the formula $C_{20}H_{34}O_3$

The white cauliflower masses of crystals obtained in Berlin found to agree closely as regards their melting point and behaviour with solvents, with a substance called *Alban* obtained by Payen from gutta percha (Jahresbericht uber die Fortschder Chimie, 1852, p 643); they were accordingly named *Madar-alban* A yellow resin associated with *Madar alban* in the drug was found to agree, in behaviour with reagents, with the *Fluavil* found by Payen in gutta percha, but as regards chemical composition the *Madar alban* and *Madar fluavil*

428. CALOTROPIS PROCERA, R Br.

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Sans —Alarka *Hind* —Madar, Safed Ak, Ak. *Ben* —Akanda *Punj* —Shakar al lighal *Mah* & *Bom* —Mandara *Tam* —Vellerku *Sind* —Ak *Afgh* —Spalwakka *Indian Languages* —Spulmei, Spal mak, Pashkand (Trans Ind)

Habitat —North Western and Central India, from Sind, and the Punjab, Upper Bengal, Bihar and Bombay, and the drier climate of the Deccan This is the smaller white-flowered variety

Parts Used.—Root, root bark, leaves, juice and flowers

Constituents (Chemical Composition) —The active principle is believed to be a yellow bitter substance which makes but a very minute percentage of the plant s tissue The latex contains a rennet ferment, which like those present in the fig, papaw, etc., coagulates boiled milk more rapidly than raw milk and is very resistent to heat Its action is inhibited by mercuric chloride, but not by salts of the alkali metals (J Ch S A II pp 977) The physiologically active substance is found in the milky juice of the plant, in which it may be preserved for years without fermentation The milk coagulates upon long standing or by the addition of alc or Me_2CO D—1062 reacts alk The white, resin like ppt becomes hard in the air After washing, with alc H_2O and Me_2 Co, there remains an ash free sub stance $C_{16}H_{27}O$ The resin free serum reacts alk, upon heating, the protein is coagulated With HCL HNO_3, picric acid and salts of heavy metals, it gives a turbidity, with NaOH a gelatinous ppt, and with alc $(N H_4)_2 SO_4$ or NaCl a pptn of albumose-like protein compounds The active substance is found in the serum after freeing from resin, protein and sulphates Upon concentration it appears as a black, resin like mass, with a smell like coniine which causes head ache It is soluble in H_2O and dil alc, with green fluorescene Et_2O ppts from alc., a yellow N—free mass, hygroscopic, reacts neutral, colour of H_2SO_4 solution is red The same product is obtain ed by centrifuging and conc of the serum and extraction with alc or $CHCl_3$ The pharmacological action of the juice upon warm or cold blooded animals is like that of digitalis 0 02 0 04 G of the purified principle, injected subcutaneously, kills a rabbit in 30 minutes, a guinea pig in 15 minutes With pigeons, there results vomiting, in frogs 1 3 mg causes systolic arrest of heart action in 6 minutes. (Ch. Abs August 10, 1913, pp 2663)

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differed from the alban and fluavil of gutta percha Dr Warden also separated from the drug, *a yellow bitter resin*, which is probably the active principle, and *Caoutchouc*

He found the percentage of the various principles (the results being calculated on the bark containing 8 079 per cer of water) to be—

Madar alban	0 640	The fact that the sap of the Madar plant contains in addition to Caoutchouc two principles analogous to the alban and fluavil of gutta percha, is a point of some interest, as Madar guttapercha has been recommended as a substitute for the commercial article For full particulars of the chemical examination see Pharm Journal, Aug 22nd 1885
Madar fluavil	2 471	
Black acid resin	0 997	
Caoutchouc free from M alban & M fluavil	0 855	
Yellow bitter resin (active principle)	0 093	

Dr E G Hill and A P Sarkar of Muir College, Allahabad, have analysed the root bark and have published the results in the Journal of Chemical Society, T 1915, pp 1437 1442, of which the following is a summary —

Four kilos of the root bark broken up and exhausted with boiling 98% alcohol for 3 hours gave 78 g oil, 90 g white solid (A) which separated partly on cooling and partly on concentration, and a residue which when exhausted with Et_2O and digested with H_2O, gave 330 5 g gutta percha like residue and a small amount of a yellow bitter principle A long series of fractional crystallisations from alcohol of (A), identical with Warden and Waddel s " madar alban , Pharm J 1885, p 165 gave, as the less sol portion, *akundarol isovalerate* (B), $C_{38}H_{61}OCO_2C_4H_9$, needles m 210°, $(a)_{23D}$ 119° in Et_2O, and as the more sol *mudarol isovalerate* (C), $C_{30}H_{97}OCO_2C_4H_9$ nodules, m 140, $(a)_{23D}$ 128° in Et_2O Sapon of (B) gave *Akundarol* (D), $C_{38}H_{62}O_2$, needles, m 215° (acetate needles, m 222°), oxidized by CrO_3 in HOAc to *akundaric* acid isolated as the *silver salt* $C_{38}H_{59}O_3Ag$, faintly green amorphous Sapon of (C) gave *mudarol* (E), $C_{80}H_{48}O_2$, hexagonal plates, m 176° (acetate, needles, m. 195 6°), oxidized to *mudaric acid*, amorphous, m

Dosage —Tincture ½ to 1 fluid drachm Powder 5 to 10 grs As an alternative the powder may be used in doses of less than 10 grs it is an emetic in doses of 30 to 60 grains

Uses — If the root of this white flowered variety, viz C procera, is taken with black pepper it will destroy the poison of snake bite in doses of 5 to 10 grains The medicinal properties of this plant are similar to those of C gigantea The milky juice is moreover used as a blistering agent The fresh root is used as a tooth brush and is considered by Pathans to cure toothache (Watt) Fresh milk is employed in the Punjab for the purposes of infanticide In a drachm dose the fresh juice will kill a large drone in 15 minutes flowers are used in cases of cholera (Dr Thompson in Watt s Dictionary) In mild cases of dysentery the crude powder of the dried root (which grew abundantly in the Khyber Pass) certainly appeared to do good and cases got well on it but that it was certainly not a specific in all cases and had much the same tendency as Ipecacuanha to produce vomiting and depression The evacuations become bilious after use of this powder much the same as they do after Ipecacuanha (Col G T A Harris M D F R C P) Useful in mild sub acute cases of dysentery, but recovery is slow (Capt W M Anderson) In Indigenous medicines the powdered root bark is in considerable use Minimum doses of tincture were found useful in acute and sub acute dysentery, but in cases of chronic diarrhoea no good effects (Capt Childe) The powder is a good substitute for Ipecacuanha in dysentery and the tincture is not so efficacious as the powder (Capt K Prasad) Tincture and powder were used in bronchitis and dysentery and were found efficacious (Asst Surgeon, Ganga Singh) Tincture prescribed as a tonic and stomachic for debility and impaired appetite in doses of 20 m had given satisfactory results (Major Powell) The pulvis should be given in at first in small doses and gradually increased and the tincture to be started in 20 m doses and gradually increased so that no violent vomiting and purging result (Civil Surgeon Maddox) Dr L Lewin of Berlin Arch Exp Path Pharm of 71 14-56 declares this as a new Heart Drug acting like Digitalis

N B —C gigantea and C procera both these plants have a white milky acid juice

(Notes on this drug has been compiled from various sources)

Habitat.—This shrub which is a native of China is grown luxuriantly in the hill districts of India, viz Assam, Bengal, (states of Tipperah) Bihar, Orissa, U P the Punjab, Madras, Coorg, Travancore, Cochin and Mysore Indeed it may be said without exaggeration that India is the largest tea growing country in the world Ceylon comes next in importance (India exports also more tea than all other tea trading countries)

Varieties.—There are two varieties— the green (Thea viridis) and the black (Thea Bohea) tea, those that are quickly dried and fired are the green teas, and those allowed to ferment a few hours before being dried and fired are the black variety

Parts Used —Young leaves and the alkaloid

Constituents —Tea leaves contain a volatile oil (oil glands occur in the substance of the leaves and contain about 30% of fixed essential oil (somewhat resembling olive oil), to which the flavour of tea is largely due), tannic and gallic acids, quercetin, '*theine*' its chief alkaloid (identical with caffeine), ranging from 3 22 to 4 60 p c., xanthine, adenine, saponin and theophylline similar in character to theobromine The volatile oil is most abundant in green tea. Average samples of tea leaves contain from 2 5 to 3% of caffeine, though some varieties may contain as much as 4% Caffeine is obtained industrially almost entirely from tea.

Action.—Stimulant, diuretic and astringent. The remarkable stimulating and refreshing qualities of the beverage are due to the thein which is also found in coffee, Paraguay tea, or mate, and the Kola nut, a closely allied alkaloid is also present in cacao Experiment has shown that an infusion of the leaf for ten minutes is sufficient to extract all the valuable theine, and a longer period merely results in an accumulation of tannin which, in excess, is well known to seriously impede digestion Green tea is more powerfully stimulant, due to abundance of volatile oil in it In moderate quantities tea stimulates the mental faculties, clears the mind and facilitates its working In some it prevents sleep and causes mental irritability At times however, the disorder of the mental faculties under the influence of strong tea, amounts nearly to insanity In some it is highly stimulating and exhilarating, in others its effects are depression and lowness of spirits Like all other stimulants it requires to be taken with due caution. Very strong tea, like alcoholic drink is mischiev-

ous, although not in such a high degree as spirits, beer etc. *Theine* diminishes the waste of the body, i.e., carbonic acid, ureas, uric acid and waters ; it increases the assimilation of nitrogenous and hydrocarbon foods. When indulged into excess it affects the heart, vasomotor centre and motor nerves and also the stomach, giving rise to nausea, vomiting, flatulent dyspepsia, tremulousness of the limbs, pallor of form, feeble pulse, supraorbital headache, hallucinations and nightmare.

Preparations.—Caffeine can be more economically manufactured from tea than from coffee, and for this manufacture it is not necessary to use good tea suitable for human consumption, but teawastes (fluff and sweepings left over after preparation of finished tea for the market) can be used.

Uses.— An infusion of tea leaves was once used as a remedy for insect blights. Tea is seldom used medicinally except as a stimulant in strong infusion or as an astringent lotion on account of the tannin it contains, and which it renders useful as a gargle or injection. *Theine* is a nervine stimulant and beneficial in headache, neuralgia and nervous depression. A very moderate use of tea is beneficial in supplying the necessary stimulus to the flagging powers and reviving and refreshing all the mental powers. "When taken in excess it produces harmful effects." (Lt. Col. Chopra). "The number of plants used as substitutes for genuine tea in different parts of the world is very large and nearly 200 are known. These plants, as a rule, do not contain caffeine ; some of them contain an essential oil but do not possess the properties of the purine compounds, caffeine, theobromine, etc." (Lt. Col. Chopra). The Chinese are experts in the adulteration of tea. They use for this purpose the leaves of the rose, ash, plum, rhododendron, buckthorn, and many other plants. The teas are also scented with the flowers of an olive (olea fragrans), Chloranthus inconspicuus, and species of *Gardenia* and *Jasminium* ; even mineral adulterants are also employed to give weight and colour.

433 CAMPHORA OFFICINARUM, Bauh or Cinnamomum camphora, Nees

See —Dryobalanops aromatica, D camphora

(N O —Lauraceae)

Sans—Karpoor, Ghausar, Himavaluka *Eng*—Camphor, Bheemseni camphor (natural) Borneo camphor *Hind*, *Duk*, *Ben*, *Guj* & *Mah*—Kapur *Tel Tam* & *Mal*—Karpooram *Burm*—Payo, Paronk, Piyo *Sind*—Karpura, Kapooroo *Bom*—Bhimseni Kapur *Fr*—Camphre *Ger*—Kampher *Pers*—Kafu, Kafur, Kafoor *Ben*—Kaphur *Guj*—Kapoor, Karpoor *Mah*—Kapoora *Tam*—Pachai Karpooram, Karpooran cheena, Karuppuram; Karpuram *Tel*—Pacha Karpooram Cheen Karpooram. *Arab* & *Urdu*—Kafoor

Habitat—Found in Indian Bazaars, it is generally imported from China and Japan

Parts Used—The concrete volatile oil, i e camphor (stearoptene) obtained by distillation with water of the wood of the trees or plants, viz Cinnamomum camphora of Formosa and S China or Dipterocarpus camphora of Borneo and Sumatra, and purified by sublimation It occurs in translucent white crystals

There are three varieties viz —(1) Formosa camphor, (2) Borneo or Barus camphor, known in India as *Bhimseni kapur*, and (3) Blumea or Ngai camphor The second variety is highly prized in India and is sold at a very high price It is naturally formed in the stems of Dryobalanops camphora grown in Dutch Sumatra and sinks in water

Constituents—Camphor treated with chloride of zinc and distilled is converted into *Cymene* or *Cymol*, a substance contained in many essential oils When treated with nitric acid it becomes oxidised and forms *camphoric acid*, which is a crystalline body, odourless and of an acid taste soluble in alcohol, ether and fatty oils, in boiling water (1 in 10), and in cold water (1 in 100), insoluble in carbon sulphide All parts of the camphor tree yield, on distillation, a semi soiled oil from which camphor can be separated by mechanical means The oil from the wood and root is of the highest value as in addition to camphor it contains another valuable substance called safrole [1]

(1) Chopras I D of I " pp 114 & 155

TABLE I

(CINNAMOMUM CAMPHORA)

Camphor Contents of Different Parts of the Camphor Tree Grown in India

Place of Growth	Description of Material.	Total Volatile oil yield per cent	Camphor per cent.	Camphor oil per cent
Nilgiris	Green leaves	1-0	0-1-0-7	0-9-0-3
Madras	Do	2-62	1 99	0-63
Burma	Do	1-51	1-03	0-48
Cochin	Do	2-33	2-01	0-32
Dehra Dun	Do	4-04	0-38	3-66
Dehra Dun	Young leaves	4-83	0-59	4 24
Dehra Dun	Twigs	0-34		

NOTE — Camphor oil is the residue left after Camphor sublimes over

TABLE II

Oil Contents of Different Parts of the Japanese Camphor Tree.

Twig	2 21 per cent
Branches	3 70
Stem	3-81
Stump	5-49 "
Root	4-46 "

Action.—Diaphoretic, stimulant of skin and cardiac stimulant, antiseptic, antispasmodic, internally expectorant sedative, temporary *aphrodisiac, narcotic, internally carminative and externally anodyne In* large doses antiaphrodisiac.

' Action and Uses in Ayurveda and Siddha —Madhura tikta rasam seeth veeryam, lagu, lepanam, chakshusyam, vrishyam, kapha pitta haram, in visham, trishna, foul smell etc. *Cheena* —Tikta rasam kapha haram, in Kandu, kustam, chardhi

Action and Uses in Unani.—Cold 3°, Dry 3°, tonic for rohachi-vani in T B Antipoison brain tonic, diarrhoea, stomatitis, headache, irritation of liver and kidney [1]

(1) Therapeutic Notes

Preparatioos.—Pill, Powder, emulsion, tincture, spirits, liniment and water or mixture.

Properties and Uses.—Camphor is of a very peculiar fragrant and penetrating odour, bitter, pungent, and aromatic taste. It is extremely volatile and inammable burning with a bright light and much smoke. It is good in typhus. confluent small-pox and all fevers and eruptions of the typhoid class; also in measles, febrile delirium, whooping cough, hiccup, spasmodic asthma, hysteria, nymphomania dysmenorrhoea, puerperal mania, chorea, epilepsy, atonic gout, melancholia, acute rheumatism, myalgia, toothache, chronic bronchitis, diarrhoea ets. It is stimulant in prostration of fevers, sedative in delirium trements and chordee It exhilarates in moderate dosss and raises the pulse without producing febrile symptoms; it also promotes perspiration and in certain states of the body it induces sleep when opiunt fails to do so; but its effects are trainsient and therefore it requires frequent adminstration. It is given in doses of 3 to 10 grains in *pills, pouder* and in *emulsion* Sniffed up the nostrils it relieves cold in the head; the *vapours* inhaled by means of a tube like a cigar are useful in affections of the chest; a piece held in the mouth is a protective against fevers and other infectious diseases; finally its stroog odour protects animal substances from the ravages of insects. In cases of spermatorrhoea, chordee, pruritus, chronic rheumatism &c., *pills of camphor and opium* in the proportion of 3 grains of the former to half-grain of the latter taken at bed time are found to be very efficacious. In uterine pains 6 to 8 grain pills are administered and the *liniment* of camphor is rubbed on the abdomen. In apoplexy fomentations of hot water with liniment of camphor added are applied to feet and calfs of legs with much benefit; so also in cases of delirium. An ounce of camphor liniment added to 15 ounces of conjee water will make an injection useful in round worms and in cases of apoplexy, tonvulsions (puerperal), hysteria and similar other affections. Three or four grains of camphor with an equal quantity of asafoetida and made into a pill and administered in asthma, insomnia and delirium gives much relief. In pruritus and eczema of genitals camphor ointment (1 in 16 of boracic ointment) is a very useful application. Its chief *official preparations are.*—(1) *Camphor mixture* made by simply immersing in rold water a lump of camphor tied in muslin for a few hours (half ounce of camphor to one gallon of water). Dose is 1 to 2 ounces. (2) *Compound tincture of camphor* known as Parego-

ric Elixir Dose—15 tn 60 minims (3) *Camphor liniments,* simple and compound, prepared by dissolving camphor in olive oil or rectified spirit and which are used externally as stimulants and counter-irritants, especially in rheumatic pains of joints and muscles (4) *Spirits of camphor* prepared by dissolving 1 ounce of camphor in 9 ounces of rectified spirit Dose is 10 to 30 minims in emulsion Camphor taken in excess acts as an irritant narcotic poison producing epigastric pain, nausea, vomiting, maniacal delirium and convulsions

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434 CANARIUM BENGALENSE, Roxb,

(N O—Burseraceae)

Ben—Dhuna.

Constituents—Resin

(Chopra's *I D of I* pp 471)

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435 CANARIUM COMMUNE, Linn

(N O—Burseraceae)

Eng—Java almond tree *East Indian*—Elemi *Hind, Cutch* & *Ben*—Jangli badam. *Bom*—Jangali badana *Tam*—Kagli mara *Mal*—Kanari *Can*—Kagglimara, Sambrani *Java*—Badamee.

Habitat—This plant of the Malay Archipelago has been cultivated in Southern India.

Parts Used—Nuts or seeds and oil, concrete oleo-resin which exudes by excision—*elemi*

Constituents—Brein 60 p c, and amyrin (resin) 25 p c, bryoidin, breidin and elemic acid Essential oil yields anethol, nut yields a semi liquid oil on expression

Action—Demulcent, stimulant, laxative and expectorant. Gum is stimulant and rubefacient. Oil is demulcent

Preparations—Ointment (1 in 5), emulsion of nuts or seeds and oil, dose of the emulsion—½ to 1 ounce

Properties and Uses—The *resin* ("Manilla Elemi") is a substitute for Mixture amygdalae, *gum* is used as an ointment for indolent and sluggish ulcers Oil yielded by nuts is used for culinary purposes and is regarded as palatable and demulcent as almond oil, useful in gleet, gonorrhoea etc. *Bark of the tree yields* an abundance

of *limpid oil* with a pungent turpentine smell congealing to a buttery camphoraceous mass; it is stated to possess the same properties as copaiba applied in the form of an ointment to indolent ulcers. *Kernels* in emulsion form is a substitute for almond mixture.

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436. CANARIUM PIMETA, Koen.

(N O—Burseraceae)

Chinese—Chin wu-lan.

Action.—Astringent, sialogogue and stomachic.

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437. CANARIUM STRICTUM, Roxb.

(N. O—Burseraceae)

Eng—Black damer *Ben., Duk., Hind.* & *Guj*—Kala-dammar. *Bom*—Dhup *Tam*—Karuppu-damar *Mal.*—Canari-telli mara *Tel.*—Nallarojen *Can*—Mandadhup; Raldhup.

Habitat—Western Peninsula, Tinnevelly, Malabar, Bababudan Hills

Parts Used—Resin obtained from the tree.

Constituents—A volatile essential oil and resin.

Action.—Resin is stimulant to the skin

Uses.—*Resin* is used as plaster and ointment, and as a substitute for Burgandy pitch in making plasters etc. It is useful as an ointment in chronic skin diseases such as psoriasis, pityriasis, etc. It is also employed with gingelly oil in rheumatic pains.

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438. CANAVALIA ENSIFORMIS, DC

(N O—Papilionaceae)

Sans—Maha shimbee *Hind*—Goyijiyashivalam; sweeta-sima; kadasambal *Eng*—Sword Bean; Jack Bean. *Guj*—Abao *Ben.*—Makam shim *Mah*—Abayee; Pathave. *Tel.*—Karochikadu; Thamma. *Tam*—Kattuvalari; Thamattan; Valavarai. *Can.*—Shembi avare; Tumbekonji *Arab.*—Galaphul; Gol

Habitat—Many parts of India, especially Southern India. There are two varieties—the white and the red.

Other Varieties—*C. fruticosa* (*Mah.*—Pandhri abai) grown in the Deccan and Khandesh; *C. Virosa* which is abundant in the Konkan, bears uneatably nauseous pods and greyish brown seeds

Parts Used—*Root and fruit*

Constituents— *Cystin, tyrosin, tryptophan etc, and an alkaloid* [1]

Action.—*Cool, demulcent antibilious and cordial*

Properties and Uses.—*Fruits are used as vegetables in curries, chutneys and pickles When the pods are very young and tender and fresh, they may be eaten, but in very small quantity as in large quantity they create abdominal complaints, hernia and colic* They are cooked either separately and seasoned with various species, or with other vegetable substances such as potato brinjal, pulse and other vegetables The seeds are much used by Mahomedans as a vegetable eaten with meat A variety with white seeds is considered to be more wholesome The young, tender pods are used by Europeans as a substitute for French Beans [2] Root ground into paste with cow's urine and *administered internally for consecutive days will cure enlargement of liver*

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439 CANANALIA VIROSA W. A

(N O—Papilionaceae)

Ben—Kath shim *Bom*—Kudsumbat

Action.—*Narcotic*

Chopra's I D of I pp 471)

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440. CANNA INDICA, Linn. or C orientalis.

(N O—Scitamunaceae)

Sans—Kamakshee, Sarvajaya. *Ben*—Sarvajaya, Kath shim. *Eng*—Indian Bread shot *Bom*—Kudsumbat *Duk*—Akalbarki *Hind*—Sabbajaya *Mah*—Devakeli *Tel*—Krishnatamara, Mettata mara *Tam*—Poovalai, Kandamanu, Kandamani cheddi, Kalvazhai. *Mal*—Katuvara *Can*—Kaelahoo, Sugandharaju *Kon*—Kaelaphool *Punj*—Hakik

Habitat—*Several varieties are common all over India grown in gardens*

Parts Used—*Rhizome and fruit*

Constituents.—Fat, traces of an alkaloid, gum & starch

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(1) Chopra's "I D, of I pp 471

(2) Bombay Govt. Agri. Dept. Bulletin.

Action.—Root is diuretic, diaphoretic and demulcent Seed is cordial and vulnerary Drug is a narcotic.

Preparations.—Decoction (1 in 20), dose —1-2 ounces

Uses.— *Root in decoction* is used in fevers and dropsy It is also given in dyspepsia *Seed juice* warmed and instilled into ears as ear-drops relieves earaches. When cattle have eaten any poisonous grass, which is generally discovered by the swelling of the abdomen, the *root bulb* is broken up in small pieces, boiled in rice water together with pepper and given to drink, to the cattle suffering from poisonous symptoms

441 CANNABIS INDICA. See Cannabis sativa, Linn.

442 CANNABIS SATIVA, Linn, or C. Indica

(N O—Urticaceae)

Sans—Vijaya, Siddhapatri, Ganjika, Bhanga, Hursini *Eng*—Indian Hemp *Hind*—Ganja, Charas *Ben*—Bhang, Sidhi, Ganja *Arab*—Khinnab *Pers*—Darakte-bang *Bom* & *Guj*—Ganja. *Mah.*—Bhang *Tel*—Ganjayi, Jadaganja. *Tam*—Pangi, Kanja or Ganja, Madamattagam *Can* & *Kon*—Bhangi *Mal*—Kancha *Burm*—Segiyav *Sinh*—Kansa

Habitat.—This pistillate plant is a native of Persia, Western and Central Asia, now largely cultivated all over India and is found wild on the Western Himalayas and from Kashmir to east of Assam, and is acclimatised to the plains of India generally When grown in the hot regions of the tropics, the plants (especially the female plants) yield a quantity of resin possessing remarkable intoxicating properties, and on this account hemp is largely grown in India and the East

Collection and Storage.—The plant attains its highest therapeutic power when grown in tropical or sub-tropical climates, inasmuch as it develops there a larger content of resin than elsewhere

The plant is required to be harvested before becoming quite ripe, owing to liability to seedling The seed loses its germinating power very quickly, hence the stock should be of one season old only Indian seed is smaller and darker coloured than that of Europe It should be used fresh. (Dr K. C. Bose)

"The usual time for gathering leaves for preparation of *bhang* varies with the locality in which it is grown, but it is usually in the months of May and June in lower altitudes and June and July in higher places. The *bhang* obtained from some localities is regarded as

superior to that obtained from others There is no evidence to show that the cultivated plant yields a superior quality of the drug [1]

Parts Used.—Dried flowering or (growing) fruiting tops of the pistillate plant. Leaves, seeds and resinous exudation of the 3 varieties of *Ganja*—flat, round and powdered (*Chur*), the last is the best for medical use The *fibre is hemp*, oil seeds are hemp seeds

Constituents.—A volatile oil (prepared from the fruits or seeds) composed of Cannabene, Cannabene hydride several alkaloids (Cannabinine tatano-cannabinine, etc.), Canabinoo and Canoabio, a resin which consists of Cannabinol pseudo-cannabinol canoabinin and several terpenes Hempseeds yield from 25 to 30 p c of a greenish yellow oil becoming brownish yellow on keeping Essential oil purified by distillation in a current of steam and extraction with ether is a mobile liquid boiling at 248 to 268 degrees *Charas* the cannabis resin extracted from the leaves contains no chlorophyl On analysis it was found to contain 33 p c. of an oil The ethereal extract from *Charas* has yielded—[2] (1) a terpene C10 H16 B P *boiling* at 160 to 180 degrees, yield about 1 5 per cent (2) a sesqui terpene C15H24 B P boiling at 258 259 degrees yield about 1 75% to 2% (3) a small amount of paraffin hydrocarbon C20H60 melting point 64 degrees, yield 0 15 per cent. (4) a toxic red oil or resin C18H24O2, termed Cannabinol, B P, boiling at 265 degrees 20 mm., yield about 33 per cent [3] of the *charas* taken

The red oil set to a semi solid mass insoluble in water but dissolving easily in alcohol ether benzene glacial acetic acid and organic solvents generally It gave a monoacetyl and a monobenzoyl derivative, proving the presence of a hydroxyl group and was therefore termed Cannabinol and which is considered to be the active principle of the drug and Marshall (1897) showed by physiological experiments on himself and on others that it was so Later (1899) that the cannabinol thus isolated was shown to be a mixture of at least two compounds having similar physical characters Older chemists have retained the name Cannabinol for the pure Compound C21H26 O2 (obtained by hydrolysing the crystalline acetyl derivative of melting point 75°) whilst the original crude cannabinol is probably a mixture of this and one or more compounds of lower molecular weight. Older chemists also described a series of derivatives and decomposition products of pure cannabinol which throw some light on the pro-

(1) & (2) Chopra's "I D of I" pp 79-76.

bable constitution of the compound Bauer (1927) concluded that cannabinol is not an ester, acid, aldehyde, ketone or phenol but is probably of the nature of a polyterpin, Cahn (1930) suggested the correct formula for cannabinolactone, a decomposition product of cannabinol isolated by Wood, Spivey and Easterfield Other investigators have obtained appareotly constant boiling resins and although theso yielded only oily derivatives, they have claimed homogeneity for each product, appropriated the name cannabinol, and variously assigned to it the formulae $C_{20}H_{30}O_2$ (Casparis 1926; Bergel 1930) and $C_{21}H_{30}O_2$ (Frankel 1903, Czerkis 1907) The most recent work of Cahn (1931) was carried out with several different samples of 'hashish of uncertain origin, all of which gave similar results and these were confirmed with a Cannabis sativa resin of known Indian origin His work and that of Wood, Spivey and Easterfield have shown that the apparent constancy of boiling point cannot be held to prove the homogeneity of these resins, and that the resins of Frankel, Czerkis, Casperis and Bergel were all mixtures The name 'Cannabinol,' $C_{21}H_{26}O_2$ should be applied only to the substance obtained from the acetyl derivative of melting point 75° and the apparently constant boiling resin should be termed 'Crude cannabinol' (Lt Col Chopra)[1] *Ganja* contains about 26%, *Bhang* 10%, and *Charas* 40% of resin

Action.—All parts of the plaot are intoxicating (narcotic), stomachic, antispasmodic, aoalgesic, (anodyne) stimulant, aphrodisiac and sedative In moderate doses the plant is at first exhilarant and powerful aphrodisiac, after a while it is sedative Its habit leads tc indigestion, body waste, melancholia and impotence In large doses it first produces mental exaltation, intoxication, a sense of double consciousness and finally loss of memory, gloominess etc.

Cannabinine is a powerful sedative Dose —1 to 4 grains Cannabinon is also sedative in action, dose —½ to 1 grain Tanato Cannabinine is a brownish powder, anodyne and hypnotic in action Dose —4 to 8 grains *Charas* the resin is narcotic anodyne and also aphrodisiac. Dose —¼ to 2 grains On the whole Indian hemp is feebly anodyne, strong exhilarant, delirant and hypnotic, antispasmodic on muscles, aphrodisiac on genital organs and diuretic on kidneys Leaf juice is diuretic.

(1) Chopra's "I D of I" pp 76

Cannabinol is a toxic red oil, a constituent of Cannabinon, *charas, ganja* and *hashish* Leaves of Cannabis sativa are regarded as heating, digestive, astringent and narcotic Male flowers are not more narcotic in their action than the leaves, unlike the female flower heads Indian hemp is primarily stimulant, secondarily anodyne, antispasmodic and anaesthetic. *Charas,* the Cannabis resin is narcotic, does not cause nausea, constipation or headache as opium does

"Action and Uses in Ayurveda and Siddha —Tikta rasam, ushna veeryam, lagu, tikshnam, grahi pachanam, moham, madam, produces pittam, sukra sthambanam, aphrodisiac, grahani, athisaram

Action and Uses in Unani —Murakab-ul khuva, musakin, reten tive, anaesthetic, astringent Externally sedative "[1]

Preparations —*Sabjee, Majoom* (Confection), *Charas* (resin of C sativa manufactured in Central Asia), Paste, Powder, Tincture, Poultice and oil (freshly prepared oil is greenish yellow, with a pecu liar taste and smell) Hemp plant is cultivated in India for the vari ous forms of narcotics which it yields and which have been used so largely by Indians from very ancient times Three principal forms in which Cannabis sativa is used in India are —(1) *Ganja* consisting of the unfertilized resinous brownish green or rusty green coloured flowering heads or branches or shoots of the female plant, trodden and pressed by the feet into compact masses (known in the English drug markets as 'guaza"), grown on the plains, the narcotic princi ple which is only developed in the *Ganja* in the unfertilized flowers entirely disappears after fertilization has taken place. *Ganja* has a characteristic odour On the other hand, the plant grown on the lower hills of the Punjab and which yields (2) *Bhang* which is of deep green colour, does not develop the narcotic property until the fruits are mature, the dried broken flower heads with chaff, leaves and fruiting shoots constituting the *Bhang* or *Siddhi* so largely used by Indians in making into a paste with milk or water and taken as an intoxicating liquor *Hashish* (a preparation made from C. Sativa is at present time smoked by Egyptians), or the narcotic conserve or con fection called *Majoom* (3) The *Charas* possesses little taste, but has a powerful odour, and is of the dark green or brown colour, it is the cannabis resin which exudes naturally on the leaves, stems and fruits, but only on plants growing on the mountain tracts at an alti tude of 6000 to 8000 feet It is powerfully narcotic, chiefly used for its soothing properties in cases of mania and hysteria, and is smok-

(1) Therapeutic Notes

ed with tobacco. The female plant (cultivated for fibre in Kumaon and other places) yields considerable quantities of *charas*, which is sometimes smoked as *Ganja* "Various methods of preparing *charas* in India have been described :—(a) Sometimes men dressed in leather-suits or jackets pass through the fields of C. Sativa rubbing and crushing roughly against the plants early in the morning just after sunrise and when a fall of dew has taken place. The resinous matter, which sticks on, is then scraped off and forms the *Ganja* resin of commerce (b) In Kulu and the Hill States, the flower heads are said to be rubbed between the hands and the accumulated resin is scraped off (c) The operation is also said to be done by treading the plant with the feet. (d) Sometimes the flowering twigs are simply beaten over a piece of cloth and the greyish white powder, which falls, is collected "[1]

A Syrup (*Sherbat*) prepared from C. indica, given in very small doses during convalescence after diarrhoea, is soothing.

"*Bhang, Siddhi, Subji* and *Patti* are synonymous with each other ; they are the dried leaves of C sativa, whether male or female, and whether cultivated or uncultivated, and are purified by being boiled in milk before use The term has also been sometimes made to include the female flower heads as well as the leaves of the plant, and the green leaves as well as dry leaves It is also probable that male flower heads must also enter into it as the methods of preparing *bhang* are very crude, the plant being simply dried and the leaves being separated by beating it against a block of wood or hard ground '*Bhang*' is commonly the name given to the drink made out of '*subji*', *ganja* pounded up and made into a drink, as is done in case of *Garhjat ganja* in Puri, also is called *bhang*. For this reason, in many parts of India, especially in the South and West the distinction between *ganja* and *bhang* is lost. *Bhang* here is the name given to the most simple style of consumption, viz : pounding and drinking, which in the evolution of its narcotic use must have preceded smoking. Although *bhang* is a more comprehensive term and often includes *ganja* in the North, in South India *ganja* is a more general term and in some places is made to include even *bhang*, the latter term being quite unknown there. *Bhang* is prepared from both the uncultivated plant and a small quantity from cultivated plant. The plant is cut and is alternately exposed to sun and dew. When the leaves are dried

(1) Chopra's "I. D. of I." pp. 78-79.

they are pressed and stored in earthenware vessels *Bhang* is also the name given to the refuse of the treading floor when *ganja* is prepared '[1]

Bhang, Siddhi, Subji and *Patti* are used with water as a drink which is thus prepared —About three tolas weight are well washed with cold water, then rubbed to powder, mixed with equal parts of black pepper, dried rose-petals, poppyseeds, almonds cardamoms cucumber and melon seeds to which sugar, half a pint of milk and equal quantity of water are added This is considered sufficient to intoxicate an habituated person Quarter to half the quantity is enough for a novice The intoxication caused by this beverage, i e, *bhang* causes the person to sing and dance, to talk much to eat food with great relish and to seek aphrodisiac enjoyments The intoxication lasts about 3 hours when sleep supervenes No nausea or sickness of stomach follows, nor are the bowels at all affected, next day there is slight giddiness and vascularity of the eyes but no other symptoms worth recording

' *Ganja* consists of the dried flowering tops of the cultivated hemp plants which have become covered with the exuded resin in consequence of having been unable to set seeds freely It is also said to be prepared from a particular variety of the wild plant known as ganja plant *Ganja,* which is called '*Ganja-yela*' in Tamil '*Bangiaku*' in Telegu and as '*Ganja*' in Hindustani, Bengali Marathi and Punjabi ,[2] is used like tobacco for smoking alone One rupee weight or 1 to 2 grams of *ganja* and a little dried tobacco with a little water are rubbed together in the palm of the left hand with the right thumb for a short time till the stuff becomes sticky A little tobacco is placed in the pipe (*chillam*), then a layer of the prepared *ganja,* then more tobacco and above all the fire Four or five persons usually join in the use of this The *hookah* is passed round and each person takes a single draught Intoxication ensures almost instantly and within half an hour to the novice and after four or five inspirations to those that are accustomed to it The effects differ from those occasioned by *siddhi* Heaviness laziness and agreeable reveries ensue but the person can be readily roused and made to discharge his routine duties. The intoxicating quality of the drug is said to increase with the length of the time spent on rubbing it but this is doubtful '[3] ' Though *ganja* is mainly used for smoking, a small

(1) to (3) Chopra's "I D of I" pp 77 79

quantity is used for taking internally in certain parts of India, e g. Puri of Madras Presidency * A sweet made by mixing *ganja* with seeds of black *dhatura* and sugar is used by criminals to drug people "1

Bhang' prepared from the dried larger leaves which are collected separately, is pounded in water to a pulp and used in the preparation of a drink. The resin itself, to which the intoxicating properties of the drug are due is known as "*churras*" or "*charas*" and is obtained by kneading *ganja* with the hands, or by causing men, clothed in leather garments to brush through the living plants as violently as possible, with the result that the resin escapes from the wounded surfaces of the plants and adheres to the leather, from which it is afterwards scraped and rolled into balls

The *Majoom* or hemp confection made in ghee and with the addition of water contains *bhang ganja, charas,* opium, poppy seeds, *dhatura* leaves and seeds cloves mastich, aniseeds, cumin, sugar, butter, flour milk cardamoms and *tabashir* Dose —½ to 1 drachm One drachm by weight will intoxicate a beginner, three drachms will be required to one that is accustomed to its use The taste is sweet and odour very agreeable Sometimes if the customers require, stramonium seeds are introduced, *but never nux vomica* It is most fascinating in its effects producing ecstatic happiness, a feeling of high rank a sensation of flying voracious appetite and intense aphrodisiac desire

Paste consists of equal parts of *Bhang, Ganja* and pepper made into a paste with water

Uses.— *Bhang* and *Ganja* are prescribed by Hakims and Vaidyas in bowel complaints and recommended as appetisers, as nervous stimulants and as a source of great staying power under severe exertion or fatigue *Leaves* make a good snuff for deterging the brain, their *juice* applied to the head removes dandruff and vermin, dropped into the ear it allays pain and destroys worms, it checks the discharge in diarrhoea and gonorrhoea *Powder of the leaves* applied to fresh wounds promotes granulation, a *poultice* of the plant is applied to local inflammations erysipelas neuralgia, haemorrhoids etc, as an anodyne or sedative The dose of the leaves is 40 grains internally Externally a poultice of the fresh bruised leaves is useful in affections of the eye with photophobia also applied to relieve pain and

(*) & (1) Chopra's "I D of I pp 77

swelling in orchitis The concentrated *resin* exudate (resinous matters) extracted from the leaves and flowering tops or agglutinated spikes of C sativa and known as *nasha* or *charas* which form the active principle when collected separately, is used to produce sleep in cases of sleeplessness, in which opium is contraindicated, it is valuable in preventing and curing sick headaches, neuralgias, migraine (malarial and periodical), valuable in acute mania, whooping cough, asthma, dysuria and in relieving pain in dysmenorrhoea and menorrhagia and pain of the last stages of phthisis, it increases appetite It does not produce loss of appetite or constipation like opium For asthma and tetanus the dose of the extract is from ¼ to 2 grains, the leaves powdered, mixed with sugar and well fried in ghee and with black pepper added are administered in chronic diarrhoea, with poppy seeds the extract is given in dysentery, with asafoetida it is given in hysteria. In cases of chronic colic wonderful effect is produced by the administration of 1 grain of the extract in combination with ¼ grain of ipecacuanha In dysentery about half a drachm of dried tender leaves mixed with a little sugar and black pepper powder is a well known and successful remedy, the *tincture* of the British Pharmacopoea is also used in 15 to 20 minim doses three times a day especially in acute dysentery, combined with belladonna it is given in whooping cough, infantile convulsions hepatic and renal colic, tetanus and hydrophobia. *Oil* extracted from the seeds is used for rubbing in rheumatism. *Paste* applied to the head relieves dandruff and vermin

Numerous confections of *bhang* are described in books They are as their names imply, considered aphrodisiac and are used in chronic bowel complaints and nervous debility Most of them are prepared with equal parts of a number of supposed tonic and aphrodisiac substances in small quantities and *bhang* equal in weight to all the other ingredients together with sugar, honey and the usual aromatics *Majoom* would be a neater substiture for these complicated preparations

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443 CANSCORA DECUSSATA, *Roem. et Sch.*

(N O.—Gentianaceae)

ans—Kambumalinee *Mah & Kon*—Shankha-pushpi. *Hind*—Shankhini, Shankhahuli *Ben*—Dankuni. *Mal*—Cansyan Coea. *Cutch*—Shunkhapushappi

Habitat.—Through India and Burma.

Parts Used—Entire plant and fresh juice

Preparations.—Infusion (1 in 80), dose:—1 to 2 ounces; juice dose:—½ to 1 ounce; paste of the entire plant and a compound powder.

Uses.—Fresh juice is given in insanity, epilepsy, scrotula and nervous debility. According to Chakradatta *fresh juice* of the plant in doses of about an ounce is given with the addition of honey and Saussurea lappa root in all sorts of insanity. A *paste* made of the entire plant including roots and flowers is recommended to be taken with milk as a nervine and alterative tonic. Following *compound powder* is used in similar cases:—Take of *gulancha*, Achyranthes aspera, *baberang*, *pachak* root, root of Asparagus racemosus, Acorus calamus, Chebulic myrobalan and Canscora decussata in equal parts; powder and mix. It is said that the use of this powder for three days will enable a student to learn by rote a thousand couplets of poetry.

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444. CANSCORA DIFFUSA, Br.

(N. O.—Gentianaceae)

Burm.—Kyouk-pan.

Uses.—This drug is a substitute for C. decussata.

(Chopra's "I. D. of I." pp. 471).

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445. CANTHIUM DIDYMUM, Roxb.

(N. O.—Rubiaceae)

Santhal Parganas.—Garbha gogha. *Tam.*—Yerkoli.

Parts Used.—Bark.

Uses.—Bark is used in fevers.

(Chopra's "I. D. of I." pp. 471).

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446. CANTHIUM PARVIFLORUM, Lamk.

(N. O.—Rubiaceae)

Bom.—Kirni. *Tam.*—Karai. *Tel.*—Balusu. *Can.*—Kake-gida *Mal.*—Kandangari; Nerooti. *Kon.*—Kayili.

Habitat.—A shrubby plant met with from the Konkan Southwards to Ceylon.

Parts Used.—Leaves, root.

Action.—Root is anthelmintic.

Uses.— Decoction of edible leaves as well as the root is prescribed in certain stages of flux

(Chopra s I D of I pp 471)

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447 CAPPARIS ACUMINATA, Roxb.

(N O —Capparideae)

Hind —Govindphal *Ben* —Kalukera *Tam* —Anthundi Kai

Action —*Cooling*

(Chopra s I D of I pp 471)

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448 CAPPARIS APHYLLA, Roth or *C spinosa*

(N O —Capparideae)

Sans —Karira *Eng* —Caper plant, Caper Berry *Bom* —Kari *Arab* —Kiabara *Hind* —Kachra, Kabra, Karer *Punj* —Karia *Mah* —Nepati *Can*—Nispatigay *Tel* —Enugadanta, Mumudatu *Pers* —Kuraka, Kebir *Tam* —Karyal

Habitat.— In the deserts, especially of Rajputana, Punjab and Sind

Parts Used —The plant, the root bark and fruits or berries

Constituents —Bark contains a neutral bitter principle resembling senegen Flower buds contain capric acid and a glucoside which yield on boiling with sulphuric acid isodulcite and a colouring matter similar to quercetin

Action — Root bark is astringent and alterative Plant is regarded by Kavirajas as acrid, stimulant, laxative, etc. The drug is a counter irritant

Preparations —Powder and infusion of root bark (1 in 10), dose —½ to 1 ounce Juice of plant

Uses — Root bark in powder or infusion is used in rheumatism gout, cough, dropsy, palsy etc. *Externally* the powder is applied to malignant ulcers The plant in the form of infusion is used *externally* for boils, eruptions, diseases of the joints and *internally* as an antidote to poison Kavirajas give it in phthisis, heart diseases, colicky pains and loss of appetite and scurvy Its fruits and the unexpanded flower buds are pickled or used as condiment In Rajputana the plant is a wholesome fodder for camels Juice of fresh plant is dropped into the ear to kill worms, also a fair substitute for senega

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449 CAPPARIS CORUNDAS or CARISSA CARANDAS, Linn.

(N O —Apocynaceae)

Sans —Karamardaka , Krishna Phala , Karmoha. *Eng* —Bengal Currants *Hind* & *Guj* —Karwando , Karando , Tirnukhia *Mah* — Karvand *Gwalior* —Karonda *Mal* —Keelay *Tam* —Perinkalak phalam *Tel* —Peddakalivipandu

Habitat.— Throughout India in dry, sandy and rocky grounds , Kangra and Katch jungles

Parts Used —Fruit, bark and leaves

Constituents —Root contains a fixed oil, a volatile oil, a dark yellowish resin and an alkaloid

Action —Fruits are stomachic antiscorbutic, refrigerant and diges tive Unripe fruits are astringent and antiscorbutic.

Preparations —Syrup of fruits, dose —1 to 2 drachms Juice of fruits, dose —30 to 90 minims Decoction of leaves, dose —1 to 2 ounces

Uses — Juice of ripe fruits, mixed with sugar and cardamoms is a cooling drink in biliousness Decoction of leaves is refrigerant in fevers Fruit makes a good pickle, when unripe, and tarts, jellies and puddings when ripe Ripe berry is largely eaten

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450 CAPPARIS DIFFUS

Sans —Karamarda *Ben* —Karachma of the genus Capparidaceae grows in Bengal and South India bearing an edible black fruit larger in size than *Karmardaka* Ripe fruit is acid and astringent and is used as a stomachic.

(Chopra s I D of I pp 471)

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451 CAPPARIS HEYNEANA, Wall.

(N O —Capparideae)

Hind —Chayruka

Parts Used —Leaves, flowers

Uses — Leaves are used in rheumatism Flowers are used as laxative

(Chopra s I D of pp 471)

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452. CAPPARIS HORRIDA, Linn.

(N. O.—Capparideae)

Sans.—Hankaru. *Hind.*—Ardanda. *Tam.*—Alanday.

Action.—Counter-irritant.

(Chopra's "I. D. of pp. 471).

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453. CAPPARIS SEPIARIA, Linn.

(N. O.—Capparideae)

Sans.—Kakdani. *Ben.*—Kaliakara ; Kanta-gurkamai. *Tam.*—Surai.

Habitat.—Found in South India.

(Chopra's "I. D. of pp. 471).

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454. CAPPARIS SPINOSA, Linn.

(N. O.—Capparideae)

Sans.—Kakadani. *Hind. & Punj.*—Kabra.

Constituents.—*Glucoside rutin.*

Uses.—Used in palsy, dropsy, gout & rheumatism.

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455. CAPPARIS TRIFOLIATA.

See Crataeva nurvala or C. religiosa.

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456. CAPPARIS ZEYLANICA, Linn.

(N. O.—Capparidaceae)

Hind.—Govindaphal; *Ben.*—Kalu-Kera. *Tam.*—Anthundi-kai.

Action.—Sedative and diuretic.

(Chopra's "I. D. of pp. 471).

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457. CAPSELLA BURSA PASTORIS, Moench.

(N. O.—Cruciferae)

Occurs in South India.

Constituents.—Alkaloid bursine, saponin.

Action.— Antiscorbutic.

Uses.—Used in haematuria and dropsy.

(Chopra's "I. D. of pp. 471).

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458. CAPSICUM ABBREVIATA, Fingerh

(N O—Solanaceae)

This is a variety cultivated sparingly, but chiefly by Europeans in Bombay Presidency

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459 CAPSICUM ACUMINATA, Fingerh

(N O—Solanaceae)

Mah—Mircha, *Can*—Mirchi, Menasinakai Grown in Bombay Presidency

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460. CAPSICUM ANNUUM, Linn.

(N O— Solanaceae)

Sans—Marichiphalam, Katuvira, Bruhi *Eng*—Spanish pepper, Red pepper, Cayenne pepper *Hind*—Lal or Gach mirchi *Punj*—Mirch, Mattisa. *Kumaon*—Mattisa wangru *Kash*—Mirch wangum *Guj*—Marcha, Marchu *Ben*—Lalmirchi, Lanka marich, Gach marich, Jhal. *Mah*—Mirsinga, Mirchi *Tel*—Mirapakaya; Gala konda, Mirapa sinqa *Tam*—Molagay, Milagai *Mal*—Upperi paranki, Perangimuluk, Kappalmelaka *Can*—Kempu Menasu (ripened), Menasinakai (unripe) *Kon*—Mirsang *Arab*—Filfile ahmar, Ahmur *Pers*—Filfile surkh *Burm*—Na yop *Sinh*—Gasmiris, Miris *Malay*—Chabai, Ladumira

Habitat—This plant is very largely cultivated for its fruit throughout the plains of India and in the hills in some districts.

Parts Used.—Fruit, dose —½ to 1 grain There are three principal varieties —*Deshi, Malabari* or *Ghati,* and *Lavangiam* or *Nepali*

Constituents.—Capsicin, a volatile alkaloid, capsacin, a crystalline acrid substance, solanine, a volatile oil, fixed oil, fatty acid, resin, red colouring matter and ash 4 to 5 p c. Its pungency and acridity is due to the oleo-resin Capsicin

Action.—A powerful local irritant, heart and general stimulant, stomachic and tonic, of pungent odour and sharp burning taste

Preparations.—Pills powder, paste, tincture, decoction or infusion and vinegar

Uses.—Chillies are employed in India as an ingredient of various curries, chutneys and pickles. *Externally* a paste of it is used as a rubefacient and as a local stimulant for the tonsils in tonsillitis In

diphtheria its application is said to hasten the separation of false membranes. When applied locally the three important varieties of capsicum, *C. annuum, C. fastigiatum and C. minimum* (*differeing in size*, shape and colour) produce blisters and the fresh fruits made into a paste in combination with mustard are used as *counter-irritant*. *In chronic* lumbago a plaster of capsicum with garlic, pepper and liquid amber (*silarasa*)' or storax is an efficient *stimulant* and *rubefacient* application. *Internally* also it is irritant and large doses produce gastro-enteritis. When made into a lozenge with sugar and tragacanth it is a remedy for hoarseness; employed in the form of tincture as an adjunct to bitter tonics and other stimulaots, it is useful in atonic dyspepsia, loss of appetite and flatulence; *pills* made of equal parts of capsicum, rhubarb and ginger or aloes as carminative are used; also with ciochona *it is useful in intermittent and lethargic affec*tions, atonic gout and advanced stages of *rheumatism*; with asafoetida and weet-flag root or *camphor it is used in the form of pills in cases* of cholera; also the *decoction* of the fruit with the addition of opium and fried asafoetida is given with equal success in cholera. Capsicum has a powerful action on the *mucous membrane*, and in hoarseness and sore throat, and in putrid throat a gargle made of chillies (4 drachms in 1 bottle of boiling water) *is found particularly beneficial*. By pouring hot vinegar upon the fruits all the essential qualities are preserved. 'This chilly *vinegar* is an excellent stomachic imparting a fine flavour to fish and meats. The whole plant steeped in milk is successfully applied to reduce swellings and hardened tumours. An infusion with cinnamon and sugar is a valuable drink for patients suffering from delirium tremens as it satisfies the craving in dipsomaniacs. *It is* used in the West Indies to relieve the sinking at the epigastrium felt by drunkards. Capsicum is used in snake-bite also.

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461. CAPSICUM BACCATA, Irish.

Eng. Brazil Pepper or Pimenta.

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462. CAPSICUM CERASIFORMIS or CERASIFORME, Bailey or Lank.

Eng.—Cherry Pepper, cultivated occasionally in the gardens of Europeans in the Bombay Presidency.

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463 CAPSICUM FASTIGIATUM

Is a species cultivated widely in tropical India It is a small shrub bearing conical oblong scarlet fruits about ½ to ¾ inch long and 1/5 inch thick containing numerous flat reniform seeds having a pungent peculiar odour and a very hot and biting taste They are known as Guinea pepper or Malabari or *Ghati Mirch*

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464 CAPSICUM FRUTESCENS, Linn

or C. minimum Willd See C annuum

(N O—Solanaceae)

Eng—Chillies (dried fruits of C. minimum and C. frutescens) Cayenne pepper Bird s Eye Chilli of Europeans *Hind*—Jhal *Ben*—Lanka marich, Jhal *Sind*—Gatho-mirch *Mah*—Lavungi mirchi *Tam*—Milagai *Tel*—Mirapa.

Habitat—Is a native of India occasionally found in Europeans' gardens in the Bombay Presidency

Uses—Used for pickling When ground in a mill they form ' Cayenne Pepper

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465 CAPSICUM GROSSUM, Bailey or Willd

Eng—Bell pepper, Spanish or Monstrous pepper *Ben*—Desho maricha. *Mah*—Kafri mirchi, Bhopla mirchi *Can*—Donne Mena shinakai A large and inflated variety of C. frutescens with very little pungency, growing in Western India

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466 CAPSICUM LONGUM, Bailey

Eng—Purple Chilli Occasionally cultivated in gardens of Bombay Presidency

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467. CAPSICUM NEPLEANSE

Is a Nepal species diminutive in size but with great pungency These are known as *Lavangian* or Nepali *marich* Fruits are very highly esteemed. They have a peculiar flavour

(Chopra s I D of I ' pp 472)

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468 CARALLIA LUCIDA, Roxb

(N O—Rhizophoreae)

Tam—Vallabhom

Parts Used—*Fruits*

Uses—*Fruits are used in contagious ulcers*

(Chopra s I D of I pp 472)

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469 CARAPA MOLUCCENSIS Lam

Ben—Pussar

Action—Bitter astringent

Uses—Used in colic & diarrhoea

(Chopra s I D of I pp 472)

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470 CARDAMEMON MAGUS

(N O—Scitamineae)

Habitat—This drug is imported into India

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471 CARDAMOMUM REPENS

See Elattaria cardamomum

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472 CARDANTHERA ULIGINOSA Ham

(N O—Acanthaceae)

Parts Used—Leaves

Action—Leaves are blood purifiers

(Chopra s I D of I pp 472)

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473 CARDIOSPERMUM HALICACABUM Linn

(N O—Sapindaceae)

Sans—Jyotishmati, Karavi, Karnaspota, Paravata padi, Lata phatki, Banu Uchchhe *Eng*—Balloon vine or winter cherry, heart s pea. *Hind*—Kanphata *Mah*—Kanphuti, Shibjal, Kakumardanika. *Ben*—Nayaphataki, Lataphatkari, Napatki, Shib-jhul *Bom*—Bodha *Guj*—Karodio *Duk*—Shibjub *Can*—Kanakara *Mal*—Uluja *Tam*—Moddacoatan, Mooda-cottan, Mudakathan *Tel*—Buddaka kara, Nellagulisetenda, Vekkuditege *Pers*—Habul kalkal (seed)

Burm —Malmai, Ma la mai *Arab* —Laftaf *Sinh* —Painaira wel.
Fr —Poi de coeur *Ger* —Gemeiner herzsamen

Habitat —India, chiefly Bengal and U P

Parts Used —The herb —roots, leaves and seeds

Constituents —Seeds or fruits yield a kind of essential oil, bitter and stimulant, and Saponin

Action —Root and the leaves are diuretic, laxative, stomachic, alterative and emetic, externally rubefacient

Preparations —Decoction of the root (1 in 10), dose —4 to 10 drachms A compound powder made up of Carbonate of potash root of Acorus calamus root bark of Terminalia belerica and the leaves of this plant all in equal parts, dose is 1 drachm.

Uses —*Root* and the *leaves* of the herb in decoction are used in rheumatism, nervous diseases, piles, chronic bronchitis and phthisis Dr U C. Dutt recommended the following preparation as an emmenagogue —Equal parts of leaves of C halicacabum potassium carbonate, root of Acorus calamus and root bark of Terminalia tomentosa, are applied into a paste with milk, also in amenorrhoea one drachm doses of the same compound powder is given for 3 days, effects a free menstrual flow in about 3 days. Leaves fried are applied to the pubes to increase the menstrual flow in amenorrhoea Leaves boiled in oil such as castor oil are applied over rheumatic pains, swellings and tumours of various kinds. *Juice* of the plant is dropped into the ear in earache and discharge from the meatus Decoction of the root in doses of 4 to 6 ounces is considered as a diuretic, diaphoretic and laxative, and is given in half-ounce doses in cases of piles and amenorrhoea. The drug is used in snake-bite also In short, the whole plant has also been used both internally and externally in rheumatism and lumbago

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474 CARDUUS NUTANS, Linn

(N O —Compositae)

Punj —Konchan.

Action.—Febrifuge

(Chopra's " I D of I " pp 472)

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475. CAREYA ARBOREA, Roxb

(N O—Myrtaceae)

Sans, *Hind* & *Ben*—Kumbi *Guj*, *Mah* & *Ben*—Vakumbha. *Tel*—Dudippi *Tam*—Patlacputatammu *Can*—Daddala, Guddada ippae *Mal*—Peelam, Paer, Alam, Ukamaram *Mysore*—Govuldu.

Habitat.—Frequent in Sub-Himalayan tract from the Jumna eastward

Parts Used—Bark, fruit, flowers and juice

Constituents—Thick red bark contains tannin 8 p c. Liber contains calcium oxalate in large simple crystals

Action—Bark and fruit are astringents, juice of bark is demulcent.

Preparations.—Decoction of bark (1 in 10), dose —½ to 1½ ounces

Uses—Bark when moistened gives out mucilage and is therefore prescribed for emollient embrocations, bark is applied to the wound in snake bite and an *infusion* of the same is given internally Leaves made into a pulp and used as poultice 3 to 4 times a day rapidly heal obstinate ulcers, *flowers* are given in *sherbat* or in infusion after child birth to heal ruptures caused by child birth *Juice of the fresh bark* as well as flowers is administered with honey as demulcent in coughs and colds Boils, abscesses and ulcers cleaned and washed with the *decoction* of the barks will heal rapidly, for the same purpose the decoction is employed in cases of dysentery and also internally on account of its astringent action in indigestion Fruit is used as decoction to promote digestion It is also pickled and used.

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476. CARICA PAPAYA, Linn.

(N O—Caricaceae)

Eng—Papaw or Papaya tree *Hind*—Popaiyah, Arandkharbuza, Papita *Pers* & *Arab*—Amba hindi *Punj*—Arand kharpuza. *Ben*—Papeya, Panpe *Guj*—Papai Paputa. *Mah*—Popai. *Tel*—Bappayi; Bobbasi *Tam*—Poppayi, Pappali, Parangi. *Mal*—Kappalam, Pappavam. *Can*—Pappangaye, Peragi, Piranji *Kon*—Poppaye-phal. *Sind*—Paputa, Katha chibudo *Fr*—Papayer Commun. *Ger*—Melonenbaum

Habitat — This valuable tree is commonly cultivated in gardens throughout India, indigenous in America

Parts Used — Milky juice, seeds and pulp

Constituents — In the early stages, the fruit secretes a white milky viscid juice of the consistency of cream which contains an albuminoid, a digestive enzyme or milk curdling ferment—*papain* or *papayotin* "To a certain extent the green fruit also contains 'papain similar to pepsin'[1] A milky juice comes from the rind, which becomes yellow or orange when ripe Pulp of the fresh fruit contains a caoutchouc like substance, a soft yellow resin fat albuminoids sugar, pectin, citric tartaric and malic acids, dextrin etc. Dried fruit contains a large amount of ash 8 4 p c which contains soda, potash and phosphoric acid Seeds contain an oil papaya oil or carsicin, an oil like substance of a disagreeable taste and smell and several acids similar to palmitic acids, carica fat acid and a crystalline acid called papayic acid, also a resin acid and a soft resin 'Leaves contain an alkaloid called *carpaine* and a glucoside named *carposide* On examining *carpaine* Merck & Van Rijn, found that it is a secondary base The present accepted formula is $C_{14}H_{25}O_2N$ The alkaloid can be purified by repeatedly crystallising the base from dilute spirit when it occurs in the form of colourless lustrous, needle-shaped crystals with a melting point of 121°C " Carpaine with hydrochloric acid forms Carpaine hydrochloride soluble in water, used hypodermically as an injection, dose —1/30 to 1/15 of a grain as a cardiac tonic in place of digitalis

Papayotin or Papain a concentrated active principle, which is the proteolytic enzyme is also found distributed in all parts of the tree roots, leaves fruits and seeds, it is also obtained from the milky juice of unripe fruit by precipitation with alcohol (by adding alcohol and powdering the residue after drying) is a whitish amorphic hygroscopic powder soluble in 75 p c of absolute alcohol, water and glycerine, dose —2 to 10 grains Though the active substance is obtained by an incision made on the trunk of the tree a product superior in quality is obtained by pricking the fruits The milky juice obtained by an incision in the trunk of the tree hardens in the air and forms crude papain A good primary material may likewise be prpared by pressing the fruits with a little water and letting the juice dry in the air

(1) & (2) Chopra's I D of I " pp 312

In both cases the product is reduced to a fine powder of whitish appearance and serves for the preparation of commercial papain For this purpose the powder is dissolved in water, the liquid obtained is filtered, and treated with 10 volumes of alcohol The product, thus purified, is finally dried at low temperature and is then pulverized A papain of careful preparation can dissolve in 12 hours almost 2000 times its weight of fibrin However, we rarely find products capable of such activity.

Estimating the Proteoclastic Powder of Enzymes —(a) Pepsin Pharmacopoeial method —The egg albumin employed for the test is made by boiling fresh eggs for 15 minutes, cooling, separating the whites from the yolks and membrane, and after drying the former with a cloth, and sieving it through a wire gauze containing 12 meshes to the centimetre If 12 5 gm of this albumin be suspended in 125 c c of acidified water prepared by mixing 1 gm of hydrochloric acid of sp gr 1 160 with 156 c. c water (0 2% HCL) and 5m gm. be added to the mixture and the whole be incubated for 6 hours, with frequent shaking, at 40 5°, the protein should dissolve, with the exception of a few flakes, to a clear solution Relative strength of different preparations can be approximately ascertained by estimating how much more or how much less than 5m gm can produce the same result (Scientific Indian, Dec 1939 Vol VIII, No 48)

Action.—A good sample of Papayotin or papain, according to British Pharmacopeia Codex, resembles pepsin in its physiological properties and is capable of digesting 200 to 250 times its weight of fresh, pressed blood fibrin in 4 to 5 hours at the temperature of 45/50° Its action is quicker than and superior to that of ordinary animal pepsin at a higher temperature and has the peculiar additional advantage of requiring neither the aid of a free acid nor an alkali to convert the contents of the stomach into peptones, 7 grains of papayotin can digest a pint of milk Papain dissolves natural, albuminoid material such as muscles, diphtheretic false membranes cancerous tissues and their like Papain decomposes peptone much more rapidly than does pepsin The hydrolysis is also more thorough promptly producing tryptophane, and in operations of long duration, tyrosin. However, tyrosin is not produced in papainic digestions with some facility as in tryptic digestions Sap of Carica papaya contains a constituent which is a powerful digestive of albuminoid substances and meat albumen forming true peptones and like pepsin curdles milk. It has

the extraordinary energetic action of hastening the decay of muscular fibre and nitrogenous substances exposed to its influence Juice of the green fruit is emmenagogue and in large doses it acts as ecbolic Fresh milky juice is rubefacient As a solvent of fibrin and other nitrogenous substances the juice makes the meat tender 'Makhzan el adwiya mentions the use of the juice mixed with fresh ginger, for making meat tender The milky juice of the unripe fruit is said to possess powerful anthelmintic properties Women in South India believe that the seeds are powerfully emmenagogue Leaves are saponaceous Filtered juice, unlike pepsin, gives no precipitate on boiling but is precipitated by mercury chloride, iodine and all the mineral acids like pepsin it is precipitated by neutral acetate of lead and does not give any precipitate with copper sulphate and iron chloride The active principle so separated from the fruit is named papain (vegetable pepsin) or papayotin Ripe fruit is digestive and alterative, green fruit is laxative and diuretic Carpaine is said to be not very toxic. A dose of 5 mgm, when injected intravenously in experimental animals, causes only a slight fall of blood pressure which, however, returns to the normal level within a very short time The action of the heart is depressed and both the ventricles and auricles show evidence of slight depression The respiration is not depressed to any great extent The volumes of the different organs are very slightly affected, if at all The alkaloid is said to have not been used in therapeutics

Preparations — Juice, Pulp, Syrup, Paste or Poultice

Uses — Papain or papayotin is most useful in deficiency of gastric juice, excess of unhealthy mucous in the stomach in dyspepsia, intestinal irritation and the like, in doses of one to five grains, it is also used in solution to dissolve the fibrinous membrane in croup or diphtheria, a solution in glycerine being painted on the pharynx every five minutes, and also applied with good results to ulcers and fissures of the tongue and in the form of a pigment prepared with borax and water, to remove warts and corns and other horny excrescences of the skin, in psoriasis and chronic eczema especially of the palms of the hands —Papain 12 grains, powdered borax 5 grains, and distilled water 2 drachms Mix and make a solution Apply it to the part effected

Milky juice of unripe fruit mixed with honey and followed by castor oil acts as an anthelmintic for round worms The milky juice,

which is more efficacious in dissolving albumen than pepsin, is gathered from incisions made on the unripe fruit scraped longitudinally and the juice is put oo a sand bath, it should be dried at a low temperature after 24 hours or so a dull white powder is left, this is the best preparation for internal use, one or two grains with sugar or milk after meals should be given to adults A preparation of this kind is sold under the name of Finkler s Papain The milky juice is exported from Ceylon and other places to Europe for the manufacture of vegetable pepsin which is given to invalids with weak digestion The tincture does not keep well and is disagreeable to taste, *syrup* of the powder may be made, if required for children and women It is most efficacious in dyspepsia Fruit is useful in chrooic diarrhoea. Juice of the green fruit if applied locally in the shape of pessary to the os uteri induces abortion, it dissolves coagulated albumen Fresh milky juice is an application for ringworm, it is a certain remedy in cases of scorpion stings, seeds are also similarly useful, they and the milky juice form the best vermifuge especially for round worms in children Juice of the pulp of the ripe fruit removes freckles Dark-coloured seeds taste like water cress Ripe fruit if eaten regularly corrects habitual constipation, it is useful in piles (bleeding piles) and dyspepsia Boiled and mixed with lime-juice and sugar it makes a good sauce Dried and salted fruit reduces enlarged spleen and liver Unripe and green fruits are made into curry and eaten by women to stimulate secretion of milk Leaves dipped in hot water or warmed over a fire are applied to painful parts for nervous pains Bruised *leaves* applied as a *poultice* are said to reduce elephantoid growths, inspissated juice of the fruit in pill form in doses of 2 to 4 grs, is given internally for the same disease Papaya resembles the apple in taste and is substituted for the sauce of the latter fruit It has the property of making meat hung on the branches of the tree tender, the green fruit is also mixed with meat when set to boil for the same purpose and also cut into slices and eaten as vegetable, it is also pickled Some eat the fruits with ginger or with sugar and lemon juice or pepper and salt

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477 CARISSA CARANDAS Linn

See Capparis corundas.

(N O—Apocynaceae)

Hind—Karaunda, Kantakregi, Korada *Ben*—Karamcha, Karamcha *Tam*—Kalaka, Perungkala. *Tel*—Peddakalavi.

Action.—Antiscorbutic, alkaloid salicylic acid

478 CARTHAMUS TINCTORIUS, Linn.

(N O—Compositae)

Sans—Kamalottara, Kusumba *Eng*—Saf flower, Parrot seed, Wild saffron (dye variety), Bastard saffron *Arab*—Zurtum. *Ben*—Kajureh, Kusum *Can*—Kusubi, Kusibe, Kusumbe *Guj*—Kusumbi, Kasambi (crop or dye), Kabri (seed) *Hind*—Kusumbar, Kusum. *Mah*—Kardai, Kardi Kusumba. *Pers*—Khasakdana *Tam*—Sen durkam, Sendurukkai, Kusumbavirai *Tel*—Agni sikha, Kusumbha *Mal*—Chendurakam. *Sind*—Khoinbo *Fr*—Cartheme, faux safran. *Ger*—Farber safflor

Habitat.—Tropical and subtropical parts of India

Varieties—Two varieties of saf flower are grown in the Bombay Presidency The oil seed variety and dye plant variety "

Parts Used.—The plant seeds root and flowers

Constituents—Flowers contain red colouring principle *Carthamin* or *Carthamite* insoluble in water, a yellow colouring matter soluble in water, cellulose, extractive matters, albumen, silica, manganese, iron etc Seeds contain a clear straw coloured fixed oil 32 p c. '(25% is yielded in the country *ghani* or oil mill in Bombay Presidency), oil determinations made on the whole seed including the husk, gave oil 28 5 to 34 7 p c when the husk was removed, the inner kernel gave 60 5 p c oil [1] Albuminoids 13 p c, carbo-hydrates 18 p c, fibre 26 p c. and ash 2 p c Well prepared saf flower cake contains about 38% albuminoids and at least 6% nitrogen [2] The fresh vegetable contains 86 00 p c. moisture, and the dried material contains Ether extract 6 14, albuminoids 28 12 (contg Nitrogen 4·50), soluble carbohydrates 44 46 woody fibre 9 14 and Ash 12 14 (contg sand 0 43) p c respectively [3]

Preparations—Infusion and decoction (1 in 20), dose—½ to 2 ounces, a medicated oil (the plant boiled in sesamum oil), oil expressed from the seeds

Action.—Seeds are purgative, root is used as diuretic

Uses.—Dried *flowers* taken in drachm doses internally, cure jaundice *Plant* boiled in sesamum oil is a valuable remedy for itch This medicated oil is locally applied to rheumatic and painful joints paraly

(1) to (3) Bom Govt Agri Dept Bulletin.

tic limbs and intractable ulcers *Hot infusion of dried flowers* is given as a disphoretic in jaundice, nasal catarrh and muscular rheumatism A *cold* infusion is used as a laxative and tonic in measles and scarla tina to favour efflorescence of eruptions Seeds are used in rheuma tism Tender leaves and stems, from the 4th to the 6th week of sowing are eaten boiled as a vegetable [1] Leaves curdle milk like rennet *Oil from the seeds* is a most valuable edible oil used in cook- ery, as also in adulterating ghee, while the oil cake is a valuable cattle food, and also a manure for sugar cane and other crops ' The cake has, besides, one advantage over other edible oil cakes in that it keeps free from mould and good for months ' [2] It is also used in the manufacture of soaps and oil paints The flowers of the dye variety saffron, after picking are dried in the sun but preferably under shade and when dry are beaten into powder, sifted and packed ready for the market

N B —*Kardai*, ground nut and *til*, mixed and crushed together, furnish the sweet oil of the bazars Very often the oil seed is partly decorticated by rough grinding between stones and the husk separated by sifting before being pressed for oil Saf flower oil is supposed to be the 'Macassar" oil of European perfumers and large quantities of the seed are sent to Liverpool and London [3]

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479 CARUM AJOWAN—See Prychotis ajowan.

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480 CARUM BULBOCASTANUM, See Carum carui

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481 CARUM CARUI, Linn

(B P) See Cuminum cyminum

(N O—Umbelliferae)

Hind—Shiajira. *Ben*—Jira *Tam*—Shimayi shombu.

Constituents—Essential Oil

Action—Stomachic and carminative

(Chopra's ' I D of I ' pp 472)

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(1) to (3) Bombay Govt Agri Dept Bulletin

482 CARUM COUTICUM, Benth Hook

See Ptychotis ajowan

(N O—Umbelliferae)

Sans—Yamani *Eng*—Bishop's weed, Lovage, Ajava seeds. *Hind & Bom*—Ajowan, Owa *Ben*—Jowan, Juvan, Ajowan *Tam*—Oman, Omam, Asamadam *Tel*—Omamu *Arab*—Kamue muluki. *Pers*—Zinian, Nankhwah

Constituents—Essential oil, thymol

Action—Anthelmintic, antiseptic and carminative

(Chopra's I D of I pp 47-)

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483 CARUM NIGRUM, C GRACILE—See Nigella sativa.

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484 CARUM ROXBURGHIANUM, Benth

See Ptychotis ajowan

(N O—Umbelliferae)

Hind—Ajmud *Ben*—Raudhuni, Radhuni, Randhoni This plant is extensively cultivated in Gujarat (Bombay Presidency) in many Indian gardens, for the sake of its aromatic fruits which are used as a flavouring ingredient in curries, and medicinally as carminative stimulant and stomachic

(Chopra's I D of I pp 472 and Bom Govt Agri Dept Bulletin)

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485 CARYOPHYLLUS AROMATICUS, Linn

See Myrtus caryophyllus and Eugenia caryophyllata

(N O—Myrtaceae)

Sans & Ben—Lavanga *Hind*—Laung *Bom*—Lavang *Tam*—Kirambu

Constituents—Essential oil eugenol

Action—Carminative

Uses—Used in snake bite

(Chopra's I D of I pp 472)

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486 CARYOTA URENS, Linn

(N O—Palmae)

Ben—Benkhajur *Eng*—Jaggery Palm, Malabar Sago palm Hill palm, Ghatpalm Bastard Sago *D & H*—Marika jhad *Guj and*

Mah —Ardhi sopari *Hind* —Ramguoah *Mal* —Irampanae *Tam* —Kondapan *Tel* —Kondaa jilugu *Bom* —Bhiralumada

Habitat.—Assam

Parts Used —Juice, spirit and nuts

Constituents —Palm sugar

Preparations —Palm juice, palm wine, confection, sago from the trunk

Action —Internally nutritious and aphrodisiac, also laxative

Uses —Confection is used in seminal weakness and urinary disorders Juice is used as a palm toddy, and as an application to the to the forehead in hemicrania A glass of freshly drawn toddy taken forehead in hemicrania A glass of freshly drawn toddy taken manufactured from the juice Nut made into a paste is applied to the forehead in hemicrania Pith or farinaceous part of the trunk of old trees is considered equal to the best sago It is baked into bread and boiled into thin gruel

487 CASEARIA ESCULENTA, Roxb

(N O —Samydaceae)

Eng —Wild cowrie fruit *Hind* —Bairi, chilla, chilara *Mah* —Mora ageru Mormassi, Pingri, Bithari *Tam* —Kaddlashingi *Tel* —Gundu gungure *Goa* —Satagunda

Habitat.—Malabar, Bombay to Coorg and Ceylon

Parts Used —Root and bark

Constituents —Bark contains tannin and a principle allied to cathartic acid Root contains a brownish yellow resin (which is partially soluble in spirit), tannic acid, a colouring matter, a small quantity of starch, and also a neutral principle crystallizing in white transparent prisms

Preparations —Decoction (1 in 20), dose —1 to 2 ounces Extract dose—10 to 20 grains Syrup (1 of extract in 6 of syrup), dose—1 to 2 drachms

Action —Root and bark are astringent Root is also a mild aperient, alterative and cathartic and promotes action of liver

Uses — Paste of the root is applied locally to piles Root is a valuable internal remedy for enlargement and chronic congestion of the liver and piles It very soon removes the feeling of weight and

tension in the hepatic region It is best given as a decoction It is also given in diabetes

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488 CASSIA ABSUS, Linn.

(N O —Leguminosae)

Hind and Duk—Chakur Chaksu Banar *Tam*—Karum, Kanam, Mulaippalavirai, Kuttukkol, edikkol *Tel*—Chanupalavit tulu *Mal*—Karinkilla. *Bom*—Chaksie *Mah*—Chamada, Kan kuti *Guj*—Chimar, Chinola *Sind*—Chowan *Punj*—Chaksoo *Arab*—Habusasonadava, Chasa mizaja. *Pers*—Chohsha Makn, Chasauma

Habitat.—From the foot of the Himalayas to Ceylon

Parts Used—Seeds and leaves

Constituents—Seeds reduced to fine powder lost 13 5 p c at 100°C, ash amounted to 3 7 p c, and contained a trace of manganese Extracted with water acidulated with sulphuric acid the solution indicated the presence of an alkaloidal principle Extract also contained a yellow resin insoluble in alkalies Petroleum ether extract contained a non drying oil insoluble in alcohol Ether extract contained a trace of oily matter completely soluble in petroleum ether. (Dymock)

Action & Uses—Muhammadan writers describe seeds as attenuant and astringent and say they strengthen the sight when used as a *collyrium* A *plaster* made from seeds is recommended as an application to wounds and sores especially of the penis In purulent ophthalmia and conjunctivitis about a grain of the *powdered* seeds after being baked is introduced beneath the eyelids Receptacle of the seeds possess diuretic and stimulant properties It is used as a cathartic in habitual constipation, dose —3 drachms Seeds are found efficacious in cases of ringworm and form one of the ingredients of aphrodisiacs like *Methi ladu* and *Vakeno ladu*

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489 CASEARIA GRAVEOLENS, Dalz

(N O—Samydaceae)

Hind—Chilli *Bom*—Naro

Parts Used—Fruits and leaves

Uses.—Fruit is a fish poison, leaves are poisonous

(Chopra's I D of I ' pp 472)

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490 CASEARIA TOMENTOSA, Roxb

(N O—Samydaceae)

Hind—Chillara Used as fish poison

(Chopra's I D of I pp 472)

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491 CASSIA ACUTIFOLIA—*See Cassia lanceolata* (Alexandrian Senna), has also been cultivated in India and a good quality of leaf can be produced from this variety

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492 CASSIA ALATA Linn or C. bracteata or C herpetica

(N O—Caesalpiniaceae)

Sans—Dadrughna *Eng*—Ringworm shrub *Hind* & *Ben*—Dadmurdan, Dadmari *Mah*—Dadamardana *Tel*—Sheemaavisi, Sima avisi Mettatamara *Tam*—Vendukolli Sheemai agatti *Mal*—Seemagati *Can*—Sheemigida Agase-gida *Kon*—Daddupana *Duk*—Dad ka patta, Vilayati agati *Burm*—Marzali gi *Sinh*—Attora

Habitat—It is cosmpolitan in the tropics, met with all over Bengal and many other parts of India

Parts Used—Leaves

Preparations—Extract dose—1 to 4 grains, Tincture (1 in 5) dose—½ to 2 drachms Decoction and paste

Constituents—Chrysophanic acid

Action—Leaves are antiparasitic Decoction is astringent, tincture and extract act as purgative

Properties and Uses—*Leaves* bruised into a *paste* with an equal weight of simple ointment or borax is a specific for ringworm and similar other skin affections, to be more effective it should be mixed with a little lime juice or common salt or the juice of the leaves mixed with a little lime juice makes an equally efficacious application *Leaves in decoction* is considered as a cure for herpes and other skin diseases even venereal affections and all poisonous insect bites and also as a general tonic Decoction of the leaves and flowers, is used as expectorant in bronchitis and dyspnoea and as astringent it is used as mouth wash in stomatitis. *Tincture* of the dried leaves or an *extract* from the leaves acts as a purgative like that of senna or colocynth *Strong decoction* of the leaves and

flowers is a good wash for eczema The drug is used in snake bite also

493 CASSIA ANGUSTIFOLIA, Vahl

See Cassia lanceolata

(N O—Caesalpiniaceae)

Hind—Hindisana *Ben*—Sonamukhi *Tam*—Nila vakai

Constituents.—Glucoside, Kampferin anthraquinone, essential oil, chrysophanic acid, iso rhamnetin, Ca oxalate 12% in leaves.

Action—Laxative and purgative

(Chopra s I D of I pp 472)

494 CASSIA AURICULATA, Linn

(N O—Caesalpiniaceae)

Eng—Mature tea tree, Tanner s cassia *Hind*, *Ben* & *Duk*—Tarwar *Guj*—Awal *Mah*—Taravada *Tel*—Tangedu *Tam*—Avarai, Avirae *Mal*—Aveeram, Jumute, Ponnaviram, Avara *Can*—Taravada gida, Avarike Chakusina gida *Cutch*—Awala. *Sinh*—Rana vara

Habitat—It grows wild in the Central Provinces, Western Coast, South India and Ceylon

Parts Used.—Root leaves flowers bark and seeds

Constituents—Bark contains tannin 25 p c and ash 5 p c

Action—Seeds are refrigerant and attenuant, bark is astringent and tonic Root in decoction is used as alterative

Preparations.—Infusion of leaves (1 in 20), dose —1 to ½ ounces Infusion of bark, Compound syrup (of flowers mixed with Mochaias and Sarsaparilla), dose —2 to 4 drachms, decoction of root (1 in 20), dose —2 to 8 drachms, electuary of the seeds dose —2 to 4 drachms, medicated baths of leaves

Uses—*Decorticated seeds* in fine powder or paste are valued local applications to purulent ophthalmia or conjunctivitis known as 'country sore eye', seeds with their testa and their kernels are finely powdered and blown into the eyes or the *powder* mixed with cocoanut or gingelly oil is applied to the sore eyes "Seeds are also used in diabetes and chylous urine [1] The plant is used in the form of a powder mixed with honey or the *decoction*, especially of flower buds is administered in chylous urine and diabetes with excellent

(1) Bom Govt Agri Dept Bulletin

results *Twigs* are used as tooth brushes In the south of Ceylon, *leaves* are used as a substitute for tea Coffee made from powdered seeds or leaves, is a good substitute for coffee made from seeds of Coffea arabica, and is usefully prescribed in giddiness due to heart disease *Flowers* are used as pessaries by women in Gujarat to check excessive menstrual flow *Infusion of bark* is used for enemas gargles etc, as a substitute for tannic acid, or oak galls *Compound syrup is prescribed for nocturnal emissions*

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495 CASSIA BURMANNI, Wight
(N O—Caesalpiniaceae)

Substitute for senna

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496 CASSIA FISTULA, Linn
(N O—Caesalpiniaceae)

Sans—Nripadruma Aragbhada, Arakvadam, Rajavraksha, Suvarnaka. *Eng*—Indian Laburnum, Pudding Pipe tree, Purging Cassia. *Hind*—Sonhali, Amulthus *Gualior & Duk*—Amaltas, Girmalah, Kirvali *Ben*—Bundarlati, Sonalu, Soondali, Sondal *Guj*—Garmala *Mah*—Bahava *Tel*—Kondrakayi, Raelachettu, Aragvadhamu, Koelapenna, Relagujju *Tam*—Konai, Irjviruttam, Kontaikkai, Sarakkonnai or Sarokkonnoi *Mal*—Konna. *Can*—Kakkaemara. *Kon*—Kakkayi *Smb*—Ajhalla. *Arab*—Khayar shambar

Habitat.—Common throughout India and Burma

Parts Used—Pulp root bark flowers, pods leaves and root

Constituents.—By steam-distilling the finely powdered *fruit*, a dark yellow volatile oil with honey like odour is obtained Water which distils over with the oil contains normal butyric acid Pulp consists of sugar, gum, astringent matter, gluten colouring matter and water

Action—Pulp root bark seeds and leaves possess purgative properties Root acts as purgative tonic and febrifuge Fruit is cathartic.

Action & Uses in Ayurveda and Siddha—*Madura rasam, seetha veeryam, pitta, pitta haram, guru, mild laxative in jwaram,* diseases of the heart, raktapittam, udhardham, soolam.

Action & Uses in Unani—Hot 1°, Moist 1°, laxative, good in liver disease, intestinal ulceration, externally as a paste to resolve as gargle useful in chest diseases of children

Uses—Pulp of pods is an agreeable laxative safe for children and pregnant women It is best used combined with other purgatives as a confection or electuary as by itself it requires to be taken in doses from one to two ounces to produce any effect It is an ingredient in the confection of senna Cassia pulp is also employed in the essence of coffee A confection of the pulp in 2 to 4 drachm doses is a mild purgative producing 1 or 2 soft motions, and is given in cases of diabetes *Gulkhand* of which it forms an ingredient is a cooling laxative especially for delicate women dose is half an ounce with warm milk taken at bed time *Externally* the pulp is considered to be a good application for gout, rheumatism snake bite etc The pulp of the ripe pod mixed with tamarind pulp taken at bed time acts on the bowels mildly causing one or two soft motions the following morning In the flatulent colic of children it is commonly applied round the navel to produce motions Flowers in decoction are given in stomach affections *Externally* the leaves ground into a paste are applied to ringworm, bark and leaves mixed and rubbed with oil are applied to pustules ringworm chilblains insect bites facial paralysis and rheumatism From 5 to 7 of the powdered seeds are prescribed as an emetic Root is useful in fever, heart diseases retained excretions biliousness etc

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497 CASSIA GLAUCA, Lam

(N O—Caesalpiniaceae)

Tel—Kondatantemu, *Sinh*—Wal ahalla

Parts Used—Bark & leaves

Constituents—Glucoside chrysophanic acid

Uses—Bark & leaves are used in diabetes and gonorrhoea

(Chopra's "I D of I" pp 473)

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498 CASSIA LANCEOLATA, Lino & Forsk.

Var C angustifolia, C elongata

(N O—Caesalpiniaceae)

Eng—Tinnevelly or Indian Senna *Hind*—Hindi sana *Ber*—Sona makhi, *Arab*—Sana-e-Hindi *Duk*—Nat ki Sona *Guj*—

Senamakki *Mah*—Mulcacha Sonamakki *Tel*—Naelaponna. *Tam*—Nilavakai, *Mal*—Nilavaka *Can*—Nilavirai

Habitat.—Cultivated in Southern India, at Tinnevelly, Madura. Trichinopoly and in Poona of the Bombay Presidency

Parts Used—Pods and dried leaves

Constituents—Pods and leaves to a major degree (leaflets) contain *cathartin* (cathartic acid with one or two earthly basis), emodin (trioxy methyl anthraquinone), chrysophanic acid, etc, also senna picrin (senna sugar, catharto mannit or sennit), senna crol (chrysophan), phoecretin, mucilage, vegetable salts (tartaric and oxalic acids) and ash Senna leaves belong to the group of drugs containing oxyanthraquinone

Action—Purgative, but heaty and is apt to gripe and cause nausea, but it is free from astringency and does not induce after constipation 'Senna leaves cause pappy stools, large doses produce intestinal irritation, tenesmus, nausea, intestinal colics and abortion (Dr Marfori Bachem) Therapeutical doses stimulate intestinal peristalsis (Dr Marfori Bachem), the aperient effect ensuing in about 7 to 12 hours This may be associated with mild colics but without inflammatory intestinal irritation To order to remove the cause of these colics the resinous components of the drug are often taken out by extraction of the leaves with spirit of wine, this however results in the loss also of active substances so that the use of Folia Senna sine resina cannot be advocated (Dr Wasicky) [1] Legufes are more active when green

Preparations.—Powder, dose —1 to 2 drachms, Confection of Senna, dose —1 to 4 drs Compound Infusion, dos —1 to 2 ounces, Syrup, dose —1 to 2 drachms, Tincture, dose —1 to 4 drachms

Uses.— Arab physicians had esteemed the fruits more than the leaves and extolled the merits of senna as a purgative and as a cordial when mixed with suitable drugs as violets (Banafsha) [2] Later physicians preferred senna leaves Senna is most commonly employed in conjunction with an aromatic and alkaline salt to prevent griping *It should not be administered when there is irritation and fever, nor during pregnancy nor the existence of piles* It may

(1) Dr Madav's Book, (2) Chopra's "I D of I" pp 114 & 115

be given to children and elderly persons when a tolerably active purge is required, and it is good to combine a saline aperient such as epsom salt with it. The compound infusion is prepared as follows —senna leaves 4 drachms, raisins (stoned) 1 ounce, ginger (bruised) and cloves (powdered), each one drachm and boiling water a pint; macerate four hours in a covered vessel and strain; dose is 1 to 2 ounces; with the addition of milk and sugar it will taste like tea and will be readily taken by children A table-spoonful of brandy will add to its stomachic properties and make it keep better, *but, if for children, this should not be added*. The infusion should be kept in a cool place Pods of the senna tree also possess purgative property but in a less degree than the leaflets; 6 to 12 pods for adults and 3 to 6 for children and the aged. They are best infused in a glassful of cold water for 6 to 8 hours and the whole taken *Externally* powdered leaves mixed with vinegar and made into a *plaster* are applied locally in certain skin diseases. Senna leaves combined with Henna are used as a hair-dye to make the hair black.

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499 CASSIA MIMOSOIDES, Linn.

(N O.—Caesalpiniaceae)

Santhal.—Patwa-ghas

Parts Used.—Roots

Uses.—Roots are used in spasms of stomach.

(Chopra's "I. D of I" pp. 473)

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500. CASSIA OBOVATA, Linn. or C senna

Found in Punjab, Western Peninsula, Sind and Bombay, the Deccan; known as *Surati-sonamukhi* in Gujarat and is sold as "country-senna." This was used as an adulterant to ordinary senna but was not recognised in the Pharmacopoeia

Mah.—Bhui tarwad. *Tam*.—Nilavagai; Nilavarai *Tel*.—Nel. tangedu.

501 CASSIA OBTUSIFOLIA, Linn

(N O—Caesalpiniaceae)

Hind & Ben—Chakunda

Constituents— *Emodin*

(Chopra s 'I D of I ' pp 473)

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502 CASSIA OCCIDENTALIS, Linn

(N O—Caesalpiniaceae)

Sans—Kasamarda *Eng*—Negro Coffee *Hind*—Kásondi *Duk & Bombay*—Kasunda. *Ben*—Kalakasunda. *Guj & Mah*—Kasuvayee; Hikal *Tel*—Kasinda *Tam*—Nattutakarai, Paeravirai, Ponnavirai *Mal*—Natrum takara, Ponnaveeram. *Can*—Doddatagache *Kon*—Hodu taikilo

Habitat.—A common weed scattered from the Himalayas to the Western Bengal, South India, Burma and Ceylon

Parts Used.—Leaves, seeds and roots

Constituents.—Seeds contain fatty matters (olein and margarin) tannic acid, sugar gum, starch, cellulose, achrosine and traces of calcium sulphate and phosphate, sodium chloride, magnesium sulphate, iron, silica, *malic acid and chrysophanic acid* Achrosine is so called, because the colour cannot be fixed upon tissues by any mordant. Leaves contain *cathartin*, a colouring matter and salts Roots contain a resin, a bitter non alkaloidal principle 'Emodin, oxymethyl anthraquinones, toxalbumin "

Action—Leaves, roots and seeds are purgative Seeds are also febrifuge Root is considered as also diuretic and antiperiodic.

Preparations.—Infusion and decoction

Properties and Uses.—Seeds roasted and ground have been used as a *substitute for coffee* Medicinal properties are destroyed in the roasting process Seeds, 4 to 12 grains, grounded with a tola of milk and strained are given once a day to children in convulsions, or in doses of 1½ drachms it may be given to the mother or wet nurse Seeds are also useful in cough and whooping coughs Dose of the leaves is 90 grains *Externally* the seeds and leaves are applied smeared with grease to slight sores, itch, blisters etc., seeds are used in France and West Indies as a febrifuge in the form of a wine or tincture. Infusion of the *root* is considered as an antidote to various poisons; it is given in fevers and neuralgia, useful also in incipient

dropsy Infusion of root (1 in 20) is given in doses of ½ to 1 ounce and the *decoction of whole plant* (1 in 10), in doses of 2 to 6 drachms, in skin diseases as an application A *decoction of the leaves, roots and flowers* is highly prized in hysteria to relieve the spasm, also useful in relieving flatulence of dyspeptic, nervous women A decoction of the powdered seeds (1 in 10) is given in doses of 1 to 2 ounces in cases of constipation as a mild purgative

(Chopra's "I D of I " pp 473)

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503 CASSIA SIAMEA, Lam

(N O—Caesalpiniaceae)

Tam—Ponnavarai, Karungkonnai *Tel*—Seematangedu A tree growing in Bombay Presidency

Constituents.—An alkaloid

(Chopra's "I D of I " pp 473)

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504 CASSIA SOPHERA, Linn or C. coromendeliana.

(N O—Caesalpiniaceae)

Sans & Can—Kasamarda *Eng*—Senna Sopheta, Senna Esculenta, Senna purpurea *Hind*—Bas ki Kasunda *Dak*—Jangli takla *Gwalior*—Sarphoka. *Mah*—Ran tankala *Tel*—Paidi tangaedu *Tam*—Peria takarai *Mal*—Ponnantakara *Ben*—Kalkasunda

Habitat.—Common throughout the tropics and India

Parts Used—Bark leaves seeds, root and root bark

Constituents—Emodin, chrysophanic acid

Action—Bark, leaves and seeds are cathartic, root is considered expectorant Leaves are anthelmintic and antiseptic

Preparations.—Infusion, powder, plaster and ointment.

Properties and Uses—*Juice* of the leaves made into a *plaster* with sandalwood or mixed with lime-juice or a paste made from the root with *conjee* or powdered seeds is viewed as a specific for ringworm, also for dhobi itch, it is given *internally* as an expectorant for coughs Infusion or *decoction of the leaves* is given in asthma hiccup, etc, given with black pepper the *root* is a remedy for snake bite *Bark in infusion* or the *powdered seeds* with honey are given in diabetes *Ointment* of the bruised seeds, leaves and sulphur or the *root bark* ground into a paste with honey is an application for

ringworm and patches of pityriasis and psoriasis This virtue seems to be due to the chrysophanic acid which it and other species of Cassia contain *Infusion of the fresh leaves* is a useful injection in gonorrhoea in the sub-acute stage, when it is administered internally it acts as an anthelmintic *Externally* it is used for washing syphilitic sores It is dropped into ears invaded by any insects Infusion of the leaves is administered also in rheumatic and inflammatory fevers, mixed with sugar it is given in cases of jaundice A decoction of the whole plant is useful in diminishing urine, and as an expectorant it gives relief in cases of acute bronchitis

(Chopra's I D of I " pp 473)

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505 CASSIA TORA, Linn C toroides; C. foetida; C. obtusifolia, C. tagara.

(N O—Caesalpiniaceae)

Sans—Dadamardana, Kharjugna, Taga, Ayudham, Prabhoonata, Chakramarda (destroyer of ringworm) *Hind & Ben*—Chakunda, Panevar *Gwalior*—Pambar *Duk*—Tarota. *Bom &* *Guj*—Kovarayа. *Mah*—Tankala. *Tel*—Tagirisa, Tantemu, Tanti yamu *Tam*—Ushittagarai, Thagarai verai (seeds), Tagarai, *Can*—Tagache, Taragashee. *Mal*—Takara. *Kon*—Daddupan *Eng*—Foetid Cassia, Cassia. *Arab*—Kulikul, Sanji *Burm*—Dan kilay kwai *Sinh*—Toga.

Habitat.—A small plant growing on dry soil in Bengal and throughout the tropical parts of India.

Parts Used.—Leaves, seeds and roots

Constituents.—Both leaves and seeds contain a glucoside resembling chrysophanic acid Leaves contain a principle similar to cathartin and a red colouring matter and mineral matters. "Emodin glucoside "[1]

Action—Mucilaginous and foetid smelling leaves are internally gentle aperient, externally germicide and antiparasitic, they have also maturant and anodyne action. Root and seeds also have the same properties, externally

Preparations.—Decoction, Paste Poultice and Oil

Uses.—Both *leaves* and *seeds* constitute a valuable remedy in skin diseases, *seeds* steeped in the juice of Euphorbia neriifolia and

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(1) Chopra's "I D of I " pp 473

then made into a *paste* with cow's urine is an application to cheloid tumours, also useful in leprosy, psoriasis, etc, ground with sour buttermilk or lime juice and applied to ease the irritation of itch or skin eruptions Root rubbed into paste with lime juice is a specific for ringworm, applied also for buboes in plague *Leaves* are prescribed *in decoction* (1 in 10) in 2 ounce doses for children suffering from feverish attacks while teething, boiled in castor oil they are applied to foul ulcers, also inflammations caused by any irritant They are also used as a *poultice* to hasten suppuration It forms a warm remedy in gout sciatica and pains in the joints Seeds have been used as a substitute for coffee and tea An oil called *Chakramardha* and containing Cassia tora and Eclipta alba is a very useful application in obdurate skin diseases such as ringworm etc The drug is used in snake bite also

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506. CASSUVIUM PORNIFERUM,

See Anacardium occidentalum

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507 CASSYTHA FILIFORMIS, Linn

(N O—Lauraceae)

Sans—Akasavalli *Hind*—Amarbeli *Ben*—Akasbel *Tam*—Kothan *Tel*—Pachitiga *Mal*—Akashavalli *Can*—Akashaballi, Beluballi

Habitat.—This common plant is a parasite on Eugenia jambolana and other trees

Constituents.—Alkaloid 0 1%

Uses.— Used in bilious affections urethritis and skin diseases (Chopra's I D of I pp 473)

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508 CASTALIA ALBA—See Nymphoea alba

The Egyptian Castalia Lotus of the genus Nymphoea

(N O—Nymphoeae)

Is met with in Bengal with white or pink petals or mixed in shallow autumn flood waters Its stem is regarded as astringent and refrigerant, it is eaten by the poorer classes

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509 CASTANEA SATIVA

Eng —Sweet chestnuts

Habitat — This large tree closely allied to the oak is native of Asia Minor and other parts of Asia and now very widely cultivated in India

Constituents.— Bark of the common chestnut contains practically as much tannin as oak bark The green wood contains from 3 to 4% of tannin Chestnut extract (used for tanning leather) contains from 30 to 40% of tannin

Uses — Nuts are highly nutritous The green wood of this like oak wood is employed as a source of extract for tanning purposes in Europe

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510 CASUARINA EQUISETIFOLIA Forst

(N O —Casuarinaceae)

Hind —Janglijhan *Ben* —Belatijan

Parts Used — Wood Bark and leaves

Constituents —Colouring matter casuarin

Action — Astringent

Uses — Leaves are used in colic

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511 CATABROSA AQUATICA Beauv

(N O —Gramineae)

Constituents — HCN glucoside

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512 CATARUS SPECIFLORUS Linn

Uses — Used in diarrhoea

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513 CATTLEYA

(N O —Orchideae)

Habitat.— This orchid is a favourite in green houses of cool places in South India

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514 CAULERPA CRASSIFOLIA & its other species

caulerpaceae

(N O —Siphonales)

1 Caulerpa verticillata (J G Agardh)
2 " scalpelliformis (R Brown) Zeber V Bosse
3 " crassifolia (Ag) J Ag
4 " taxifolia (Vahl) Ag
5 " peltata (Lamourx)
6 " racemosa (Foerskal) J Agardh Var clavifera
" " macrophysa
" " uvifera
7 " sertularioides (Gmelin) Howe

Habitat — Found on the rocks of seacoast of Malvan harbour of Bombay Presidency in the South West of India

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515 CADREIA TOONA Roxb

(N O —Meliaceae)

Sans —Tuna Kuberaka Nandi vraksha *Eng* —Red Toon or Indian Mahogany Tree *Hind* —Toona Tun *Ben* —Nandibriksha *Uriya* —Mahalimbu *Punj* —Khusing *Nepal* —Labshi *Mah* — Deodari *Tam* —Tunumaram Sevvagil *Tel* —Nandi chettu *Mal* Aranamaram *Can* —Devadari Kempu gandhagiri *Bom* —Kooruk Tuni *Burm* —Thit ka du

Habitat—Tropical Himalayas from the Indus eastward and throughout the hilly districts of Central and Southern India

Parts Used —Bark, gum and flowers

Constituents Resin extractive matter gum, a bitter substance nyctanthin

(Chopra s I D of I PP 473)

Action —Bark is a powerful atringent tonic and valuable anti periodic Flowers known as *gultar* in Bombay are considered emmenagogue

Uses — *Bark* in the form of *infusion* is given in chronic infan tile dysentery dose for the infant is ½ to 1 drachm. *Powder* of the bark is a useful application in various forms of ulceration With

bonduc nut as a tonic and antiperiodic the infusion is given in fevers, rheumatism and dysentery *Flowers* are given in disordered menstruation

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516 CEDRUS DEODARA—See Pinus deodara

(N O—Coniferae)

Sans—Vrikashapa, Snehaviddha, Devadaru, Badra daru, Suradaru *Eng*—Pinus Deodara, Himalayan cedar *Hind*—Deodar, Toona *Ben*—Toon *Tam*—Toon maram, Devadaru *Tel*—Devdari, *Mal*—Devadaru *Can*—Devdari, Devadaru *Mah*—Devataram *Punj*—Pahari keli

Habitat—All over the Northern Himalayas, largely cultivated in India as an ornamental tree

Parts Used—Wood bark, leaves and turpentine

Constituents—Wood yields an oleo-resin known as *Kelanka tel* and a dark coloured oil or tar resembling crude turpentine is obtained by destructive distillation

Action—Wood is carminative, bark is powerfully astringent and febrifuge Leaves have mild terebinthinate properties

Action and Uses in Ayurveda and Siddha—Tikta rasam katu vipakam, ushna veeryam, kapha vata haram, lagu, snigdham, in dam, adhananam amam, tandra, prameham, kasam. Externally Kandu sodham, megha vranam (Therapeutic Notes)

Action & Uses in Unani—Hot 2° Dry 2° Resolves inflammation, antispasmodic, anti poison, paralysis, stone in the kidney fevers Oil—Hot 2°, Dry 1°, for injuries (external) (Therapeutic Notes)

Uses.—*Bark* is a good remedy in remittent and intermittent fevers diarrhoea and dysentery and though not bitter it is a fair substitute for Peruvian bark particularly when united with powdered Bonduc nut Its *powder* is applied with much benefit in the treatment of ulcers It is considered especially useful in bilious fevers and inveterate diarrhoea arising from atony of the muscular fibre

Oleo resin and *dark coloured oil* or *turpentine*, are applied to ulcers and skin diseases They are valuable in mange in horses and sore-feet of cattle

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517 CEDRUS LIBANI, Barrel

(N O —Coniferae)

Sans & *Ben* —Devadaru *Hind* —Deodar *Punj* —Pahari keli

Constituents —Gum, cholesterin, and essential oil

Uses — Used in fever, flatulence, dropsy, rheumatism, piles, gravels in kidney and also in snake bite

(Chopra s I D of I pp 473)

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518 CELASTRUS PANICULATA, Willd

C. montana, C. multiflora, C nutans.

(N O —Celastraceae)

Sans —Vanhiruchi, Katumbhi, Kanguni *Eng* —Staff Tree *Bom*, *Hind* & *Guj* —Malakanguni *Mah* —Kanguni, *Punj* —Sankhu *Can* —Karuganne *Tam* —Atipati chchain, Valuluwai *Tel* —Mala eri kata, Bavunji, Gundu mida

Habitat.—Hilly districts, Himalayas and Ceylon

Parts Used —Seeds, leaves and oil

Constituents.— Seeds contain an oil, a bitter resinous principle, tannin and ash 5 p c. Oleum nigrum an empyreumatic black oil is obtained by the destructive distillation of the seeds "Alkaloid, glucoside, colouring matter"

(Chopra s I D of I pp 473)

Action.—Oil is rubefacient, seeds are alterative, stimulant and nervine, seeds and oil stimulate intellect and sharpen memory

Preparation —Decoction of seeds and Pomatum or Pomade

Uses.— *Oil* with benzoin, cloves, nutmeg and mace added, is a sovereign remedy in Beri beri and a powerful stimulant, dose 10 to 15 minims Decoction of seeds (1 in 10) with or without the addition of aroamtics is given in rheumatism, gout, paralysis and leprosy Oil is used as pomade for relieving rheumatic pains of a malarious character and in paralysis It is also used in the form of pomatum made by mixing one part of the oil in 8 parts of butter for application to head It is known as *Magzudhi* (Brain clearer) and believed to promote intelligence

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519 CELASTRUS SENEGALENSIS, *Lam*
(N O —Celastraceae)

Hind —Gajachini
Uses.— Used in *snake bite*
(Chopra s I D of I pp 473)

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520 CELASTRUS SPINOSA, *Royle*
(N O —Celastraceae)

Hind —Faliddhar *Punj* —Kandiari
Parts Used —Seeds
Uses —Smoke from seeds is good for toothache
(Chopra s I D of I pp 473)

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521 CELOSIA ARGENTEA, Linn
(N O —Amarantaceae)

See Amaranthus poligamus Most abundant in dry fields of South India
Hind —Sufed murgha *Ben* —Sweetmurgha, Safed morugphul *Tam* —Pannai *Tel* —Gulugkura.
Parts Used —Seeds
Uses —Seeds are used in diarrhoea
(Chopra s I D of I pp 473)

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522 CELOSIA CRISTATA, Linn
See Amaranthus poligamus
(N O —Amarantaceae)

Sans —Mayur Sikha *Hind* —Kokan *Ben* —Lal murga *Punj* —Mawal
Parts Used — Flowers
Action — Seeds are demulcent
Uses — Flowers are used in diarrhoea and excessive menstrual discharges Seeds are used in painful micturition
(Chopra s ' I D of I ' pp 473)

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523 CELSIA CAUCASICA, Willd
(N O —Scrophularineae)

Punj —Brimla
Parts Used —Fruit

Uses — Fruit is used in amenorrhoea.
(Chopra's "I D of I" pp. 473).

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524 CELSIA CINNAMOMEA, Lindl.
(N O —Serophularineae)

Sing —Gurenda.
Parts Used.—Bark.
Constituents —Scatol
Uses —Bark is used as a blood-purifier in skin eruptions
(Chopra's "I D of I" pp. 473).

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525 CELSIA COROMANDELIANA, Vahl.
(N O —Serophularineae)

Sans —Kulahala *Ben* —Kumshuma.
Action —Sedative, astringent
Uses.—Used in diarrhoea & dysentery.
(Chopra's I D of I" pp 473)

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526 CELTIS ORIENTALIS, Linn
(N O —Urticaceae)
(Chopra's I D of I." pp. 473).

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527 CELTIS RETICULATA, Hk f & T
(N O —Urticaceae)
Constituents — Alkaloid

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528 CENCHRUS BIFLORUS, Roxb.

Vernacular —Anjan Dhaman
Habitat — This perennial grass is found in Gujarat and Sind;

Composition :—

	Before flowering.	In flower.	After flowering.
Moisture.	82·08	80 65	60·72
Ether extract .	1·07	1·15	1·42
Albuminoids .	2 44	2·31	1·71
Carbohydrates	7·16	8·10	21·81
Wood fibre ..	4·42	5·09	10·12
Ash	2·83	2·70	4·22

Uses — This grass is liked by cattle, when fed before flowering as nutrients are highest in this stage In the first two stages the grass is not suitable for hay or silage on account of its large percentage of water Hay *made from the seed stage is fine and soft although* it contains only a small proportion of nutrients

(Chopra's I D of I pp 473)

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529 CENTAUREA BEHEN, Linn

(N O—Compositae)

Ind Bazar—Safed bahman

Constituents — A crystalline alkaloid bahamine

Action — Aphrodisiac

Uses — Used in jaundice and calculus affections

(Chopra's I D of I pp 473)

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530 CENTAUREA CYANUS, Linn.

(N O—Compositae)

Constituents — Glucoside, chichorigenin

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531 CENTELLA ASIATICA, Urban

(N O—Umbelliferae)

Tam—Vallarai *Tel*—Babassa Mandukbrammi *Ben*—Thul kurhi *Hind*—Kula kudi

Habitat.— Occurs as a weed in wet places

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532 CENTIPEDA ORBICULARIS, Lour

See Myriogyne minuta or Artemesia sternutatoria or A ptarmica

(N O—Compositae)

Sans—Chikkana, Chhikika *Eng*—Sneezwort *Hind Ben, Bom and Gualior*—Nakk chhikni, Nagdowna, Machittie *Ben*—Mechitta *Mah*—Nakasinkani, Shikani *Sind* & *Arab*—Afkur *Santal*—Bedi Achim *Guj*—Chhikani

Habitat.— Plains of India and Ceylon

Parts Used— Seeds and herb

Constituents—Essential oil amorphous bitter substance (Chopra s I. D of I pp 473)

Action and Uses—Minute *seeds* are used as a snuff (sternutatory), also the powdered herb It is administered in ozena, headaches and colds in the head Boiled to a *paste* and applied to the cheeks it is employed in the cure of toothache, used also for hemicrania. It is considered a hot and dry medicine, useful in paralysis pains in joints and special diseases, also as a vermifuge The plant in *infusion* has been found to be a very efficient application in cases of ophthalmia purulent or otherwise

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533 CEPHAELIS IPECACUANHA,

See Phychotria ipecacuanha

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534 CEPHALANDRA INDICA, Naud

See Coccinia cordifolia, Cogn or C. Indica, Wight & Arn

(N O—Cucurbitaceae)

Sans—Vimboshta Vimbaja, Bimba, Tundika *Hind*—Kandurika bel *Punj*—Kanduri *Pers*—Kabare hindi *Guj*—Gholi *Bom*—Bhimb *Mah*—Ran tondala, Tondli *Mal*—Kova *Tam*—Kovai *Tel*—Dondatiga, Kakidonda *Can*—Tonde konde, Tonde kayee *Ben*—Tala kucha

Habitat— Grows in a wild state abundantly in Bengal and in most parts of India. [1]

Parts Used—Leaves, root fruit and bark

Constituents—Root contains resin which is soluble in caustic soda and in amylic alcohol, and an alkaloid starch sugar, gum, fatty matters, an organic acid and ash 16 p c. which contains no manganese Collip (1923) isolated a substance called Glucokenin The expressed juice taken from the crushed plant, when analysed was found to contain an enzyme, a hormone and traces of an alkaloid [2]

Action—Alterative Dried bark is a good cathartic Leaves and stem are antispasmodic and expectorant The fleshy green fruit is very bitter When ripe the fruit becomes scarlet in colour and "sweet to the taste" [3] Glucokenin has the property of reducing the

(1) to (3) Chopra's I D of I pp 313 313

amount of sugar in the blood ' The enzyme had well marked amylolytic properties and rapidly hydrolysed starch On the proteins it had no effect No marked effect was produced besides the normal variations which usually occur when subcutaneous injection of the hormone for blood sugar was given The alkaloidal body was also tested but did not show any pharmacological action on the heart, respiration, blood pressure and isolated uterus Neither the alkaloid nor the enzyme had any sugar reducing properties when administered to rabbits '[1] The plant has the reputation in Bengal of having a remarkable effect in reducing the amount of sugar in the urine of patients suffering from diabetes mellitus It has been described by some as the 'Indian substitute for insulin' and among the medical practitioners in Calcutta a strong belief exists as to its efficacy in glycosuria The green juice extracted from the plant was tried in some of the surgical cases suffering from glycosuria in the Calcutta Medical College Hospitals with apparently beneficial results The quantity of sugar was said to be greatly reduced and in some cases entirely disappeared "[2]

Preparations.- Tincture (1 in 10), dose —½ to 1 drachm. Decoction of leaves and stem (1 in 10), dose ½ to 1 ounce, Powder of dried bark, dose is 30 grains, juice of root, dose 1 to 3 drachms

Uses — Fresh expressed juice from the tuberous roots, stem and leaves is given either by itself or in combination with certain metallic preparations in early cases of diabetes intermittent glycosuria, enlarged glands and in skin diseases such as pityriasis Leaves mixed with ghee are applied like liniment to sores and skin diseases Leaves are also applied to skin eruptions such as those of small pox, and the plant is generally used as tincture internally in gonorrhoea Fresh juice of leaves is applied to the bites of animals; also applied to the body to induce perspiration in fevers Green fruit is chewed to cure sores on the tongue, and the ripe fruit is eaten raw as a vegetable, but is never given to children as it is supposed to blunt the faculties There is a bitter variety which is useless, under cultivation the fruit loses its bitterness When green, the fruit is used in curries Decoction of the leaves and stem is useful in bronchial catarrh and bronchitis Leaves boiled in gingelly oil are applied

(1) & (2) Chopra's "I D of I" pp 313-315

to ringworm, psoriasis and itch; oil is also used as an application to ulcers, and as an injection into chronic sinuses.

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535. CERASTIUM GLOMERATUM.

(N. O.—Caryophyllaceae)

Habitat.—Found growing on the Nilgiris and Western Ghats, above 6000 ft.

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536 CERASTIUM INDICUM, Thuill.

(N O—Caryophyllaceae)

Habitat—Found on the Nilgiris & Western Ghats above 6000 ft.

(Chopra's "I D. of I." pp. 473)

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537. CERASUS CAPRONIANA.

(N. O—Rosaceae)

Kash—Aloo-baloo

(Chopra's I D of I" pp 474)

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538 CERATONIA SILIQUA, Linn

(N O—Leguminosae)

Parts Used—Pods

Action—Purgative, astringent.

Uses—Used in cough

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539 CERBERA ODOLLAM, Gaertn

C. manghas; C. quaternifolia.

(N O—Apocynaceae)

Lng—Odallum tree *Burm*—Kullu *Ben*—Dabur; Dhakur. *Hind.*—Pilikurbur *Mah*—Sukanu *Tam*—Kadamoth, Katarali; Udalai. *Mal.*—Odallum. *Can*—Honde *Pers*—Kanerzard

Habitat.—Salt swamps in Malabar and creeks on the sea coast of India, Ceylon and Laccadives

Parts Used.—Seeds, bark, leaves and milky juice

Constituents.—A poisonous glucoside identical with thevatine; cerbetin occurs in the seeds which yield 55 p. c of a fixed oil and ash 3.3 p. c.. bitter substances odollin.

Habitat — Western India Punjab Upper Gangetic plains as far east as Allahabad Southward to Travancore

Parts Used — Tubers

Constituents —Tubers are found to contain starch, sugar, gum albuminoids fat crude fibre and ash 9 4 p c containing manganese The bitter principle of the tubers is an alkaloid *Ceropegine* soluble in ether alcohol and water

Action and Uses.—Tubers of this and several other species of Ceropegia are used as tonic and digestive Tubers when boiled lose their bitterness and pulped with milk form a sweet mucilaginous mixture which should be highly nutritious judging from their chemical composition The drug is used in Bihar in colds and eye diseases to cause sneezing dose is 1 grain to half drachm Tubers are given in leucorrhoea seminal debility, bowel complaints of children etc They form an ingredient of aphrodisiac and tonic confections

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544 CEROPEGIA TUBEROSA Roxb

(N O —Asclepiadaceae)

Punj.—Galot *Bom* —Khappar Kadu *Tam* —Manda

Action —Tonic.

Uses —Used as a tonic for children

(Chopra s I D of I PP 474)

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545 CHAMAEROPS RITCHIEANA Griff

(N O —Palmae)

Leaves are used in diarrhoea and dysentery

(Chopra s I D of I PP 474)

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546. CHAVICA BETEL. See Piper Cetel

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547 CHAVICA ROXBURGHII—See Piper longum

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548 CHEIRANTHUS CHEIRI Linn

(N O —Cruciferae)

Hind.—Todrisurkh. *Ben.*—Khuen

Constituents —Alkaloid cheiranine, glucoside, cheirolin cheiran thin

Action.—Emmenagogue.

(Chopra s I D of I pp 474)

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549 CHENOPODIUM ALBUM Linn.

(N O —Chenopodiaceae)

Sans—Vastuk *Hind*—Chandan betu *Eng*—Goose foot. *Ben*—Bathu sag *Punj*—Bathua. *Bom*—Chakwat *Mah*—Chak wat *Sind*—Fil, Jhil *Tel*—Pappu kura. *Tam*—Parupu kire *Can*—Hunchik *Arab*—Kulf

Habitat.—Usually grown in gardens, but sometimes in corners of early grain fields in Bombay Presidency and elsewhere in India, Kashmir and Sikkim.

Constituents—Leaves are rich in an essential oil mineral matters, particularly in potash salts a considerable amount of albuminoids and other compounds of nitrogen

Action.—Anthelmintic and laxative

Uses—The plant is much esteemed as a pot herb. Leaves are taken in the form of infusion or decoction as a laxative and anthelmintic. Seeds are consumed by hill tribes as an article of food It has been recommended by Hindu physicians in hepatic disorders and in splenic enlargement.

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550 CHENOPODIUM AMBROSIOIDES, Linn.

(N O — Chenopodiaceae)

Eng—Mexican Tea, Jerusalem Oak, American Wormseed. *Mah*—Chandanbatva. *Mal*—Kutu ayamodakam.

Habitat.—Annual or perennial pot herb, generally 6 or 7 species are met with in South India, Bengal Sylhet, Madras and Bombay Presidencies. The fruit from which oil is expressed is somewhat globular frequently more or less compressed with a thin greyish brown pericarp The seeds are reddish brown or black kidney shaped and shiny and have a strong eucaluptus like aromatic odour and a bitter and pungent taste.

Chemical Composition & Properties of Chenopodium ambrosioides.—The active principle of chenopodium is a volatile oil which, like most of the substances of this class, is a mixture of various constituents The oil has no definite boiling point and when

it is heated to 100 C in the air, it explodes with great violence. Different specimens of the oil differ much in their physical characters; the colour may vary from pale yellow to bright golden yellow. The toxicity of different stocks also varies considerably. The chemical composition of the oil has been extensively studied and though there is diversity of opinion regarding minor details the following composition may be taken as the standard —

1 Ascaridole varying from 45 to 70 per cent. of the total oil in different samples. It has a definite chemical composition $C_{10}H_{16}O_2$.

2 Small portions of an isomer of ascaridole, the glycol anhydride oil its corresponding hydrate, in proportions of 5 per cent. or more of the total oil.

3. A mixture of various liquid hydrocarbons, containing cymene a turpinene, a new laevo turpense, etc., making about 30 per cent of the total

4 Traces of lower fatty acids, chiefly butyric acid, and about 0 5 per cent. of methyl salicylate. (Lt Col. Chopra).

The Indian chenopodium oil—both from C. ambrosoides and C anthelminticus was examined by Henry and Paget at the Wellcome Bureau of Scientific Research. The yield of the oil according to their estimation was lower The percentage of oil yield from C. ambrosoides was 0 17, and from C. anthelmintica 0 24. The oil expressed from the Indian seeds was found to be lighter in colour, and had an odour somewhat different from that of the American wormseed oil derived from C. ambrosoides, var, anthelminticum.

The constants of the Indian oil as compared with those of American wormseed oil are as follows :—

Nature of oil	Sp gr at 15° C.	Sp. rotation
C ambrosioides (Indian)	0·9399	+0 07°
C. anthelminticum (Indian).	0 9080	−9 6°
American Wormseed oil.	0 9669	−5,6°

It will be seen from the above that in Indian chenopodium oil differs from good American chenopodium oil in containing less of the active principle, ascaridole, viz, only about 46 per cent. in place of 65 per cent. or more. Another difference lies in the nature of

the hydrocarbons present The American oil contains about 30 per cent. of this fraction of which about half is cymene and the other half a mixture of terpinene and a laevo-rotatory terpene The hydrocarbon fraction of the Indian oil on the contrary is p-cymene with a small amount of dextro-rotatory terpene The specifications of the United States Pharmacopoeia are that the oil shall have a specific gravity of 0 955 to 0 980 at 25 C, shall be soluble in 8 volumes of 70 per cent alcohol and shall have an optical rotation between 40 and 10 in a 100 mm. tube at 25 c. The mixed Indian oil therefore obviously falls short of these specifications

In view of the differences between the two specimens of oil as outlined above, the Indian oil may be considered to be very much inferior The results achieved so far clinically with the Indian oil are, however, said to have been satisfactory

(Chopra s I D of I ' PP 90, 91, 92,)

Constituents —The fresh vegetable chenopodium ambrosiodes contains 86 59 moisture, and the dried material contains Ether extract 5 14, Albuminoids 18 18 contg Nitrogen 2 91, soluble carbohydrates 59 23, woody fibre 7 31 & Ash (contg sand 2 61) 10 14 P c. respectively

it is heated to 100 C in the air it explodes with great violence Different specimens of the oil differ much in their physical characters the colour may vary from pale yellow to bright golden yellow The toxicity of different stocks also varies considerably The chemical composition of the oil has been extensively studied and though there is diversity of opinion regarding minor details the following composition may be taken as the standard —

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on the nature of the worms harboured Carbon tetrachloride alone is said to be more effective against pure necator infection and chenopodium for ascaris infections, whereas ankylostoma infections are apparently most readily cured by a combination of the two with a relatively high proportion of chenopodium The dose of chenopodium oil when given in combination with carbon tetrachloride is comparatively much smaller (1 0 c c) than when given by itself (3 0 c c.) Maplestone (1931) has obtained much better results by the treatment of ascaris infections with a combination of Santonin grains with chenopodium oil 1 0 c. c in a capsule Chenopodium oil is also used for eradication of intestinal parasites of domestic animals and agricultural cattle (Chopra s I D of I " pp 89). Other plants of the same Order contain volatile oil which is useful as antispasmodic, aromatic, nutritious, laxative, carminative and stimulant besides being anthelmintic.

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551 CHENOPODIUM BOTRYS (Linn.)

Is found in the temperate Himalayas from Kashmir to Sikkim Several other varieties e g, (1) C. blitum, Hk f, (2) C album Linn (known in Bengal as Bathu Sag) (3) C. glaucum Linn, (4) C. hybridum, Linn, (5) C. murale, Linn, and (6) C. opulifolium, Schrad, grow both in the hills and in the plains, and are available plentifully near Calcutta *All these varieties, however, do not yield the therapeutically active o i*

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552 CHIRONGIA SAPIDA—See Buchanania latifolia (Chopra s I D of I pp 474)

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553 CHLORANTHUS INCONSPICUUS, Linn

(N O—Chloranthaceae)

Chinese—Chin-chu-lan

(1) Bom. Govt Agri Dept Bulletin

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554. CHLORIS BARBATA. (Lw)

Mah.—Gondvel *Dharwar*—Zende baladahullu

Habitat.—A perennial grass of the Bombay Presidency

Composition.—

	Before Flowering	In Flower	After Flowering
Moisture. . .	76 83	71 50	71 03
Ether extract. ...	1·15	1·69	1·19
Albuminoids ...	1·31	1 56	1 50
Carbohydrates . .	13 49	11 86	14 91
Woody fibre . .	4·44	10 83	9 06
Ash ...	2·78	2 56	2·31

Uses — This grass may be fed in any state to cattle, preferably in the green condition, as the nutrients rise although the woody fibre increases; but is unfit for silage. Best grazed in mixture with other grasses In Australia it is reckoned to be a good fodder.

(Chopra's "I. D of I" pp. 474)

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555 CHLOROPHYTUM ARUNDINACEUM, Baker.

(N. O.—Liliaceae)

Hindi—Safed musli

Action—Tonic

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556 CHLOROPHYTUM ATTENUATUM, Baker.

(N. O—Liliaceae)

Habitat — Met with here & there in the plains

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557 CHLOROPHYTUM BREVISCAPUM, Dalz.

(N O—Liliaceae)

Sing—Bhumpal

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558 CHLOROPHYTUM TUBEROSUM Baker.

(N O—Liliaceae)

Habitat—Met with here and there in the plains

(Chopra's "I D of I" pp. 474)

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559 CHLOROXYLON SWIETENIA, DC.

(N O—Meliaceae)

Action.—Irritant.

(Chopra's "I. D. of I." pp. 474)

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560. CHLONDRUS CRISPUS, Lyngbye.

(N. O.—Algae, Family.—Gigartinaceae)

Eng.—Carrageen; Irish moss.
Fr.—Gaemon, Mosse d' Irlande, Mousse perlee.
Ger.—Knorpeltang, Irlandisches Moss; Perlmoos.
Action.—Stimulant, sudorific.

(Chopra's "I D of I." pp. 474)

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561. CHONEMORPHA MACROPHYLLA, *G.Don.*

(N. O.—Apocynaceae)

Hind.—Garbedero. *Ben.*—Harki.

(Chopra's "I D. of I." pp. 474)

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562. CHROZOPHORA PLICATA, A.Juss.

(N O.—Euphorbiaceae)

Hind.—Shahdevi *Bom.*—Khudhokra *Punj.*—Nilkanthi.
Action.—Alterative
Uses.—Used in leprosy.

(Chopra's "I D. of I." pp. 475)

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563. CHROZOPHORA TINCTORIA, A.Juss.

(N O.—Euphorbiaceae)

Hind.—Subali *Punj.*—Kukronda.
Constituents—Colouring matter turnsole
Action.—Emetic and poisonous

(Chopra's "I. D of I." pp. 475)

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564. CHRYSANTHEMUM CORONARIUM, Linn.

(N. O.—Compositae)

Hind.—Gulchini; *Ben.*—Guldandi
Constituents—Adenine and chlorine.
Uses—Used in gonorrhoea.

(Chopra's "I. D. of I." pp. 475)

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kind known as 'Kabli and found rarely, is said to closely resemble a kind which is an important crop in Spain, and under the name of of 'Garbanzos' is used plainly boiled as one of the commonest articles of food. Extensively used as human food in the form of *dal* and in confectionery and also as a good fodder for horses and cattle; an excellent food for fattening sheep. Tender shoots of the plant are nipped off and cooked as a vegetable. The crop is sometimes cut green for fodder, though usually it is allowed to mature its grain. The bruised chaff obtained after threshing of gram, forms a good mixture in cattle-food. Dry stalks are good fodder."

(Bombay Govt Agri. Dept. Bulletin).

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569. CICHORIUM ENDIVIA, Linn.

(N. O.—Compositae)

Eng—Endive.

Constituents.—A bitter substance.

Action.—Resolvent and cooling.

Uses.—Used in bilious complaints.

(Chopra's "I. D. of I." pp. 475)

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570. CICHORIUM INTYBUS, Linn

(N. O.—Compositae)

Eng—Endive, Wild Chicory; Chicory. *Panj.*—Hand; gul; Guchal. *Hind., Bom., Guj. & Ben.*—Hinduba; Kasni. *Chin.*—Kuchai; Ku-tsai. *Mah.*—Kachani, *Pers.*—Kasni; Ambuboia. *Tel.*—Kasini-vittulu. *Tam.*—Kaṣini-virai. *Arab.*—Hindyba; Shikoriah; Bazarula; Hundiba. *Pers.*—Tukhm-e-Kasani.

Habitat.—N. W. India, the Deccan, the Punjab, Kashmir, Persia and Europe.

Parts Used.—Seeds, root and flowers.

Constituents.—Seeds contain a bland oil. Burnt chicory contains sugar, free extractive, cellulose, ash nitrogenous matter, fat, etc. Roots contain nitrate and sulphate of potash, mucilage, some bitter extractive principle and *enulin* 36 p. c. Flowers contain a colourless crystalline glucoside soluble in alkalies, hot water and alcohol; "glucoside, cichoriin, bitter substances lactucin, intybin, As-0,01 mg in 100 g. root." (Chopra's "I. D. of I." pp. 193)

Preparations.—Decoction of seeds (1 in 20), dose —1 to 2 ounces, Fluid extract of the root dose —1 to 2 drachms, and Powder

Action — Chicory closely resembles Taraxacum in its pharmacological properties, increases bile secretion and promotes digestion, a stomachic and tonic, in large doses a mild aperient and diuretic It has also alterative and resolvent effects From its narcotic character it exerts an effect on the nervous system, hence chicory coffee is considered one of the many causes of amaurotic blindness Seeds are carminative and cordial Root is bitter

Uses — *Decoction of the seeds* or *powdered seeds* are used in obstructed or disordered menstruation A strong infusion of powdered seeds is useful in obstructions or torpor of the liver and in checking bilious enlargement of the spleen with general dropsy *Root* is used as a substitute for coffee, with other vegetable bitters it is given in dyspepsia and fever Chicory, which is prepared from fleshy dried older roots which are roasted and powdered is often used to adulterate coffee and sometimes as much as 90% of chicory has been detected in ground coffee A simple test whereby to detect the presence of chicory is to put a little of the ground material in a glass of water Coffee remains hard and floats on the surface for a long time chicory soon softens and sinks colouring the water more or less brown In the Punjab and Kashmir, chicory is cultivated as a fodder *Flowers* made into *sherbet* is given in liver disorders Chicory is useful in removing gravel for which the following powder is very useful —Take of chicory 5 *Gokshura* 6 Melon seeds 7, Sweet fennel seeds 8, mix and make a powder Dose —30 to 40 grains The plant is applied externally in inflammatory affections on account of its cooling properties

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571 CIMICIFUGA FOETIDA, Linn

(N O —Ranunculaceae)

Eng —Bugbane *Punj* —Jiunti

Constituents - Alkaloid cimicifugine

Action.—Nerve depressant

(Chopra s I D of I pp 475)

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572 CIMICIFUGA RACEMOSA, Linn

(N O—Ranunculaceae)

Contains alkaloid cimicifugine

(Chopra s I D of I pp 475)

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573 CINCHONA CORTEX

or CINCHONA OFFICINALE Hook.

(See—Quinine)

(N O—Rubiaceae)

Varieties—C officinalis, C. calisaya, C. succirubra, C. robusta, C. ledgeriana, C micrantha, C. lancifolia C. cordifolia, C. trianae, C. paludiana, C. josephiana, C. calsopera, etc.

(Chopra s I D of I pp 96)

Eng—Cinchona Bark, Peruvian Bark, Jesuit s Bark *Indian Languages*—Cinchona.

Habitat.—The most important species of cinchona are now thoroughly acclimatised in India —Yellow cinchona bark (C. calisaya) grows best at the Himalayan plantations and Sikkim: ' The species of cinchona grown in the Bengal and Neduvattam (Madras) plantations are C. ledgeriana, C. succirubra, and a hybrid of these two species C robusta. (Chopra s I D of I pp 98) Pale or brown cinchona bark (C. officinalis, C. pallidae cortex) is chiefly cultivated on the Nilgiris (near Ootacamund) and in Ceylon, and Red Cinchona bark (C. succirubra, C. rubrae cortex) grows well both in Bengal (in Govt Plantations in Mungpoo of Sikkim) and in the *Madras Presidency, South India,* Tomengoo Hills in Burma and on the Satpura Range

Parts *Used*—Dried branch of the stem and branches The Red Cinchona Bark

Constituents—Cinchona bark contains five chief crystallisable alkaloids, viz —(1) quinine, cinchonine quinidine cinchonidine, and hydroquinine, there are also present about 20 other alkaloids in smaller quantities which are non-crystallisable and amorphous, value of the bark rises with its alkaloidal contents, as the root bark being especially rich in the alkaloid, and analysis shows that the secondary

bark is richer in quinine than the natural bark, (2) three acids, chinic or quinic acid closely allied to benzoic acid chinovic acid and a variety of tannic acid called cincho tannic acid (3) one glucoside—chinovin which easily splits up into chinovic acid and glucose, (4) one colouring ingredient cinchona red almost insoluble in water, and (5) traces of an aromatic volatile oil which gives the bark its smell.

Chemical constitution of the alkaloids is —Quinine is p-methoxy y quooyl B vinyl 2 quinuclidyl carbinol the two component rings being called the quinol ne and the quinuclidine residues

(a) Quinine occurs (as the alkaloid) in white acicular crystals inodorous and very bitter It reacts like an alkali forming neutral acid salts with acids

(b) Cinchonine consists of colourless prisms inodorous and bitter forms salts with acids Cinchonine and cinchonidine which are stereosomerides only differ from quinine in the absence of the methoxyl group

(c) Quinidioe is isomeric with cinchonine, and is a stereoisomeride of quinine

(d) Cinchonidine isomeric with Cinchonine resembles that alkaloid but its solutions are laevo-rotatory and when pure are not fluorscent and do not give the Thalleioquin test

(e) Hydroquinine contains the saturated ethyl (—CH_2CH_3) group in place of the vinyl (—$CH{=}CH_2$)

Red Cinchona bark gives a h gh yield of alkaloids as much as 10% but the quinine and cinchonine contents preponderate over that of quinine (not less than a half being Quinine and Cinchonidine) Of the other species of Cinchona Yellow Bark Cinchona calisaya 1000 gms. of good yellow bark yield 60 gms of total alkaloids containing 30 gms of quinine sulphate and should yield 2 5 to 3 8 p c. of Quinine, and Pale Bark 0 7 to 1 4 p c. of alkaloids, chiefly Cinchonine or Quinidine with a l ttle Quinine The total alkaloidal content in this variety is very large and of late years the quinine yield has considerably increased

The average composition of Indian to Javan cinchona *febrifuge* and of Indian residual alkaloids is given in the following table (Mac Gilchrist, 1916 and W Fletcher 1923) —

	Cinchona Febrifuge		*Residual Alkaloids*
	Indian	*Javan*	*Indian*
	Percentage	*Percentage*	
Quinine	7 40	11 5	3 0
Cinchonine	18 58	26 3	35 0
Quinidine	22 83	5 0	20 0
Cinchonidine	5 84	20 0	2 0
	54 65	62 8	60 0
Quinoidine	29 12	37 2	30 0
Water & Ash	16 23		10-0

A perusal of the above results will show that the amount of the crystalline alkaloids having an antimalarial action is present in the two brands of cinchona febrifuge as well as the residual alkaloids in sufficient quantities to produce therapeutic effects if given in 10 to 15 grain doses It will be seen also that cinchona febrifuge has no fixed composition and is frequently adulterated The cinchona febrifuge as issued from the Government factories in India is mostly the residual alkaloid preparation after most of the quinine has been removed from the bark of C. ledgeriana It can be administered in the form of a mixture tablet fresh pill or in gelatine capsules The mixture unless it is properly strained is slimy the alkaloids especially the amorphous ones stick to the mouth and produce nausea It is, therefore advisable to give it in tablet form It is rapidly absorbed and the alkaloids can be detected in the urine in ½ to 2 hours according as to whether it is taken in solution or in pill form If it is properly standardised it is an excellent substitute for quinine

Quinetum and Quininum —Another product of cinchona bark similar to cinchona febrifuge used in India is *quinetum* According to some it is a substance like cinchona febrifuge containing all the alkaloids but only 15 per cent of quinine and 5 per cent of quinidine According to others it is a mixture of cinchona alkaloids as they occur in the bark of C. succirubra consisting of sulphates of cinchonidine cinchonine and quinidine with smaller quantities of the sulphates of quinine and amorphous bases Some even say it is

simply a mixture of amorphous bases of cinchona bark, the crystalline alkaloids having been previously removed. Like cinchona febrifuge it is also liable to produce nausea.

Quininum is an extract prepared according to a French formula. It contains all the constituents of the bark except the woody fibres.

Efficacy of Other Alkaloids.—Experiments carried out by Goodson, Henry and Macfie (1930) in bird malaria have shown that of the cinchona alkaloids the most active was hydroquinine, followed by quinidine, quinine, cinchonidine and cinchonine in descending order though there is little to choose among the last four.

(Chopra's "I D. of I" pp. 109 & 110).

ANALYSIS OF CINCHONA FEBRIFUGE.

Source of Samples	Quinine per cent	Cinchonidine per cent	Quinidine per cent	Cinchonidine per cent	Total Crystalline Alkaloid	Quinoidine (Amorophous Alkaloid) per cent
1. Cinchona Febrifuge, (Tolal Alkaloid of C. Succirubra)	15 5	29 0	....	33 5	78 0	17 0
2. Cinchona Febrifuge from Moungpoo (Mac Gilchrist 1914-15)	7 4	5 8	22 8	18 6	54 6	29 1
3. Cinchona Febrifuge, Govt. of India (Gage 1922) ..	10 5	7 0	16 0	23 0	56 5	33 0
4. Cinchona Febrifuge, Tablet, Govt. of India (Howard 1913)	2 7	3 4	12 5	12 3	30 9	54 9
5. Do.	8 0	21 0	4 5	21 0	54 5	30 0
6. Chinchona Febrifuge, (Java)	5 8	12 2	8 7	20 0	46 7	41 3
7. Do.	11 9	9 2	4 8	15 3	41 2	45 4
8. Cinchona Febrifuge (Quinctum) Europe	8 5	7 0	8 6	28 3	52 4	44 7
9. Cinchona Febrifuge, (Quinctum), used in League of Nations Clinical trial .	15 0	35 0	5 0	45 0	80 0	20 0

		Quinine	Cinchonidine	Quinidine	Cinchonine	Amorphous	Total
Per cent.							
C. ledgeriana —							
Root	in Bark	5 11	0 44	0 53	0 68	0 71	7-47
	of Alkaloid	68 4	5 9	7 1	9 1	9 5	
Stem	in Bark	4 14	0 36	0 44	0 25	0 60	5 79
	of Alkaloid	71 5	6 2	7 6	4 3	10-4	
Branch	in Bark	1 98	0 09	0 14	0 20	0-57	2 98
	of Alkaloid	66 4	3 1	4 7	6 7	19-1	
Haybrid —							
Root	in Bark	3 10	0 63	0-50	1 22	0-69	6 14
	of Alkaloid	50 5	10 3	8 1	19 9	11-2	
Stem	in Bark	2 87	0 33	0 34	0 '6	0 54	4 54
	of Alkaloid	63 2	7 3	7 5	10 1	11-9	
Branch	in Bark	1 79	0 21	0 29	0-44	0-66	3-30
	of Alkaloid	54 2	6 4	8-2	13 3	20-0	
Officinalis —							
Root	in Bark	1 76	0 49	0 52	0 66	0 63	4-16
	of Alkaloid	42 3	11 8	14 9	11 99	15-1	
Stem	in Bark	2 56	0 89	0 13	0-37	0-47	4-42
	of Alkaloid	57 9	20 2	2 9	8 4	10 6	
Branch	in Bark	1 44	0 49	0 09	0 19	0-14	2-35
	of Alkaloid	61 3	20 8	3 8	8-1	6-0	
Succirubra —							
Root	in Bark	1 42	1-12	0 37	3-00	1-30	7 21
	of Alkaloid	19 7	15-5	5-1	41 7	18-0	
Stem	in Bark	1 74	1 47	0-20	1-63	1-05	6 09
	of Alkaloid	28 6	24 1	3 3	26-8	17 2	
Branch	in Bark	1-16	0 82	1-20	1-10	0-72	4-00
	of Alkaloid	29-0	20-5	5-0	27-5	18-0	

574. C. CALISAYA.

Variety.—C. ledgeriana (which was largely grown and developed in Java is now being developed in all Indian plantations and which

simply a mixture of amorphous bases of cinchona bark, the crystalline alkaloids having been previously removed. Like cinchona febrifuge it is also liable to produce nausea.

Quininum is an extract prepared according to a French formula. It contains all the constituents of the bark except the woody fibres.

Efficacy of Other Alkaloids —Experiments carried out by Goodson, Henry and Macfie (1930) in bird malaria have shown that of the cinchona alkaloids the most active was hydroquinine, followed by quinidine, quinine, cinchonidine and cinchonine in descending order though there is little to choose among the last four.

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Source of Samples	Quinine per cent	Cinchonidine per cent	Quinidine per cent	Cinchonidine per cent	Total Crystalline Alkaloid	Quinoidine (Amorphous Alkaloid) per cent
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2. Cinchona Febrifuge from Moungpoo (Mac Gilchrist 1914-15)	7 4	5 8	22 8	18 6	54 6	29·1
3 Cinchona Febrifuge, Govt. of India (Gage 1922) ...	10·5	7 0	16·0	23·0	56 5	33 0
4. Cinchona Febrifuge, Tablet, Govt. of India (Howard 1913)	2 7	3 4	12 5	12 3	30·9	54 9
5. Do.	8·0	21·0	4 5	21 0	54 5	30·0
6. Chinchona Febrifuge, (Java)	5 8	12 2	8·7	20·0	46·7	41 3
7. Do.	11·9	9 2	4 8	15 3	41 2	45·4
8. Cinchona Febrifuge (Quinctum) Europe	8 5	7 0	8 6	28·3	52 4	44 7
9. Cinchona Febrifuge, (Quinctum), used in League of Nations Clinical trial ..	15 0	35·0	5 0	45·0	80 0	20·0

		Quinine	Cinchonidine	Quinidine	Cinchonine	Amorphous	Total
Per cent.							
C. ledgeriana —							
Root	in Bark	5 11	0 44	0·53	0·68	0·71	7·47
	of Alkaloid	68 4	5 9	7 1	9 1	9 5	
Stem	in Bark	4 14	0·36	0 44	0 25	0·60	5 79
	of Alkaloid	71 5	6 2	7 6	4 3	10·4	
Branch	in Bark	1 98	0·09	0·14	0 20	0·57	2 98
	of Alkaloid	66 4	3 1	4 7	6 7	19·1	
Haybrid —							
Root	in Bark	3 10	0 63	0·50	1 22	0·69	6 14
	of Alkaloid	50 5	10·3	8 1	19 9	11·2	
Stem	in Bark	2 87	0 33	0 34	0·76	0·54	4 54
	of Alkaloid	63 2	7 3	7 5	16 1	11 9	
Branch	in Bark	1 79	0 21	0 29	0·44	0·66	3·30
	of Alkaloid	54 2	6 4	6·2	13 3	20·0	
Officinalis —							
Root	in Bark	1 76	0 49	0 52	0·66	0 63	4·16
	of Alkaloid	42 3	11 8	14 9	11 99	15·1	
Stem	in Bark	2 56	0·89	0 13	0·37	0·47	4·42
	of Alkaloid	57 9	20 2	2 9	8 4	10·6	
Branch	in Bark	1·44	0 49	0 09	0 19	0·14	2·35
	of Alkaloid	61 3	20 8	3 8	8·1	6·0	
Succirubra —							
Root	in Bark	1 42	1 12	0 37	3·00	1·30	7 21
	of Alkaloid	19·7	15 5	5·1	41 7	18·0	
Stem	in Bark	1·74	1 47	0·20	1·63	1·05	6 09
	of Alkaloid	28 6	24 1	3 3	26·8	17 2	
Branch	in Bark	1 16	0·82	1·20	1·10	0·72	4·00
	of Alkaloid	29·0	20·5	5·0	27·5	18·0	

574. C. CALISAYA.

Variety.—C. ledgeriana (which was largely grown and developed in Java is now being developed in all Indian plantations and which

is gradually replacing C succirubra) yields the most plentiful supply of quinine of all the species The average quinine content in this variety is about 6 p c , exceptional samples yielding as much as 10 to 12 p c , and very small quantities of the other cinchona alkaloids

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575 C. ROBUSTA

Which is a more or less fixed hybrid between C succirubra and C officinalis, yields quinine and the other alkaloids in more or less equal proportions

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576 C SICCIRUBRA.

Yields small quantities of quinine but a high percentage of cinchonidine and cinchonine

Action – (1) A general tonic, bitter stomachic, astringent, febrifuge and antiperiodic In small doses it increases appetite, assists digestion, increases the flow of saliva and the gastric juice It stimulates the heart and increases the arterial tension If continued for a long time it acts as a gastric irritant impairs digestion, produces gastric catarrh and even constipation In large doses it causes flatulence eructation, rise of body heat with chill and fever In large doses it directly acts on the cardiac ganglia, slows the pulse beat and lowers the arterial tension It is a protoplasmic poison It and its alkaloids prevent the development of plasmodium and hence the most important agents in malaria and ague It becomes rapidly diffused In the blood it increases the number of white corpuscles but prevents or arrests their movement, it lessens oxidation and in fever it lessens the body heat It lessens the size of the spleen when enlarged from fever As an antiseptic it is an active destroyer of low organisms (1 in 500), it destroys fungi, checks fermentation and putrefactive decomposition of uric acid but not of urea In the urine it lessens the excretion It often acts as uterine stimulant if long continued and in large doses It produces quinism or cinchonism In excessive doses it causes dilation of pupils delirium and even convulsions The antipyretic action of p methoxy quinoline is less than that of quinoline itself, whereas p-methoxy quinoline-γ carboxylic acid is almost completely inactive, as might be anticipated from the presence of the activating carboxyl group

(2) Osiander mentions the bark as an antidiarrhoic, and Hufeland recommends it on innumerable occasions. Cinchona bark is perhaps the best instance of the superiority of the activity of an entire drug as compared with separate alkaloids Where the much praised quinine is given alone, the action of cinchonomine, far more powerful but more poisonous than quinine (according to Laborde) is lost A greater curative activity than that of quinine is ascribed also to cinchonidine Wedell observed cures from cinchonidine where quinine had failed The full medicinal value is, therefore, present only in the bark itself since it contains all the active substances without producing the severe toxic effects which follow the administration of the alkaloids

(3) Goodson, Henry & Macfie, conclude after due biological tests with five main alkaloids that hydroquinine is the most effective, the remaining four being approximately of equal value. The quinoline methoxyl contributes to a small extent to the antimalarial activity Hydrogenation of the vinyl group of the quinuclidine ring gives methyl hydrocupreine which is as active as quinine, but more toxic The dehydro-compound from quinine containing the group —C=CH in place of —CH=CH2 is only half as active The conversion of the —CH=CH2 group to —CHOH—CH3 by the addition of water across the double bond leaves the activity unchanged The rearrangement of the vinyl group to the =CH—CH3 group gives the interesting compound isoquinine which is as active as quinine, although a little more toxic The oxidation of the secondary alcoholic group gives Ketoquinine while reduction to CH2 gives the methylene compound cuchene, which is extremely toxic producing tetanus and death Fraction of the quinuclidine ring yields quinetine (II) which is highly toxic being a strong convulsant, and fatal in larger doses In short the physiological action of quinine is found to be strongly antipyretic, bactericidal narcotic and local anesthetic in varying degrees

(4) Earlier attempts at preparation of anti malarials were made by modifying the structures of cinchona alkaloids The so-called modified alkaloids which were investigated were the carboxylic acids produced by the oxidation of the —CH=CH2 (vinyl) group of the cinchona alkaloids to the —CooH group and their esters

Thus quinine quinidine, cinchonine cinchonidine gave quintanine, quitenidine cinchotenine and cinchetenidine Quitenine (III)

is found to be inactive but according to Geisma Weise, and Tropp, the activity is regained in the ethyl ester called ethyl quitenine on esterification of the carboxyl group with ethyl alcohol The methyl, propyl and other alkyl quitenines have also been examined, and the interesting generalisation has been drawn that antimalarial activity increases as the homologous series is ascended, reaching a maximum at bytyl or amyl Similar relationships appear to hold good in the cases of the esters of cinchotenidine, quitenidine, and cinchotenine However none of the compounds approaches quinine in efficiency against bird malaria

Proceeding on the assumption that the secondary alcoholic hydroxyl group of quinine is essential for antimalarial activity Forneau and collaborators have prepared a number of relatively simpler aminoalcohols of the naphthalene series like (IV), (V) & (VI) of which some like (V) & (VI) were active against bird malaria but inactive against human malaria

In England, systematic research on synthesis of new antimalarials, planned as a campaign against malaria, has been initiated by Barger and Robinson, with the co-operation of the joint Committee on Chemotherapy formed by the Medical Research Council and the Department of Scientific and Industrial Research, and a number of new compounds of possible antimalarial activity have been made —

Aminoalkyl quinolines of the types (VIII) and (IX) bearing structural resemblance to plasmoquin, have been synthesised by Baldwin and aminoalkylquinolinium salts by Seshadri Kermack and Smith prepared 4 piperidino-and 4 piperazineo-2 methyl quinolines, while Kermack and Muir have extended the work by substitution of a more complex sidechain containing two nitrogen atoms in place of the simple piperidine or piperazine ring Of a different type are the pyrrole quinolines obtained by Mrs Robinson, showing similarity to the alkaloids harmine and harmaline, which are known to possess antimalarial action

J N Ray and collaborators have synthesised several compounds amongst which are a glyoxalino-quinoline, pyryl indoles, and condensation products of cotamine and phenols

Brahmachari and coworkers have prepared a number of quinoline derivatives including dimethyl amino-styryl quinolines, quinoline-amido-acetamides, carbamido-quinolines, quinoline amino-acetyl p-

while the more expensive and refined alkaloid may be reserved for severe types of cases" (Chopra's "I. D. of I" pp 111 & 112)

ACTION OF CINCHONA ALKALOIDS

The cinchona alkaloids cause disturbances of the central nervous system, deliriant conditions, spasms, convulsion, collapse (Dr. Pecker) This applies more particularly to cinchonine (Dr Kobert) Quinine is a protoplasma poison whose influence on the cell probably rests on inhibited metabolism possibly owing to a paralysing effect on intracellular ferments (Dr Henke Lubarach) The most usual manifestations of cinchonism are abdominal pains, cholera nostras, paralysis of limbs regors, cold sweats, somnolence, icterus, albuminuria, fever, cyanosis (Dr Kobert) , in chronic cinchonism, emaciation, cachexia (Dr Lewin) We also meet with quinine blindness caused by constriction and stasis in the central and uveal vessels (Dr De Bono) (De Gouvea), apt to lead to a thickening of the vascular walls and thrombosis (Schweinitz) Quinine deafness which is preceded by violent noises in the ears, is caused by an excessive supply of blood, exudation (Beck) and hemorrhage in the middle and internal ear (Dr Henke Lubarsch) Quinine destroys the erythrocytes and causes quinine hemolysis (Dr Marx), especially in malaria patients and pregnant women in whom it manifests itself in the form of hemoglobinemia and hemoglobinuria (blackwater fever) (Dr Henke-Lubarsch) Where the entire exttacts of cinchona bark are given this effect is of much rarer occurrence (Dr Nocht) Small doses of quinine and cinchonine in their direct effect strengthen the automaticity and tonus of the uterus, larger doses paralyse both (Dr Stake) In the presence of hemophilia the alkaloids cause hemorrhages within the musculature, chest cavity and pericardium, also exudation in the peritoneum, mesentery, omentum, the outer intestinal coat with partial involvement of the tissues (Dr Baermann) blood exudations in the mucous membranes of the upper respiratory passages and the lung parenchyma, also in the buccal and gastric mucous membranes (Dr Lewin) In hemolysis the spleen exhibits erythrocytes and an accumulation of pigment (Dr Henke Lubarsch) Englargement of the spleen is reduced by quinine (Dr Henke Lubarsch) The substance produces edemata wheals, roseola, scarlatinoform eruptions on the skin (Rosenbusch), also cutaneous haemorrhage quininepurpura (Dr Henke Lubarsch), and, following quinine exanthema, xanthelasm (Dr Nicol) , local application is

followed by dermatitis quinine itch (Dr Kobert) Cinchona tincture given as an amarum, impairs cardiac activity (Dr Weger)

Lt Col R Knowles and Dr Senior White are of opinion that it is very far from certain that quinine is the best alkaloid of cinchona bark to use Both quinine and cinchonidine are more efficacious with regard to their anti malarial power, and alkaloids of cinchona bark other than quinine are quite effective in the treatment of malaria if given in the usual doses in which quinine is given The total mixed alkaloids of cinchona bark (C. succirubra) in the form of and popularly called Cinchona Febrifuge prior to 1903 have been used for many years with very satisfactory results (Chopra s I D of I pp 105 & 106) After 1903 Cinchona Febrifuge represented a mixture of residual alkaloids remaining after extraction of quinine from the barks of C ledgeriana and its hybrid C succirubra, a certain amount of quinine being added to make it approximately similar to the original cinchona febrifuge in composition (Gage) This is sold to the public in the form of powder and tablets in India its price being lower than that of pure quinine As met with generally it appears to consist of any mixture of the bark extracts and by products of quinine manufacture which makers wish to get rid of Some of these mixtures are excellent in quality and contain a large percentage of the alkaloids and are considered by many experienced physicians to be therapeutically as good as quinine others are decidedly inferior and contain small proportions of the alkaloids The following tables give the composition and the variations in the alkaloidal contents of different specimens which have been analysed –

Quinine	2 7 to 15 5 Per cent
Cinchonidine	3 4 to 35 0
Cinchonine	18 6 to 33 5
Quidinine	4 5 to 22 8
Amorphous alkaloids	17 0 to 54 9

(Chopra s I D of I pp 108 & 109)

In strictly controlled tests it has been found that in dosage of 0 1 grain per kilo of body weight Cinchona Febrifuge was less satisfactory than quinine but when 0 1 grain per pound was given both were equally effective Any of the preparations such as cinchon

febrifuge, 'quininum and quinetum' may be used, provided the amount of the total crystalline alkaloids present is known so that the proper dosage required can be given For instance, if the total crystalline alkaloids present are 70 per cent or thereabout, it will be knowo that 10 grains of it are equal to seven grains of quinine If this is not considered desirable, the sulphate of the total alkaloids of the bark may be used

Cinchona Febrifuge has been very largely used of late years in the treatment of malaria all over India with very gratifyiog results The mixture used in the Carmichael Hospital for Tropical Diseases, Calcutta, is as follows —

Cinchona Febrifuge (Indian)		10 grains
Citric acid		20 ,,
Magnesium sulphate		20 ,,
Extract of liquorice		1 drachm
Syrup of Virginion Prune		10 minims
Syrup Water	equal parts	½ ounce

Dose —1 ounce three times a day, two and a half hours after food for one week, thereafter twice a day for 24 days It is liable to produce nausea and vomiting as the amorphous alkaloids present stick to the mouth The majority of patients however, tolerate it well if it is taken at the right time, i e, 2½ hours after food wheo the stomach is empty If nausea and vomiting occur, a dose of 15 minims of 1 in 1000 adrenaline or a minim of tincture of iodine in a little water before the cinchona febrifuge, will check the vomiting If necessary 5 to 10 minims of tincture of opium may be given Fletcher (1925) came to the conclusion that cinchona febrifuge with 7 to 10 per cent of quinine was therapeutically as efficient as quinine, 10 doses of 10 grains twice a day, and it is no more toxic." (Lt Col Chopra in 'I D of I ' pp 108, 109 111 & 112)

"*Plasmoquin*" is a synthetic quinoline derivative (discovered in 1926) which has been found to be of great value in treatment of human malaria.

Uses.— These are well known The barks and all preparations of Cinchona are specially valuable in intermittent fevers They are most extensively prescribed as tonic in small doses of 1 to 3 grams in dyspepsia, gastric catarrh, adynamia and convalescence from

fevers and in weak and flabby subjects The alkaloids quinine, quinidine, cinchonidine cinchonine are similarly valuable as antipyretics As a tonic and antiperiodic quinine stands prominent, and is used in the prophylaxis and treatment of malaria In doses of ten grains it is given in agues of all kinds in whooping cough, hay fever, enlargement of spleen hemicrania and other neuralgic affections, and in those arising from debility its good effect is generally marked and decided It has recently been recommended in cases of typhoid fever and in the sinking stage combined with Port Wine it is certainly beneficial The common dose is 1 to 2 grains three times a day dissolved in 2 to 4 minims of dilute sulphuric acid often given in some bitter infusion such as gentian or calumba It is also given in small pox, septic fevers pneumonia, acute rheumatism acute tonsilitis acute nasal catarrh pyaemia etc In irritability of the rectum or where the patient is insensible or cannot swallow and in cases where it cannot be given by mouth it may be injected hypodermically combined with guaiacol Locally as an antiseptic injection it is used in cystitis, and in abscess cavities and ulcers it is used as a wash and as a gargle in sore throat It is a good ingredient in dentifrice The ill effects of quinine can best be avoided by giving it dissolved in dilute hydrobromic acid *The indiscriminate use of quinine in continuous and large doses for a long time weakens the heart, produces restlessness and cachexia*

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577 CINNAMOMUM AROMATICUM, Nees

See Cinnamomum cassia

(N O—Lauraceae)

Constituents —Essential Oil

Action — Carminative

(Chopra s I D of I pp 475)

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578 CINNAMOMUM CAMPHORA, Nees.

See Camphors officinarum

(N O—Lauraceae)

Constituents — Essential oil

Action — Stimulant and carminative

(Chopra s I D of I pp 475)

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massive doses with success in the treatment of cancer and other microbic diseases by Dr. J J Carne Ross of Ancoats Hospital, Manchester. The clove oil is used externally in rheumatic pains, neuralgia, headache and toothache It is a frequent ingredient of pill masses It strengthens the gums and perfumes the breath Cinnamic aldehyde being cheaper than cinnamon oil is being recently used largely as an ingredient of chewing gums and chocolates in Ceylon.

The following are a few very useful home remedies :—

(1) Take of Cinnamon powder 1 drachm, Myrobalans (*Har*) 4 drams, and water 4 ounces Boil for 10 minutes A good aromatic purge.

(2) Take of Cinnamon (bruised) 1 dram, Catechu 3 drams, and boiling water 10 ounces Macerate for two hours and strain Dose —2 teaspoonfuls three times a day, for diarrhoea.

(3) Take of Ginger 10 grains, Cinnamon 10 grains and Cardamoms 10 grains Powder them all Dose —1 powder before food for dyspepsia and flatulency

(4) Take of Cinnamon 1 dram, Cloves 10 grains and Ginger 30 grains, for one powder Boil in one seer of water for 15 minutes Dose —two ounces every three hours Good for influenza

(5) Take of Cinnamon 1 dram, Aniseed ½ dram Liquorice Raisins without stone each 1 dram, Sweet almonds 3 drams, bitter almond without rind 1 dram and white sugar 1 dram Powder all well together and make a pill mass Divide into five grain pills Dose —*one pill several* times a day Good for cough

N B — Cinnamon is sold in the form of long slender sticks containing numerous small quills which are extremely thin and brittle, often marked with longitudinal striations on the inner surface These are frequently adulterated with a rougher, thicker and less aromatic bark from Cassia lignea (Cinnamomum tamala) etc [1]

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580 CINNAMOMUM GLANDULIFERUM, Meison

(N O —Lauraceae)

Eng —Nepal camphor wood *Assam* —Gunserai *Nepal* —Malligiri

Habitat— A large tree of the South Himalayas from Kumaon eastwards to Assam the Khasia Hills and Sylhet

Parts Wood and leaves

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(1) Chopra's I D of I ' pp 110 1 9

Constituents—Wood and the leaves yield a crystalline product which has been shown by Schimmel & Co, to be d-camphor; essential oil.

Action.— Stimulant and carminative.

(Chopra's 'I D of I" pp 475)

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581 CINNAMOMUM INERS, Reinw C. lignea or C. tamala, C. nitidum, C. eucalyptoides

(N O—Lauraceae)

Sans—Tejpatra, Tamalapatra *Eng*—Cassia cinnamon *Hind* & *Ben*—Tejpat (leaves), Dalchini (bark) *Bom*—Tikhi *Arab*—Tamelly *Pers*—Sazaj i Hindi *Duk* & *Hind*—Jangli darchini (leaves), Tejpat *Mah*—Ranachadal, Tejpat. *Tam*—Kattu kurmap, Kattu karuvappattai *Mal*—Karuntoli *Can*—Adavi lavangpatte *Burm*—Sikeyabo

Habitat.— Tropical and Sub-tropical Himalayas, U P, Eastern Bengal the Khasia and the Jaintia Hills, and Burma.

Parts Used—Leaves, bark and oil

Constituents—The leaves contain an essential oil, eugenol, terpene, and cinnamic aldehyde Outer bark of the plant yields on distillation an essential oil (similar to Cinnamon oil) which has a pale yellow colour Cinnamic aldehyde is the chief constituent of Cassia oil as also of Ceylon cinnamon bark oil. But there is an enormous difference between the odour and flavour of the two In Cinnamon oil the associated materials, e g, pinene, non aldehyde, etc., have a fragrant and delicate odour, but in Cassia oil, the cinnamic aldehyde is overpowered by the terpenes, etc, which give a somewhat disagreeable odour to the oil. Adulteration of Cassia Oil with cheap terpenes is very common in the market. Root contains an oil containing eugenol, saffrol, benzaldehyde and terpene

Preparations.—Compound Powder (*Trijataka*) containing *Tejpat*, immature fruit or flower buds of cinnamon and cardamoms, compound pill containing *trijataka* 1, pipali 4 sugar raisins, liquorice root each 8 parts, dose —3 to 5 grains

Action.—Carminative, stimulant diuretic, diaphoretic, deobstruent and lactagogue The oil distilled from the leaves is a powerful stimulant.

579. CINNAMOMUM CASSIA, Blume.

C. teylanicum ; C. saigonicum ; C. aromaticum & C laurus.

(N. O.—Lauraceae)

Sans.—Gudatvak, Thwak; Varangam; Thracham. *Eng.*—"Chinese Cassia," Cinnamon. *Pers.*—Saila-Myah. *Duk.*—Qualami. *Hom.*—Kalpbah ; Taj ; Dalchini. *Arab*—Darasini ; Darchini. *Chin.*—Yuh or Juh, Kevei. *Hind, Punj., Kash., Guj, Ben., Mah. & Can*—Dalchini ; Daruchini. *Tel., Tam. & Mal.*—Lowangapattai *Punj.*—Kirfa. *Malay.*—Kulit-manis. *Sinh.*—Kurundo. *Burm.*—Tinbotik-yobo *Fr.*—Cannelle. *Ger.*—Zimmt. *Gr.*—Kinnamomon.

Habitat.—Indigenous to Ceylon (Galle District in the Southern Province and in the region of Negumbo in the Western Province). Southern India and growing in a wild state in the Western Ghats from the Konkan Southwards, and in the forests of Tennasserim (Burma).

Parts Used.—Dried inner bark of the shoots from truncated stalks (Cinnamomi Cortex) and essential oil (oleum Cinnamomi, B. P.).

Constituents.—Volatile Oil 2 p. c., Cinnamic acid, resin, tannin, sugar, mannit, starch, mucilage, ash, etc. Oleum Cinnamomum B. P. is distilled from the cortex and consists chiefly of cinnamic aldehyde oxidizing into resin and cinnamic acid ; also cinnamyl acetate and hydro-carbon, and "small quantities of phellandrene, pinene, linalol, caryophyllene, eugenol, etc., also exist. The British Pharmacopoeia limits the amount of aldehydes to 55 to 65 per cent but a genuine oil may contain as much as 75 per cent."[1]

Different oils prepared from cinnamon are :—

(1) Oil from the bark (Ceylon).

(2) Oil from the leaves (yielded on distillation) is of dark-colour, which differs markedly from cinnamon bark oil, and of clove-like odour called clove oil. It contains 70 to 80 p. c. of Eugenol with traces of cinnamic aldehyde ; pinene ; linalol, etc.

(3) Oil from the root, of yellow colour and lighter than water

The Ceylon variety is said to be the best, containing more sugars and aromatic principles. The fragrance is due to the presence of a volatile oil ("oil of cinnamon") in the bark.

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(1) Chopra's "I. D. of I." pp. 118-119.

Action — Bark is carminative, antispasmodic, aromatic, stimulant, haemostatic, astringent, antiseptic, stomachic and germicide Oil has no astringency, it is a vascular and nervine stimulant, in large doses an irritant and narcotic poison. The volatile oils are aromatic

Action & Uses in Ayurveda and Siddha.—Katu mathura, tikta rasam, ushna veeryam, kapha vathaharam, pitta karam, lagu, ruksham, in kandu, amadosham, aruchi, hridrogam, diseases of the vasthi, arsas, krimi, pinasam (2)

Action & Uses in Unani — Hot 2°, Dry 2°, Stomachic, diabsorbent, diuretic aphrodisiac, demulcent Externally —Cold, headaches solvent of Rheei halgham, palpitation, melancholia, dropsy, hiccough, liver complaints, diarrhoea

Preparations —Oils are obtained by distillation of the leaves and roots also besides the bark

Uses — This spice is the bark of young shoots The bark in *infusion, decoction,* or *powder,* or *oil* is prescribed in bowel complaints such as dyspepsia, flatulency, diarrhoea and vomiting It is frequently employed as an adjunct to bitter tonics, purgatives and vegetable and mineral astringents As a stimulant of the uterine muscular fibre it is employed in menorrhagia and in tedious labour due to defective uterine contractions Powdered cinnamon in 10 to 20 grains doses is a reputed remedy given in diarrhoea and dysentery. It is also very largely used as a spice or condiment on account of the presence of the essential oil which imparts a delicious flavour to curries The crystalline cinnamic acid is antitubercular and is used as injection in phthisis A five per cent oily emulsion with yolk of egg is injected in lupus As a powerful stimulant cinnamon is given in cramps of the stomach, enteralgia, toothache and paralysis of the tongue ' North Kanara, South Kanara and Malabar produce a small quantity of leaf oil for export Ceylon cinnamon bark is decidedly of a superior quality and the oil has also the reputation of being the best available in the market ' The essential oil is used in flavouring sweets and confectionery and as a powerful stimulant in amenorrhoea etc, the bark chewed relieves nausea and vomiting The oil is locally applied with much benefit in neuralgia and headache As an antiseptic it is used as an injection in gonorrhoea; as germicide it is used internally in typhoid fever It was also used in

(1) Therapeutic Notes (2) Chopra's I D of I ' pp 118 119

Uses.—The compound pill is used in cough, flatulence and dyspepsia. The pill is to be kept in the mouth till it is completely dissolved. The compound powder, with other carminative preparations, is given in fevers, flatulence, dyspepsia and urinary diseases. The bark is used like that of C. cassia. Leaves are largely used as a condiment. Oil distilled from the leaves is used in flavouring sweets and confectionery.

N. B.—The bark of C tamala is coarser and is sold in larger pieces that the true cinnamon or bark of C. zeylanicum for which it is often used as adulterant.

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582. CINNAMOMUM LAURUS—See Cinnamomum cassia.

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583. CINNAMOMUM LOUREIRII.

Chinese—Ohin kio kiu.

Is a tree indigenous to Cochin China and cultivated in Southern China. Its bark gives an excellent cinnamon and its leaves are also aromatic and known as *patra* (*Hind.*—Tejpath) and used as a condiment in cooking

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584 CINNAMOMUM MALABATHRUM.

(N. O.—Lauraceae)

Sans.—Talaka *Eng.*—Country cinnamon. *Hind.*—Jangli-Dalchin *Tam* & *Mal*—Havangam. *Can.*—Kadu dalchini. *Kon*—Tikke

Habitat.—The Konkans and Malabar Coast.

Parts Used.—Seeds, bark and dried buds.

Constituents—Similar to C. iners.

Action.—Astringent, stimulant and carminative.

Uses Seeds bruised and mixed with honey or sugar are given to children in dysentery or coughs and combined with other ingredients in fevers. Bark is used as condiment in curries. Inner bark when fresh has an aromatic odour and taste. Dried buds are employed with various combinations in diarrhoea, dysentery and coughs.

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585 CINNAMOMUM NITIDUM, Blume
See Cinnamomum iners.

586 CINNAMOMUM OBTUSIFOLIUM, Nees
(N O—Lauraceae)
Ben—Tejpat *Nepal*—Bara singoli
(Chopra s I D of I pp 475)

587 CINNAMOMUM PARTHENOXYLON, Meissn.
(N O—Lauraceae)
Tam—Kayo-gadis
Constituents—Essential Oil
(Chopra s I D of I pp 475)

588 CINNAMOMUM SAIGONICUM
See Cinnamomum Cassia

589 CINNAMOMUM TAMALA, Fr Nees.
See Cinnamomum ners, Cassia lignea
(N O—Lauraceae)
Sans—Tamal *Hind*—Dalchini
Parts Used—Bark and leaves
Constituents—Essential Oil
Action—Bark is carminative
Uses—Leaves are used in scorpion sting
(Chopra s I D of I pp 475)

590 CINNAMOMUM ZEYLANICUM Breyn
See Cinnamomum cassia
N B—Fifteen species of *Cinnamomum* are uninvestigated
(Chopra s I D of I pp 476)

591 CIRSIUM ARVENSE, Scop
(N O—Compositae)
Constituents—Alkaloid leaves contain HCN glucoside
(Chopra s I D of I pp 476)

592 CISSAMPELOS PAREIRA Linn
(N O—Menispermaceae)
Sans—Venivel Laghu Patha Ambostha, Ambashthai patha, Brihatika (very pungent) Rasa (juicy) Vanatiktika, Papanalil

(creeper of sin) ; Sriyesi (auspicious) , Vriddhakarnika (long eared). *Eng* —Velvet leaf *Hind* —Harjori , Nirbisi , Akanadi *Ben* — Akanadi , Nirbisi *Nepal* —Batulpoti *Punj* —Katori , Batbel , Pilajur , Pilijari (root) *Duk* —Nirvisi *Guj* —Karandhis *Bom* — Venivit , pahadvel , punmushtic , Venivel *Mah* —Paharval , Pahadamoola *Sind* —Tikri , Katori *Tam* —Appatta , Ponmootootai ; Vatatirupie , Pomushtie *Tel* —Pata *Can* —Padvali *Sinh* —Diyamitta ; Veni waela

Habitat — Tropical and sub tropical India from Sind and the Punjab to South India and Ceylon

Parts Used — Root bark and leaves

Constituents - Cissampeline or pelosine ½ p c. in the root. Sepeerine bebeerine cissampeline

Action — Mild stomachic, bitter tonic, diuretic and antilithic. It is considered to exercise an astringent and sedative action on the mucous membranes of the genito-urinary organs

Preparations Decoction (1 in 20), dose —1 to 2 ounces, and Powder of root aqueous extract dose —10 to 20 grains, and liquid extract dose ½ to 2 drams

Uses — In fevers diarrhoea dysentery, dropsy, dyspepsia and nephritis It is a very good substitute for true pareira which is imported from South America An extract or decoction of the root is used as a diuretic in acute and chronic cystitis, urethral discharge and urinary diseases such as catarrhal affections of the bladder Also useful in the latter stages of the bowel complaints in conjunction with aromatics Root is applied externally in snake bites and scorpion sting Leaves and roots made into a paste with some bland oil are used locally in cases of unhealthy sores sinuses and itches The following compound pill is useful in indigestion colic, etc —Take of *Venivel* 4 pepper 5, asafoetida 3, and ginger 6 parts Mix and add honey to make a pill Dose is 3 to 5 grains

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593 CISSEMPELOS HEXANDRA

or C. hernandifolia.

Is another member of the same species, met with from Nepal to Chittagong, having almost similar properties and use

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594 CISSUS ADANATA,
C. quandrangularis & C. Setosa
See *Vitis adanata*

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595 CITRULLUS COLOCYNTHIS, Schrad
(N O—*Cucurbitaceae*)

Sans & *Can*—Indravaruni, Vishala, Chitrapala *Eng*—Colocynth; Indian wild gourd or bitter apple, bitter cucumber *Bom*, *Duk*, *Hind*, *Guj* & *Ben*—Indrayan, Makhal *Tel*—Eti puchcha; Verri puchcha, Chitti papara, Paperabudama *Tam*—Paedikari Attu tummatti, Peyt tumatti, Paycumutt, Pekkommatti, Vasi tummatti *Mal*—Paikummatti, Katuvelleri *Kon*—Kavandali *Punj*—Ghu rumba, Tumbi *Mah*—Kadu indravani, Kuru vrandawan *Can*—Hamekkae, Hava, Mekke kayi, Hara mekki kayi *Arab*—Hanzal, Hanzul, Aulqam *Burm*—Kaya si *Sinh*—Yekka madu *Pers*—Kavistetalkh, Kharbuza talkt

Habitat—Common weed found wild in the sandy lands of North West, the Punjab, Sind, Central and Southern India, and on the Coromandal Coast Colocynth is not systematically grown anywhere in India

Parts Used—Fruit deprived of its rind, root, dried pulp of the fruit freed from seeds, oil from seeds

Constituents—Pulp contains colocynthin (the bitter principle), a glucoside 14 p c, also colocynthem (a resin), colocynthetin, pectin, gum and ash 11 p c Seeds contain a fixed oil 17 p c, albuminoids 6 p c, and ash 3 p c Colocynthitin is a crystalline powder soluble in ether and insoluble in water In short, all parts of the plant contain traces of an alkaloid and 'colocynthin' 'The proportions of the pulp seeds and rind are 15 62 23 respectively in 100 gm of the dried fruit On an average the fruit yields 12 to 15 per cent of the dry pulp '[1] There is practically no difference in the chemical composition between the Indian and European varieties, both owe their physiological activity to the alkaloid and the bitter principle 'colocynthin'. The alkaloid is only present in very minute quantity and could not be isolated in a pure state Following table gives the analytical results of specimens of Indian colocynth which were analysed by the Dept.

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(1) Chopra's "I D of I" pp 121 & 122

of Chemistry at the Calcutta School of Tropical Medicines —

	Pulp	*Whole fruit (dry).*
Petroleum ether extract	3 61	1 36
Sulphuric ether extract	3 17	2 04
Alcoholic extract	10 90	12·15

The bitter principle is nearly completely extracted by sulphuric ether after first removing the oily matter by petroleum ether Traces of the alkaloids can be found both in the ether and alcoholic extracts Ethyl acetate is also a solvent for the bitter principle and an extraction with this solvent after a preliminary treatment with petroleum ether gives a residue of about 3 45% of the weight of the dry pulp The major portion of the bitter principle is soluble in water, is intensely bitter and gives a white precipitate with tannic acid, from which it can be obtained in a purer condition The average yield of the bitter principle is thus not less than 2% of the weight of dry pulp which compares favourably with the standard in the British Pharmacopoeia."[1]

Action —Colocynth is in moderate doses, drastic hydrogogue, cathartic, and diuretic, in large doses emetic and gastro intestinal irritant in small doses it is expectorant and alterative Colocynthin is a cathartic intensely bitter principle Colocynthitin has a purgative action All parts of the plant are very bitter The fruit has been described as cathartic

Action & Uses in Ayurveda and Siddha —Tikta rasam, ushna veeryam katu vipakam purgative diuretic, lagu, kaphaharam, puerperal disorders abortifacient, ascites, dropsy *Oil from the seeds* — Useful in hair growth, malidu (sterility) (Therapeutic Notes)

Action & Uses in Unani —Hot 4°, Dry 2°, purgative of balgam and souda resolvent, expels wind in paralysis, epilepsy, chronic catarrh hemicrania leprosy, melancholia (Therapeutic Notes)

Preparations.—Powder, dose —2 to 8 grains; Paste, Pill and Extract, dose —½ to 2 grains, Colocynthin, dose —1 to 6 grains and hypodermically 1/8 to 1/4 grain

Uses.— Mahomedan physicians use this drug extensively as a drastic purgative in ascites and jaundice and in various uterine conditions especially in amenorrhoea There is also mention of the drug in Greek and Roman medicine Colocynth in the form of solid extract enters into many of the purgative pills of modern pharmacy This drug (the spongy internal pulp only of the dried peeled fruit)

(1) Chopra's "I D of I" pp 121 & 122

is official in the British Pharmacopoea,[1] is useful in biliousness fever, intestinal parasites, constipation, hepatic and abdominal, visceral and also cerebral congestions, dropsy, etc Juice of the fruit mixed with sugar is a household remedy in dropsy Root is useful in jaundice, ascites, urinary diseases, rheumatism etc, and is given in abdominal enlargements and in cough and asthmatic attacks of children, a poultice of the root is useful in inflammation of the breasts A snuff of the powdered root is irritating to the eyes and nostrils. *Oil* from the seed is used for snake bites, scorpion stings, any bowel complaints (dysentery, diarrhoea), epilepsy and also for the growth and blackening of the hair Fruit or root with or without nux vomica is rubbed into a *paste* with water and applied to boils and pimples In minute doses it is useful in colic, neuralgia and sciatica and also to relieve pain of glaucoma In rheumatism equal parts of the root and long pepper are given in pill A *paste* of the root is applied to the enlarged abdomen of children The *powder* is often used as an insecticide *The extract should never be given without some aromatic to correct its griping tendency* It is usually combined with remedies like hyoscyamus to prevent griping *It should be avoided in pregnancy and in irritable conditions of the intestinal canal*

N B — The Indian varieties of colocynth differ a little from the imported varieties and are nearly globular in shape and usually of the size of an orange or smaller with a surface marbled with green and yellowish white patches A number of substitutes of C colocynthis are found on the market The fruit of Cucumis trigonus Cucumis pseudo colocynthis and Cucumis hardwickii grow abundantly in the mountainous regions of Northern India and are frequently used to adulterate colocynth sold in the bazar They can be differentiated from the round fruits of the true drug by their smooth contour and oblong shape "[2]

"When fresh the pulp is spongy and juicy, but when dry the fruit becomes yellowish white and contains a scantly yellowish pulp embedded inside the fruit The pulp separates from the rind with difficulty and consequently peeled colocynth of Indian origin is seldom found in the market Whatever peeled colocynth is met with is imported from the Mediterranean Coast "[3]

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(1), (2) & (3) Chopra's I D of I " pp 121 & 122

596 CITRULLUS VULGARIS, Schrad

Var - C fistulosus

(N O —Rutaceae)

Sans —Chaya pula , Kuttoowombi *Eng* —Water Melon *Hind* —Tarbuz , Jamuka *Arab* —Belik Zichi *Guj* —Karigu , Tarbuj *Ben* —Tarmuj *Bom* & *Mah* —Kalingad *Sind* —Hindano , Chhanho , Meho , Dilpasant , Dhendshi , Karing , Karigo *Punj* —Tandur *Tel* —Darbuje *Tam* —Pitchaphalam *Mal* —Mandeki patak *Can* —Kallangaday *Sinh* —Pilchalnadi , Komardu *Fr* —Melond eau pasteque *Ger* —Wassermalone *Burm* —Pha rai

Habitat — Cultivated throughout India The best water melons are found at Girhi Yasin in Sukkur District of Sind in India

Varieties — Pandhra Tarbuja Kala Tarbuja , Kalami , Surai are those largely found in Sangamner and Dhulia districts of Bombay Presidency

Parts Used —Seeds (deprived of testa) and the juice or the pulp of the fruit

Constituents —Seeds yield a fixed oil and proteids , citrullin

Action —Seeds are cooling, demulcent, diuretic, vermifuge and nutritive Pulp is cooling and diuretic Fruit juice is cooling and refreshing flesh of the fruit is pink to red, very soft, watery and sweet The small flat seeds when dried, taste like almonds

Preparations —Cold infusion (1 in 10), dose —2 to 4 drachms

Uses— Fruit juice is useful in quenching thirst , it is also used as an antiseptic in typhus fever With cumin and sugar the juice is used as a cooling drink in strangury and affections of urinary organs such as gonorrhoea etc also in hepatic congestion and intestinal catarrh

Fruit of the wild plant may be bitter or sweet without any observable difference externally A wild species named in Gujarat '*dilpasand*' and "*melo*" in Sind, and a variety known as '*Dhendshi*' are eaten cooked as a vegetable ' (Bombay Govt Agri Dept Bulletin) The bitter water melon of Sind is known as "*Kirbut*" and is used as a purgative

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597 CITRUS ACIDA

See Citrus bergamia

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598 CITRUS AURANTIUM Linn
C. bigaradia, C. vulgaris
(N O—Rutaceae)

Sans—Swadu naringa, Nagranga *Eng*—Sweet or Chinese Orange, Common Orange *Bom, Hind & Duk*—Narengi *Punj*—Santara. *Ben*—Kamla—neboo *Gur*—& *Mah*—Suntra, Narangi *Tel*—Gajanimma Narangamu *Tam*—Narangam, Kamalranj, Kitchli *Mal*—Madhuranarakam. *Can*—Kittalay *Kon*—Sonnaringa *Uriya*—Santala *Arab*—Naranj *Pers*—Narang *Burm*—Lieng mau, Sang Zen, Thau ba ya. *Chm*—Kan, Kruh *Simb*—Narangka *Malay*—Simao

Habitat.—Northern India, its different varieties are grown all over India chiefly in the warmer moist regions, Khasia Hills in Assam and Central Provinces

Parts Used—Rind (fresh and dried outer parts of the pericarp), flowers and the volatile oil distilled from fresh flowers

Constituents—Rind of the fruit contains a volatile oil, isomeric with oil of turpentine, gum resin, a fixed oil, which consists of a terpene, dextro-rotatory limonene, three glucosides hesperidin, isohesperidin, aurantiamarin a bitter crystalline principle, tannin ash 4 to 5 p c orange fruit contains laevulose Flowers and rind of the fresh fruit contain a volatile oil called oil of neroli, a fragrant yellowish liquid of a bitter aromatic taste, soluble in alcohol, 1 to 1 It gives the peculiar odour to Eau de-cologne or to Spiritus Odoratus, dose 1 to 3 minims Leaves and young unripe fruit contain a volatile oil called the oil of orange leaf or neroli petit grain or essence de petit grain This oil contains limonence 20 p c., nerolol 30 p c., nerolyl acetate 40 p c, geraniol 3 p c. Juice of the orange contains principally of mucilage, sugar, citric acid and inorganic salts such as citrate of potash (2 3 p c) As o, 011mg in 100 g

Analysis on Nagpur and Poona Oranges respectively,—

A. Nagpur Oranges :—				
Rind and seed (non-edible)		38·00	to 44·00	p c.
Juice		32·00	to 62·00	,,
	On Juice.			
Reducing Sugars		3 42	to 4 30	p. c.
Non Reducing Sugars		3·46	to 3·96	,,
Total Sugars		7 35	to 7·90	,,
Acidity (in grams of citric acid		0·81	to 1 21	,,
(,, ,, sulphuric acid)		0·56	to 0 847	,,

B. Poona Oranges —

	Moisture	82 59	to	85 97	per cent.
	Pulp	62·22	to	73 33	,, ,,
+	Reducing Sugars	11·62	to	13 32	,, ,,
+	Non Reducing Sugars	10 15	to	20 93	,, ,,
+	Total Sugars	21 77	to	34 25	,, ,,
	Acidity (in grams of citric acid)	35 25	to	42 69	,, ,,
	(,, ,, sulphuric acid)	24 67	to	29 88	,, ,,

+ (Calculated on dry matter)

Analysis :—

	Moisture	88 00	per cent
+	Reducing Sugars	4 16	,, ,,
+	Non Reducing Sugars	9 58	,, ,,
+	Total Sugars	13 74	,, ,,

+ (Calculated on edible parts) (Bombay Govt Agri Dept Bulletin)

Action – Dried peel or rind is aromatic stomachic, tonic, astringent, mild carminative and antiscorbutic Oil obtained from the rind is aromatic, internally stomachic and externally stimulating, and tonic Oil distilled from the flowers is not only a perfume but also antispasmodic and anodyne Orange water is stimulating and refreshing Juice is refrigerant and stomachic Orange is one of those fruits which are rich in vitamins which are supposed to help the digestion of other foods Naringa —a variety grown on the plains has an acid taste

Uses Orange is the safest of the acid fruits It is a blood purifier and appetiser Taken at meals it is most useful for bilious subjects and also for those with a tendency to scurvy Juice is an agreeable and refreshing beverage to invalids especially those suffering from coughs, bronchitis, diabtes, liver and heart troubles To the diabetics the laevulose which the orange contains is considered beneficial The cellular pulp in which it is enclosed is indigestible and should therefore be rejected Juice is valuable in bilious affections and stops bilious diarrhoea Juice and water in equal puts given every three hours to babies with mother s milk corrects stomach disorders, and s a good diet in dysentery For children suffering from anaemia, nervous debility neurasthenia rickets, etc Fresh expressed grape juice and orange juice make an excellent tonic Dried orange peel or rind is valuable in checking vomiting and preventing worms , it is generally used in the form of *tincture* or *infusion* which is usually employed in combination with stronger bitters such as gentian and quinine, as a

stomachic. It is useful as a carminative in atonic dyspepsia, flatulence, gastric irritabilities in general, and general debility The infusion makes one of the best vehicles for the administration of Epsom and other neutral salts which it renders less offensive to the palate and stomach Orange *marmalade* upon bread is a good breakfast diet for dyspeptic patients and the *confection* of orange peels in doses of 1 to 4 drachms may also be taken with advantage Fresh rind of the fruit is rubbed on the face by people suffering from acne, and also on the part affected with eczema. Fruit is also used in the form of sauce cream jelly honey etc Orange water is given in Europe for hysteria in doses of from 1 to 2 ozs Water distilled from the orange *flowers* is a stimulant and refreshing drink usefully employed in nervous and hysterical cases The finest quality is that distilled from the petals of the bitter orange It is invaluable in scurvy It and the *syrup* of orange flowers are also very frequently used as pleasant flavouring agents The *rind pulverised* and added to magnesia (magnesium carbonate) and rhubarb affords a grateful carminative tonic to the stomach in gout and dyspepsia Essential *oil* from the rind of the fruit is valued in perfumery *Oil* obtained from the rind and flowers may be taken as a stomachic on sugar in doses of from 1 to 3 drops, it is also used for flavouring Externally it forms an excellent stimulating *liniment* useful in gout rheumatism etc. Roasted pulp is an excellent application to foetid ulcers Orange *poultice* is recommended in psoriasis etc. Orange flowers and their distilled oil and waters are chiefly used as perfumes. Orange leaves are used for flavouring

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599 CITRUS BIGARADIA

Eng—Seville or bitter orange This fruit is largely used for making *marmalade*, and the rind for making candied orange peel The ripe fruit is also made into a syrup and is one of the principal ingredients of the liqueur Curacoa (Bombay Govt Agri Dept Bulletin)

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600 CITRUS BERGAMIA, Ris. et Poi
or Citrus acida
(N O—Rutaceæ)

Sans—Jambha Jambeeram *Eng*—Acid Lime Bergamot Orange, Sour lime of India *Hind* & *Duk*—Nimbu *Fr*—

Nebu *Kash*—Niumb *Punj* & *Guj*—Limbu *Mah*—Kagdi Limbu, *Tel*—Nimmapandu *Tam*—Elumichhai *Mal*—Cherunarakam *Can*—Cherunaranga, Limbay *Kon*—Nimboovo *Sinh*—Dehi *Burm*—Samyasi

Habitat— Several varieties are indigenous to the Himalayas and largely cultivated in Burma Upper India Bengal Assam Chittagong (Sitakund Hills), Khasia and Garo Hills Bombay Presidency In Bombay Presidency, three varieties —(1) *Godhadi* (2) *Kagdi limbu*, (3) *Pat limbu* (Bombay Govt Agri Dept Bulletin)

Parts Used - Fruit its juice its oils from the rind leaves and flowers

Constituents —Lemon Juice contains citric acid 7—10 p c phosphoric and malic acids also citrates of potassium and other bases, sugar mucilage and ashes Lemon peel contains a volatile oil hesperidin 5 to 8 p c a bitter crystalline glucoside chiefly in the white of the rind and ash 4 p c Hesperidin is sparingly soluble in boiling water and ether readily soluble in hot acetic acid also in alkaline solutions The percentage of essential oil is less in lime than in lemon The average amount of citric acid available from 100 c c of lime juice is about 5 9 per cent

Analysis of Citrus acida varieties —

Lemon (Bot Citrus medica—variety acida)

	Kagdi lemon p c	Sour l me p c	Sind lime p c	Long lime p c
Moisture	77 50	76-00	86-05	84 57
Juice	57-60	56-80	39 73	51-82
On juice				
Reducing Sugars	0-20	0 18	0-86	Traces
Non reducing Sugars.	0-24	0-18	0-52	nil.
Total Sugars	0-49	0-36	1 38	
Acidity (In grams citric acid)	7 50	7 74	10-70	10-88
" sulphuric acid)	5-25	5-42	7 50	7-62

(Bombay Govt. Agri Dept. Bulletin)

Action — Fruit is *refrigerant*, its juice is antiscorbutic, due to the presence of citric acid, pulp is acid and bitter Rind is filled with a sweet essence Juice taken internally enters the blood as alkaline citrates potassium salts and phosphoric acid Citrates are partly oxidised into carbonic acid and water Potassium salts and phosphoric acid act upon the red corpuscles They precipitate uric acid and thus promote the formation of calculi If long continued the juice or citric acid impairs digestion and impoverishes the blood It is supposed to dissolve organic matters in the system, hence used in the treatment of atheroma Citric acid is a natural antiseptic against fermentation in the stomach or bowels, it acts as a germicide

Uses — A few drops of fresh lemon juice put early morning into the eye when cataract is forming in the eyes of old men nearing 70 years, is said to gradually dissolve the cataract and make the eyesight clearer day by day (Dr A Lakshmi Pathi) *Juice* of the fruit in doses of four to six drachms is employed as a very useful refrigerant drink in small pox, measles scarlatina and other forms of fever where there is a very hot dry skin and much thirst It may also be taken with advantage in cases of haemorrhage from the lungs, stomach, bowels uterus kidney and other internal organs It is also useful in rheumatism It is a most agreeable acid with which pleasant effervescing draughts and beverages are made Juice is not only a curative in scurvy, but it is also preventive A drink made of the juice 1 in 8 of water with a little sugar added and given twice daily is useful in scurvy It is therefore most valuable for seamen, emigrants and others who undertake long sea voyages Hot lemon juice is useful in colds and mild forms of influenza, it is also a preventive of influenza and of any tendency to pneumonia Lime juice taken in half ounce dose allays hysterical palpitation of the heart *Juice of half a lemon in a little water, taken in cases of heartburn* relieves it Lime juice is most useful in dysentery with sloughing of the mucous membranes *Twelve ounces a day have been given* with success in a hopeless case Lime juice diluted with an equal quantity of water forms an excellent gargle useful in cases of scorbutic and other ulcerations of the mouth and sponginess of the gums Diluted *lime-juice is found* useful in cholera and in cases of typhoid fever as a mild germicide Lime juice added to strong black coffee without milk relieves malarial attacks. A squeeze of lime-juice added to sauces soups, gravies or stews *rice or pulse after cooking* improves

the flavour and is a great help to digestion *Lemonade* or orange ale made of these citrus fruits or the fruits in their natural state are valuable for those suffering from gout, rheumatism, lumbago, sciatica, neuralgia etc, as they diminish the acidity of the blood, the citric acid being converted into alkaline carbonate in the blood A glass of plain lemonade without the addition of sugar taken hot or cold before breakfast and at bed time is an excellent cleanser of the stomach and bowels having a gentle laxative effect For a bad cold the juice of two lemons in a pint of boiling water sweetened to taste and taken at bed time acts like magic A drachm each of lemon juice and water with two drachms of sugar added makes an excellent linctus to relieve vomiting and dyspepsia In diabetes weak lemonade is preferred to plain water for allaying the great thirst, like other fluids in this disease it is better taken during the intervals between than at meals Lime or Lemon eaten daily with salt is a remedy of great value in enlargement of the spleen *But in cases of acid dyspepsia and gastric trouble the lemon should be avoided* Lemon juice with an equal quantity of olive oil beaten with an egg beater or with a fork is said to make a good substitute for emulsion of cod liver oil

In poisoning with croton oil seeds, castor oil seeds, the physic nut and the fresh root of the bitter cassava, mandioc or tapioca plant, a drink of limejuice 4 or 5 ounces at a time diluted with an equal quantity of *ungi* or plain water gives immediate relief to the purging vomiting and other urgent symptoms *It is an antidote which should always be first tried it seldom fails to afford more or less relief A full dose of castor oil should be subsequently given* Lemonjuice ginger juice, rock salt, black salt and *sonchal* salt in equal parts mixed together and warmed is used as a *snuff* for promoting discharge of phlegm in fevers complicated with pain in the head throat and chest Formerly in Europe and America sweetmeats called *bergamottes* were made from the pulp and rind essence Now it is only used for expression of oil of bergamot

Externally for relieving the irritation etc, of mosquito bites chilblains etc local application of lime juice often proves more effectual than anything else Applied to the surface at nights before going to bed it is believed also to afford protection from the attacks of mosquitoes For pains such as neuralgia, backache etc the parts are rubbed with a portion of cut lemon Rubbed on the scalp it helps to remove dandruff A local application made of lime juice

5, impure carbonate of potash 4, copper sulphate 3 and borax 4 parts, is useful for warts and tumours *Oil* expressed from the rind is called Bergamot oil *Essential oil* of the leaves and flowers obtained by distillation is used for adulterating Bergamot oil Both these oils are successful as stimulating *liniments*

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601. CITRUS DECUMANA. Linn.

See var — C acida, Roxb

(N O —Rutaceae)

Eng —Pomelo or Shaddock of West Indies, Pumel *Hind* —Sadaphal, Batavi nembu, Chakot *Duk* —Mahanimbu *Mah* —Papnas, Papnassa *Ben* —Bator nebu. *Punj* —Chakotra *Sind* —Bijore *Guj* —Obukotru *Bom* —Panus, popnus *Tam* —Bombali nas, Pampalienaram *Tel* —Edapandu *Can* —Sakotra bannu, Pampari

Habitat — Cultivated in India, originally brought from Batavia

Parts Used — Fruit and leaves

Constituents — Fruit contains sugar and citric acid with much essential oil in the peel

ANALYSIS —

Moisture 82 56 to 90 00, Juice 25·86 p c	
On Juice —Reducing sugars	2 22 to 2 79 p c
Non—reducing sugars	1 77 to 3·32 p c
Total Sugars	4 56 to 5 44 ,,
Acidity (in grams of citric acid)	1 15 p c
(in grams of sulphuric acid)	0 81 ,,

(Bombay Govt Agri Dept Bulletin)

Action — *Fruit which is often very large, larger than a man's* head, is nutritive and refrigerant, its rind and the epicarp are aromatic. The white or reddish vesicular pulp is sub-acid.

Uses — *Rind* which is spongy, is used by some in Bombay for making bitters " like Angustura bitters for mixing drops of it with sherry as a drink before dinner *Leaves* are useful in epilepsy, chorea and convulsive cough Fruit, which is pulpy and full of juice, is eaten with much relish

602 CITRUS LIMETTA, W. & A.

(N O—Rutaceae)

Sans—Madhu karkatika *Eng*—True Sweet Lime *Hind*—Mitha amritphal *Ben*—Mitha nebu *Punj*—Mitha nimbu *Guj*—Mithalimbu *Mah*—Sakernimbu, godnimbu, musumbi ? *Tam*—Elemichcham *Tel*—Gajanimma *Mal*—Elumitchanarakam

Habitat—Cultivated in most parts of India, especially in Southern India.

Action & Uses—Fruit is extensively used as refrigerant in fevers and jaundice It is also refreshing and cooling Fruit has a sweetish taste at all stages like sugar and water It is eaten fresh or preserved Juice is not so much valued as that of the Sour Lime

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603 CITRUS LIMONUM, Sp Risso

(See also C acida)

(N O—Rutaceae)

Sans—Limpaka, Mahajambiram, Nimbaka, Vijapura *Eng*—Lemon *Hind* & *Duk*—Jambira, Paharikaghju, Pahadi nimbu *Mah*—Jamburi Thorla limbu *Ben*—Karna nebu, gora nebu, Pahari nimbu, Pahari nembu, Jambir *Punj*—Khuttia, Gulgul *Guj*—Motunimbu *Tam*—Periya elimichcham *Tel*—Peddanimba. *Can*—Dodda nimbe hannu

Habitat—Cultivated in India, common in the C. P, Kumaon and Northern India

Varieties—Two kinds of limes are found in the Indian market —"*Pati*" and "*Kagzi*" The lemon though belonging to the same stock, differs from the lime fruit in being bigger in size with a rough, thin and loose rind

Parts Used.—Rind of the ripe fruit (Limonis Cortex, officinal), essential oil of the rind (oleum Limonis) and expressed juice of the ripe fruit (Succus Limonis)

Constituents—A pale yellow volatile oil derived on either by distillation or by simple expression from the fresh outer part of the

pericarp or finely grated rind of the fruit Lemon is richer in juice and citric acid than lime The average amount of citric acid available from 100 c c of lemon juice is 3 7 per cent (Chopra s' I D of I pp 123/124)

Action — Rind is stomachic and carminative Oil of Lemon is bitter, aromatic, stomachic and carminative in doses of from 2 to 4 drops, but is rarely employed in this form. Lemon juice, the expressed strained juice of the ripe fruit is a valuable antiscorbutic and refrigerant, primarily anti alkaline and secondarily anti acid Bark is used as febrifuge and seeds as a vermifuge Pulp is exceedingly acid

Uses — This is much used as a sauce by Indians, a *pickle* of this fruit in its own juice and salt is a popular and effectual remedy for indigestion caused by excess in eating or by indigestible articles of food Rind is principally employed as a flavouring agent. *Oil* is used as a local application in some forms of ophthalmia, but with doubtful results *Nimba Tailam* applied is of special use in leprotic ulcers *Nimba Tailam* 1 part and *Tuiaraka Tailam* 1 part, camphor (1 in 100), mixed together given in doses of 5 to 10 minims internally, will be good for leprosy and skin diseases *Lemon oil mixed with glycerine* is applied to the eruption of acne, to the pruritus of the vulva and scrotum, to sunburns etc *Lemon oil is applied* to check post partum haemorrhage and is highly prized in medicine as a flavouring agent In rheumatic affections such as plerodynia, sciatica, lumbago, pain in the hip-joints etc the administration of *lemon juice* with the addition of impure carbonate of potash and honey is recommended by Sarangadhara. Lemon juice and gun powder is applied topically for scabies *Juice of the baked lemon* is an excellent remedy for cough when mixed with an equal quantity of sugar or honey and taken in tea spoonful doses A *decoction of the lemon* (1 in 3 teacupfuls of water reduced by boiling to one cupful and allowed to stand all night in the open air, strained and taken the first thing in the morning) is a very valuable remedy in the treatment of ague *Fresh lemon juice* is recommended to be taken in the evening for the relief of dyspepsia with vomiting and bilious headaches Preserved with sugar or honey lemons are recommended for sore-throat and are considered to act as detergent; they are administered before purgatives to prepare the body for them and afterwards to check excessive action In almost all countries

lime juice is considered to be a necessary adjunct to the ordinary diet Lemon plays an important part in perfumery also The quality of Indian lemon peel is almost equal to the Sicilian variety and it has been estimated that if extraction of lemon oil is attempted from the Indian lemon peel it will not be a failure commercially.

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604 CITRUS MEDICA, Linn

(N O —Rutaceae)

Sans —Karuna , Mahalunga , Matulang *Eng* —Citron *Hind* —Maphal *Ben* —Chholongo nebu *Mah* —Kagdi limbu , Mahalung *Punj* —Bajauri nimbu *Guj* —Balank , Bijoura , Turanj *Can* —Madalada hannu *Tel* —Madeephalamu *Mal* —Madalanarakam *Kon* —Mavalinga

Habitat —It is a garden plant chiefly cultivated for its valuable fruit and met with chiefly in Khasia Hills, the south west of India and parts of Northern India

Parts Used — Rind Juice and oil

Constituents —Similar to C bergamia or C acida Oil is obtained from the rind by distillation and by expression Expressed oil is pale yellow fragrant aromatic bitter, soluble in alcohol 1 in 3 It contains citrene or limonene 76 p c, citrol 7 8 p c cymene and citronellal Does —½ to 3 minims

Action —Fruit is an expellant of poisons Yellow pulp is an excellent aromatic and stomachic Pulp is bitter and described as cold and dry if acid, but cold and moist if sweet Rind is aromatic stimulant hot dry and tonic, and is an antiscorbutic Distilled water of the fruit is sedative Seeds, leaves and flowers are hot and dry Juice is refrigerant, astringent and digestive

Uses — Its juice makes a pleasant refrigerant drink (sherbet) in allaying febrile heat and thirst, and checks bilious vomiting It is useful in bilious and remittent fevers when combined with Port Wine and cinchona bark Thick and fleshy inner rind is made into an excellent marmalade and the pleasant preserve in sugar or honey is used in dysentery Both fruit and preserve are somewhat bitter to the taste Candied citron rind is well known It is also made into a pickle with salt, sweet oil, chillies and other ingredients which is useful as an appetiser in various kinds of fever, dyspepsia and inflammatory affections. Rind if steeped in a vessel of wine will

convert it into vinegar Extract of cidrat is the oil of citron dissolved in spirits to which bergamot is sometimes added Essential oil extracted by means of sweet oil from the powdered rind is used as a stimulating liniment, and is also used in perfumery Essential oil of flowers and leaves extracted in the same way is considered to have the same properties Kernel is eaten and preserved in sugar Leaves are used in flavouring The drug is used in scorpion sting and snake bite

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605 CLEISTANTHUS COLLINUS, Benth
(N O —Euphorbiaceae)

Tam —Nachuta
Parts Used.— Bark.
Constituents —Saponin.
Action.—Extremely poisonous
Uses — Bark is a fish poison
(Chopra s I D of I pp 476)

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606 CLEMATIS GOURIANA, Roxb
(N O —Ranunculaceae)

Habitat — Occurs mostly in the higher forests of the Nilgiris & the Pulneys & ghats from South Kanara to Tinnevelly
Parts Used — Juice
Action — Vesicant, poisonous.
(Chopra s I D of I pp 476)

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607 CLEMATIC NEPALENSIS, De.
(N O —Ranunculaceae)

Punj —Oandak
Parts Used — Leaves
Action.—Leaves are deleterious to skin

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608 CLEMATIS SMILACIFOLIA
(N O —Ranunculaceae)

Habitat — Occurs in many places on the ghats from South Kanara to Tinnevelly, and on the higher elevations of the Nilgiris and the Pulneys.
(Chopra s I D of I pp 476)

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609 CLEMATIS TRILOBA, Heyne

(N O—Ranunculaceae)

Sans—Laghukarni *Mah & Guj*—Ranjai *Hind & Ben*—Moravela (small leaved or light leaved)

Habitat.—Mountains of Western India and of the Deccan, an extensive climber Many other species of Clematis such as C Nepalensis C Vithiba etc grow on the temperate Himalayas

Parts Used—Plant (leaves)

Preparations—Infusion (1 in 20), dose —1 to 2 ounces

Action—Leaves are alterative, acrid and sedative

Uses—*Infusion of the leaves* is employed in blood diseases such as syphilis scrofula leprosy and in chronic fevers, and also in snake bite Some Vaidyas regard the whole plant as a purgative *Juice* of the leaves combined with that of the leaves of Holarrhina antidysenterica is dropped into the eye for the relief of pain in Staphyloma, about two drops being used

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610 CLEMATIS WIGHTIANA

(N O—Ranunculaceae)

Occurs in higher forests of ghats from South Kanara to Tinnevelly, and higher elevations of the Nilgiris and the Pulneys

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611 CLEOME CHELIDONII, L f

(N O—Capparideae)

Occurs as a weed in clay and black cotton soil

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612 CLEOME DODECANDRA

Fr Cleome a douze etamines

Is used as a vermifuge

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613 CLEOME FELINA, Linn

(N O—Capparideae)

Sans—Swarnakshira *Fr*—Cleome de Inde

Action.—Astringent

Uses.—Mixed with milk and sugar is employed in epistaxis

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water or mixed with warm ghee is used as ear drops in earache and inflammation of the middle ear, but in cases of otorrhoea its instillation produces smarting pain, when *mixed with oil* (equal parts) it is a popular remedy for purulent discharges from the ear, it also forms an application for recent wounds and ulcers, for this purpose leaves boiled in ghee are used *Juice* is given internally in small quantities freely diluted with water and acts as a sudorific in fevers

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616 CLERODENDRON INERME, Gaertn.
or C. nerifolium
(N O—Verbenaceae)

Sans—Kundali, Kshudragnimantha. *Eng*—Garden quinine *Ben*—Benjuen, Bonjoi *Guj*—Dariajai *Mah*—Koivel, Vanajai Lahankhari narval *Hind*—Binjoam, Sangan kuppi, Chhoti ami *Duk*—Isamdhari *Mal*—Nirnotijil *Tam*—Pinasangam koppi. *Tel*—Pishimika Utichettu, Erup-pichha *Can*—Naitakkilay *Fr*—Volkameria *Smh*—Wael buraenda

It is called Garden Quinine on account of its intense bitter taste

Habitat—Common shrub on the Eastern and Western Ghats of India near the sea coast Ceylon

Parts Used—Leaves and juice of the root and the leaves

Constituents—Leaves contain a bitter principle similar to that found in chiretta a fragrant stearoptin to which its apple like odour is due, resin gum a brown colouring matter and ash containing a large amount of sodium chloride (24 or p c of the ash)

Preparations.—Infusion and decoction (1 in 10), dose —½ to 1 ounce, Tincture (1 in 8) dose —½ to 1 drachm, Juice of the root and leaves dose —¼ to ½ ounce

Action.—Tonic, febrifuge and alterative Leaves are mucilaginous bitter and fragrant

Uses.—It is given in the form of *tincture* or *decoction* in intermittent and remittent fevers it is used as a substitute for quinine and chiretta. *Juice* of leaves and root is employed as alterative in scrofulous and venereal diseases A *poultice* of the leaves is applied to resolve buboes A bath of the leaves is recommended in mania and itches. *Root* boiled in oil is applied like *liniment* in rheumatism.

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617 CLERODENDRON INFORTUNATUM, Gaertn

(N O—Verbenaceae)

Sans—Bhandira *Bom & Mah*—Kari *Hind*—Bhant *Punj*—Kali basuti *Nepal*—Chitu *Ben*—Bhat, Ghetu *Tel*—Bakada *Can*—Nayi bela

Is an undershrub found in Central India and Ceylon Leaves are of very disagreeable odour and are used in infusion as a bitter tonic and antiperiodic in malaria and after attacks of ague in doses of 1 to 2 ounces, and vermifuge A bitter principle is a constituent Expressed juice of the leaves is laxative, cholagogue and anthelmintic Decoction of leaves is used as an anthelmintic in round worms Root of this rubbed down with butter milk is given in colic The drug is used in scorpion sting and snake-bite

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618 *CLERODENDRON PHLOMOIDES* Linn

(N O—Verbenaceae)

Sans—Agnimantha or ganikarika, Vata ghin *Guj*—Arani *Bom*—Airana, Umi *Hind*—Umi *Tam*—Thalanji *Mah*—Takali

Is found in the Gangetic valley Juice of leaves is used as an alterative and bitter tonic, decoction of its root which is slightly aromatic and astringent is used as a demulcent in gonorrhoea. It is also given to children during convalescence from measles This is one of the five roots Vrahat Panchamuli

N B—The specific name is given by Trimen as C. Phlomides, Linn f He says it is incorrectly given as C. Phlomoides (K. R. K.)

Mr H H Haines, I F S gives Safed tekar as its Marathi name, and mentions a variety of it as Var Denaldi and gives Kala tekar, as its Marathi name He says the Safed tekar' is used in native medicine, but not the Kala tekar, which is distinguished by the following characteristics —Leaves attaining 3 25 (while those of safed tekar only reach 1 75"), glabrous, membranous, with a cuneate base (type pubescent on both sides) Calyx 25" in flower and enlarged calyx as long as lobes of fruit only which is 3" long (in 'safed tekar' the sepals are acuminate and are at least 12" longer than the fruit) glabrous deltoid apiculate Corolla 75 long (The Indian Forester Aug 1914 p 402)

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619 CLERODENDRON SERRATUM Spreng

or C serratifolium

(N O —Verbenaceae)

Sans —Bhargi *Hind* —Bharangi *Ben* —Bamanhati *Tam* & *Mal* —Cheruteku

Met with in Eastern India especially Bengal where its root is used in the form of decoction as a remedy in asthma bronchitis and other catarrhal affections of the lungs and the leaves are applied in the form of poultice to hasten suppuration An alkaloid is its constituent The drug is used in snake-bite and fever

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620 CLERODENDRON SIPHONANTHUS, R Br

See Premna herbacea

(N O —Verbenaceae)

Sans —Bhargi *Hind* —Bharangi *Ben* —Bamunhati *Punj* —Arni

Constituents —An alkaloid Root is useful in asthma cough, etc.

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621 CLITORIA TERNATEA, Linn

or C. spectabilis

(N O —Papilionaceae)

Sans —Ashphota , Gokarna , Aparajita Vishnu kranta *Hind* —Nill koyala Kava thenthe *Ben* —Nila aparajita *Hind* & *Ben* —Aparajita *Mah* —Gokurna mula (root) *Guj* —Garani *Tel* —Dintana , Gilarnika *Tam* —Kodi kakkanam Kavachhi , Kuruvilai , Kakkanan Kakkattan kodi *Mal* —Aral Shankapuspam *Can* —Shankapushpa Karnikay Kantisoppu *Kon* —Shankapushpi *Arab* —Buzrula Mazerium-e-hindi *Pers* —Tukhm i bikhe hayata *Fr* —Clitore-de Ternate *Eng* —Butterfly pea , Winged leaved Clitoria , Mazerion *Port* —Fula criqua

Habitat A very common garden flower plant found all over India especially in Southern India.

Parts Used — Root bark seeds and leaves

Constituents — Root bark contains starch tannin and resins Seeds contain a fixed oil a bitter acid resin (the active principle), tannic acid glucose (a light brown resin) and ash o p c The testa of seeds is brittle and contains a cotyledon which is full of granular starch

Preparatioos—Infusion (1 in 8), dose —1 to 2 ounces alco holic extract decoction compound powder and juice of the leaves and root.

Actioo—1 resh root has an acrid bitter taste it is aperient (laxative) and diuretic Seeds have a powerful cathartic action like that of jalap Root bark is demulcent diuretic and also laxative

Parts Used—*Seeds* roasted and *poudered* are given in doses of 30 to 60 grains in cases of ascites and eolargements of the abdominal viscera, generally administered in combination with 2 parts of cream of tartar, and 1 part of ginger to 1 part of Clitoria seed in doses of ½ to 1 drachm. They are also employed in weakness of sight sdrethroat and mucous disorders in tumours affections of the skin and in dropsy One, two or more seeds baked and then brayed in human milk or fried in ghee are given to children in colic and con stipatioo *Alcoholic extract of the root* is also useful in doses of 5 to 10 grains Dose of the dry *bark in pouder* is from 1 to 2 drachms In the Konkan two tolas of the *root juice* are given in cold milk to remove phlegm in chronic bronchitis it causes nausea and vomiting *Juice of the root of the white-flowered variety* is blown up the nostrils as a remedy for hemicrania *Infusion of the root bark* is useful in the irritation of the bladder and urethra *Juice of the leaves* mixed with that of greeo ginger is given in cases of colliquative sweating in hectic fever Mixed with common salt it is used for applying warm all around the ear in cases of swelling of the neighbouring glands The drug is used in snake-poisons also Following is the preparation recommended by Chakradatta in ascites and enlargements of the abdominal viscera—Take of the roots of Clitoria temata Pladera decussata Beliospermum montanum and Indigofera tinctoria in equal parts, rub them together into an emulsion with water and administer with cow's urine

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622 CLITORIA MARINA (*Sieta* variety)

(N O—Papilionaceae)

Found in India bearing light blue flowers is used for cramps and paralysis

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623 COCCINIA INDICA, W & A.

See Cephandria Indica

Tam Kovai. *Tel*—Dhonda. *Ben*—Telakucha.

This is a dioecious creeper found everywhere in hedges of South India

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624 COCCULUS CORDIFOLIUS, Miers

See Tinospora cordifolia.

(N O—Menispermaceae)

Sans—Nirjara, Somavalli, Guloochee or Guduchi, Amrita, Pittagni, Bhishakpriya *Eng*—Heart leaved moonseed *Mah*—Gulvel *Hind* & *Ben*—Gulancha *Bom.*—Ambervel, Giroli *Duk*—Gulbel *Guj*—Gado *Punj*—Gilo Gulanch *Kash*—Bekhgillo *Arab*—Gulbel *Gualior*—Gudbel *Tel*—Tippatega *Tam*—Sindilkodi, Amradvalli *Mal*—Chittamrutam, Paiyamrutam *Can*—Amratavalli *Goa*—Amritvel *Burm*—Singo mone *Sinh.*—Rasakinda. *Malay*—Piturali

Habitat—A common climbing shrub growing on *nim* and other high trees in tropical Western India (grows wild on heldges at Ahmedabad), Burma and Ceylon.

Parts Used—Stem and fecula (starchy extract of *gulancha*), leaves and root.

Constituents—Root and stem contain starchy extract, bitter principle and a trace of berberine Leaves are highly mucilaginous

Action—Stomachic, bitter tonic, alterative, aphrodisiac, hepatic stimulant, antiperiodic, mild diuretic and demulcent In large doses the root is a powerful emetic. The entire plant is regarded as a valuable alterative and tonic. The stem is antipurgative *Guduchi Satwam* is 'Pathyam' (i. e., agrees with the system and, may be given to patients and convalescents as a light diet), it is 'laghu' (easily assimulated), it is 'Deepanam (kindles the digestive fire), it is 'chakshushyam (beneficial to the eyes), it is 'dhatukrit' (tissue-builder), it is 'medhayam (helps development of intelligence), it is 'vayasthapanakarakam' (retains youth and prevents premature age)

Preparations—Cold infusion (one ounce of the bruised stem infused for four hours in 10 ounces of cold water), dose —1 to 4 ounces. Tincture (1 in 8), uses ½ to 2 drachms; starchy extract or fecula; dose 5 to 20 grains Precipitated extract (*Satwam*) or *Guduchi Satwam* is an amorphous white powder or lumps derived

from *Guduchi* It is often adulterated with the English made powder of *Zea Mays*, our common corn flour and also with the common wheat flour The watery extract is prepared by powdering the stem and washing out the starch with water and drying the sediment Pandit Jayakrishna Indraji says that as the deposit settles the sooner it is dried the better It is similar to arrow root in appearance The fecula is nutritious, largely given in cold fevers and seminal weakness and in urinary affections Its preparations especially the infusion may be given in combination with iron preparations like those of calumba and quassia

Uses — The entire plant—stem, leaves and root are used in medicine, preferably in the fresh state, the root and stem should be collected in the hot season when the bitter principle is most abundant and concentrated The creeper from which *Guduchi Satwam* is prepared heads the list of the valuable bitter tonics in Ayurvedic Pharmacopoeia and is the bitterest amongst them It is a very valuable tonic and is best given in infusion, with or without milk, the tincture and *extract* (*Guduchi Satwam*), which is a starchy matter, is administered in ghee or in sugar and water, or in milk It is also a valuable nutrient when there is intestinal irritability and inability to digest any kind of food, and is largely used in (indigenous) practice, in cold fevers, seminal weakness and urinary affections, especially the *extract* in 5 to 10 grain doses is useful in general and seminal debility, fever, vomiting, jaundice torpidity of the liver, skin diseases (patches and small boils on the surface of the skin generally in the extremities often painful and persistent), secondary syphilis rheumatism, acidity, of urine and urinary diseases (various forms of diabetes) some forms of dyspepsia irritability of the stomach splenic affections, chronic gonorrhoea, leucorrhoea, chronic diarrhoea, and in some forms of obstinate chronic dysentery Kirtikar & Basu say that Guduchi is also useful when there is an acrid diarrhoea, due to an acidity of the intestinal canal or acrid dyspepsia *Guduchi Satwam* is the most potent vegetable tonic food that we have in India Besides being a tonic and rejuvenator (*Rasayanam*), it is indicated in several diseases attended with great debility Best prepared *Gudūchi Sātwam* has a good taste, carelessly prepared is bitter Yogaratnakaram says "It relieves "*Tapam*" (a hot sensation all over the body creating much restlessness), relieves hysteria, '*Daham*' (burning—general or local, internal or external), "*Moham*' (all

varieties of urinary disorders—twenty among which are prominently recognised in Ayurved), *'Aruchi'* (anorexia), *'Trit'* (thirst), *'Suasa'* (difficult breathing), (or breathlessness) *'Pandu'* (anaemia or bloodlessness), *'Arsa'* (bleeding piles), *'Raktapradaram'* (menorrhagia), *'Rogarajam'* (King of Diseases, i e, consumption) It adjusts and maintains the proper proportion of *'Tridoshas'* thus maintaining health by readjusting any disturbance of the equilibrium of *tridoshas*, relieves abnormal uterine (and worst forms of vaginal discharges It is used as a febrifuge and tonic in gout, combined with extract of chiretta, *Vasaka*, myrobalan, *neem*, picrorhiza, *parpata* (Oldenlandia herbacea) all together being equal in weight to that of *Gulancha*, it makes a very useful compound liquid extract in various kinds of fevers (high and chronic) *In malaria it is some times more efficacious than quinine* As compound tincture or in fusion it is most valuable in malarial fevers with or without enlarge ment of liver and spleen, anaemia, dropsy, hiccup and cough Root is a popular remedy for snake bite, and the *watery extract* is adminis tered for leprosy In the form of *decoction* or *infusion* combined with Cyperus Rotundus ginger, sandalwood and Oldenlandia herbacea it is given in fevers caused by cold or indigestion, especially among children Combined with acetate of ammonia its infusion is adminis tered in intermittent and other mild forms of fevers It is rendered more agreeable by the addition of cinnamon, cloves and other aromatics The dose is 2 to 4 ounces three times a day *Juice* mixed with powdered long pepper, *pashanbhed* and honey is a com mon household remedy for gonorrhoea. *Juice* forms one of the in gredients in *poushtiks* given in phthisis *Watery extract* prepared by Hakims when pure, is white in colour and consists chiefly of starch It is called *"Sat gilo* or *Palo"* and is given in chronic fevers and in diabetes Several *oils* for external application are prepared with *gulancha* and are much used in skin diseases, rheumatic affections and other nervous complaints—*Guduchyadi tasla; Vrihat guduchyadi tasla Vata Guduchyadi tasla* (Charaka) Following are a few very useful preparations containing *Gulancha* —

1 Take of Alstonia scholaris *Gulancha*, leaves of Adhatoda vasaka, Cyperus rotundus, Trichosanthes dioica, Calamus rotung Catechu, *neem* leaves in equal parts, and prepare a decoction, dose—1 to 2 ounces Useful in remittent and intermittent fevers

2 Take of *Gulancha, parpata* (Hedyotis biflora), Cyperus rotundus, chiretta and ginger each 1 drachm and water half a seer Boil down to one-fourth Useful in bilious and other fevers which have resisted other antiperiodics

3 *Dhatreemodaka*—Take of chebulic and emblic myrobalans, ginger, and long pepper each 1 part, watery extract of *gulancha* (*Guduchi Satuam*) 4 parts, water 16 parts Boil till reduced to one fourth and prepare a confection with 8 parts of sugar, when of proper consistence divide the mass into boluses of 1 drachm each Dose—One bolus taken every morning in chronic fever with enlarged spleen, cough loss of appetite etc (Sarakaumudi)

4 Take of leaves of *Gulancha* 4, Oxalis Corniculata 1 Chebulic myrobalan 1, dried ginger 1 and *Pipli* 1 part Mix and make a decoction in the usual way and then add sufficient quantity of honey Dose —1 to 2 drachms Useful in *remittent fevers*

5 Take of *Gulancha* 2, Achyranthes aspera 1, Embelia Ribes 3 root of Aplotaxis auriculata 2, Asparagus Racemosus 2, Acorus calamus 3, *Balharda* 4 and Canscora decussata 2 parts Mix and make a powder Dose —grains 10 to 15 Used as a blood purifier, also an alterative tonic in syphilis, scrofula etc.

6. Take of *Guduchi Satuam* ½ tola, sugar candy ¼ tola and honey 1 dram, and butter (preferably goat's) sufficient quantity, mix all together Taken on empty stomach morning and evening (twice a day) is useful in consumption

7 Take of *Guduchi Satuam* ⅛ tola and fresh cow's ghee ¼ tola. Mix well Taken morning and evening on empty stomach twice a day, is beneficial in diabetes mellitus

(Note —' The dose may be increased to ½ tola The administration of 1 to 5 grains of good *Satapu a Abrakam* also along with this drug is useful practice with some reputed physicians Ghee is generally prescribed for thin hot (*Pitta*) constitution and honey is not considered harmful to diabetic patients and is believed to accelerate the cure in fat and cool people' Vaidyaraj Dr D S Avadhani)

8 Take of *Guduchi Satuam* 1/8 tola and decoction of *Parpatakam* 2 ounces Such dose to be given every 3 hours or 4 hours three or four times a day for chronic and low fevers

9 Take of *Guduchi Satuam* 1/8 tola and decoction of *Asoka* or *Jambulin* bark (*Nerudu chekka*) 2 ounces in each dose to be taken two or three times a day for discharges of women

(Note — Irrigating the part with a light decoction of (1) *Jambulin* bark (2) *Asuadha* bark (3) bark of *Nyagrodha* (Banyan) along with the internal administration of *Guduchi Satuam* is found to he highly useful —Vaidyaraj Dr D S Avadhani

Cow s ghee if that is not available fresh buffalo s ghee is the best vehicle for the administration of *Guduchi Satuam* in consumption diabetes mellitus chronic and low fevers and discharges of women—Vaidyaraj Dr D S Avadhani)

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625 COCCULUS LEAEBA DC

A scandent shrub of the same genus found in the drier parts of We tern India the Punjab Sind and Carnatic valleys as well as in Afghanistan Arabia and Persia has bitter tonic and antiperiodic properties similar to those of C cordifolia and Tinospora cordifolia It is known in the Punjab as *Velri Ullar billar* in Gujarat Bombay and S nd as *Parvati*

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626 COCCULUS SUBEROSUS or C Indicus

(N O —Menispermaceae)

Sans —Kaphala Kakanashka *Eng* —Indian Berry Fish berry *Punj* —Heuber Netramala *Hind Duk Ben* & *Tel* —Kakmari *Mah* —Karwi *Tam* —Kakakulli Penkottai *Mal* —Meenanu Nanjinkuru Pellakkaya. *Can* —Kagemari *Kon* —Gardaphala *Bom* —Vatoli *Guj* —Kakphal *Sinh* —Titt taval *Fr* —Coque du Levant *Pers* —Zehere Mahi

Habitat — Found in the mountain forests of Southern and Eastern India & Burma.

Parts Used —Fresh fruit and its alkaloid picrotoxin

Constituents —Berry or the dried fruit contains picrotoxin a bitter crystalline substance and 50 p c of oil It contains other

crystallizable substances which are tasteless, *Viz* —menispermine and paramenispermine Picrotoxin is the active principle, it is soluble in water and alkalies It does not neutralise acids The aqueous solu tion is not altered by any metalic salt or by tannin iodic acid etc in fact by none of the re agents which affect the alkaloids The solution in the latter is not precipitated by chloride of ammonium, but it reduces cupric oxide like the sugars, but to a much smaller extent than glucose

Action – Pericarp is emetic. Picrotoxin, the active principle is a powerful poison irritating the respiratory and other centres in the medulla and producing violent spasmodic muscular contractions, *externally* it is parasiticide Dried fruit is a powerful narcotic, and it is the source of picrotoxin As it has exactly the opposite effects of morphia on the pressure of the blood it forms a best antidote to morphia poisonmg

Uses — *Juice of the fresh fruit* is a good application to scabies and for ulcers *Picrotoxin* is a poison and is rarely given, it is however given in the smallest doses in epilepsy especially in the nocturnal variety, in paralysis affecting the muscles of the pharynx, of the legs sphincter vesicae, and sphincter ani, in chorea and in sick headache It is however, to check the night sweating of phthisis that this drug has been much used in doses of 1/200 to 1/100 grain three times a day, it may be given in pills and the dose gradually increased to 1/50 grain It is used as an antidote in morphine poisoning as it prevents the paralysis of the respiratory centre in the medulla, also in chloral poisoning *Exterrally* in the form of ointment (1 grain of picrotoxin or 10 grains of the seeds to 1 drachm of ghee or *kukum* butter or vaseline or simple ointment) *it is used to destroy pediculi or lice which infest* the body, it is useful also in prurigo ringworm and obstinate parasi tic skin diseases *In applying this ointment or paste made of pounded seeds, which is a powerful germicide care should be taken to avoid all abraded or ulcerated surfaces on account of the danger of absorption of the poisonous principle of the seeds* In the form of an oily solution of the berries (1 drachm to 1 ounce of cocoanut oil) it is a useful external application.

627. COCCULUS VILLOSUS, DC

See Tinospora crispa.

(N. O —Menispermaceae)

Sans —Jaliamni, Patalagarudi; Vasanavalli; Vanatiktika. *Hind* —Faridbel; Jamtike bel. *Ben.*—Huyer. *Mah* —Vasanvel; Tana. *Guj* —Patalagaloi *Duk* —Jamti ka-gratta. *Tam.*—Kattukkodi. *Tel.*—Chipuru tige, Kattle-ti *Can.*—Dagadi.

Habitat.—A climber found in tropical and subtropical India.

Parts Used.—Root and leaves.

Constituents.—Resin, two principles possessing the properties of alkaloids, but differing in certain points from each other, and an acid; resin, yellowish-green and soft, of fragrant odour like that of Tolu balsam and soluble in benzine

Action.—Root is bitter and acrid; sudorific, alterative, laxative and demulcent, and is a substitute for sarsaparilla. Antiperiodic in fevers, tonic, alterative and diuretic.

Uses—*Juice of the leaves* coagulates in water and forms a mucilage which is used *externally* as a cooling and soothing application in prurigo, eczema, impetigo etc. Sweetened with sugar, the *juice* is given in acute gonorrhoea to soothe the smarting and scalding. *Decoction of the root* (1 in 10) mixed with long-pepper and goat's milk is given in doses of two to four ounces in chronic rheumatism and syphilitic cachexia Decoction in combination with ginger and sugar is given in cases of bilious dyspepsia and in cases of fevers with other bitters and aromatics *Roots* rubbed with bonduc nuts in water are given for stomachache, especially in children.

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628. COCHLOSPERMUM GOSSYPIUM, DC

or Bomoex Gossypium.

(N. O.—Bixineae)

Eng.—Golden silk cotton; yellow flowered cotton. *Duk.* & *Hind.*—Pilikapas; gajra kumbi; katera gond (the gum). *Tam.*—Tanakumaram; Kattilavan. *Tel* —Kondugogue pisunu; Adaviburuga. *Mal.*—Shimaepunji. *Can* —Burugadamara *Sinh.*—Ella-imbul. *Pers.* —Katira-i Hindi. *Arab* —Kathira.

Habitat.—Bihar, Orissa, Deccan, Garhwal and Bundelkhand

Parts Used.—Leaves and the gum obtained from the trunk.

Constituents —Seeds contain an oil and some saccharine matter

Action —Gum called Indian or Country Tragacanth, is demulcent and astringent

Uses —Gum is made into lozenges and mucilage The gum is a substitute for Tragacanth It is useful in cough, hoarse throat and scalding in the urine Mixed with curds or whey it is largely used with great benefit in diarrhoea and dysentery Young leaves are used to make a cooling wash for the hair

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629 COCOS NUCIFERA, Linn

(N O —Palmae)

Sans —Tranaraj , Deerghavraksha , Sadaphala Rasayana taru , Narikela. *Eng* —Cocoanut Palm. *Hind* —Nariyal *Ben* —Narikel *Mah* —Naral *Guj* —Naliar *Tel* —Tenkayichettu , Kobbirichettu , Thenkayamanu , *Tam* —Tengu , Tanba *Mal* —Ten *Can* —Tenginamara *Kon* —Narla maddo *Fr* —Cocotier *Ger* —Achtekokospalme *Arab* —Shajratuna narajila *Pers* —Drhakht narejile , Drakht i badinja

Habitat.—This graceful palm rising from 60 to 90 feet is extensively cultivated in Southern India and Ceylon , it is not found in the Northern Provinces, but is plentiful in Eastern Bengal, Burma towards the sea coast, in Malabar and Coromandal Coasts and the islands of the Indian Archipelago

Parts Used —Flowers, root, fruit, oil and ash The fruit contains shell, juice and kernel

Constituents —Enzyme, investin, oxydase and catalase Fresh kernel contains nitrogenous substances, fat, lignin, ash, palm sugar (glucose and cane sugar) and inorganic substances The milk in the cocoanut contains sugar (mannitol), gum, albumen, tartaric acid and mineral water Ashes of the leaves contain a good deal of potash. Cocoanut oil contains free caprylic acid in addition to glycerides of lauric, myristic, palmitic and stearic acids The oil determinations made on the dried flesh of the nut yield Moisture 2 60 to 6 95 p c , and oil 60 0 to 71 0 p c

Action.—Cocoanut milk is refrigerant, nutrient, aperient, diuretic and anthelmintic. Cocoanut water is cooling, refrigerant, demulcent and in large doses aperient Fresh kernel or the tender pulp is nourishing, cooling diuretic and Pulp of the ripe

fruit is hard and indigestible. Terminal buds are nourishing and digestive. Their fresh juice is refrigerant and diuretic. Fermented juice constitutes the spirituous liquor called toddy; it is refreshing and laxative. Oil from the shell is rubefacient and antiseptic and used externally. Root of the cocoanut is diuretic.

Uses.— The whole tree almost every part being utilised, is of great economical value to the people of the sea-board districts. *Juice* extracted from the flowering spikes is made into a palm wine or toddy and also vinegar and a coarse sugar somewhat different from cane-sugar; when fermented and distilled a clean spirit is obtained, which is suitable for pharmaceutical purposes. *Unfermented juice* taken twice or thrice weekly during pregnancy has marked effect on the colour of the infant; it will be born of a fair complexion; *i e.* if of dark parents, comparatively fair; if of lighter coloured parents the offspring generally assumes fairest complexion. *Milk of the kernel* mixed with *Kalijeera* is locally applied to freckles. From the edible portions of *kernel of the nut* three oils known as *cobrel, avel* and *muthel* are prepared. And a *tarry oil* is prepared from the shell of the nut which is used *only externally* in the treatment of ringworm. The clear shell or portions of it are burnt in a fire and while redhot, covered by a stone cup The fluid deposited in the interior of the cup is the oil or tar from the shell; it is a good substitute for acetic acid and creosote. *Milk of the fresh kernel* is useful in debility, incipient phthisis and cachexia, in doses of ¼ to 8 ounces thrice daily; in large doses it is aperient. *Water of the unripe fruit* is useful in thirst, fever and urinary disorders *Fresh oil* prepared by boiling the milk of cocoanut is a useful application in baldness as it promotes the growth of hair and also for burns. Cocoanut oil prepared from fresh pulp is used as a substitute for Codliver oil in American hospitals in wasting and pulmonary diseases of children; the dose is from 20 to 30 minims gradually increased to a drachm thrice daily; the only drawback is its indigestibility. It is the oleine obtained by pressure, refined by being treated with alkalies and then repeatedly washed and distilled with water. *Milk or water of the green fruit* is a cooling refrigerant drink, useful in urinary disorders. It allays vomiting in bilious fevers. *Root* of the cocoanut is used in uterine diseases. *Ashes of the leaves* are used in medicine. In South Africa the cocoanut is a popular remedy for tape-worm; the almond scraped out from the interior of a cocoanut is administered and it is followed

in three hours by a dose of castor oil The worm is expelled in two hours afterwards Green husk of the cocoanut is made into preserves and sweetmeats Kernel of the nut is generally used in culinary preparations such as curries, sweetmeats etc, and for extract ing milk. "The cabbage or tender leaf, when boiled, is a delicate vegetable and is also eaten raw, pickled or made into conserve The spathes yield toddy used for conversion into *jaggery*, vinegar or *arrack* spirit (Bombay Govt Agri Dept Bulletin) Dried flesh (*copra*) is used for making butter, margarine etc Residue or oil cake left after extracting the oil from the *copra* is a good manure and food for cattle *Expressed oil* is an ingredient in the prepara tion of curries It is also used in the manufacture of cosmetics, vegetable margarine, and other medicinal preparations *Narikela khanda* is a useful confection and is prepared thus —Take of the pounded pulp of cocoanut half a seer, fry it in eight tolas of clari fied butter and afterwards boil in four seers of cocoanut water till reduced to a syrupy consistence Now add coriander, long pepper, bamboo manna cumin seeds, nigella seeds, cardamoms cinnamon, *tejpatra* the tubers of Cyperus rotundus, and the flowers of Mesua ferrea one tola each in fine powder and prepare a confection Dose — two to four tolas in dyspepsia and consumption

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630 CODONOPSIS OVATA, Benth

(N O —Campanulaceae)

Punj —Ludut

Parts Used —Roots and leaves

Uses —Roots and leaves are used for bruises and ulcers

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631 COFFEA ARABICA, Linn.

(N O —Rubiaceae)

Sans —Mlechca phala *Eng* —Coffee *Hind* —Kafi, Bun *Beng* —Kafi, Kapi *Guj* & *Mah* —Bund *Pers* —Cahwa *Fr* —Cafeier d Arabie *Ger* —Arabischer Kaffebaum *Arab* —Kahvaha, Bun *Can*, *Guj* & *Mah* —Caffi *Tel* —Kapivittulu *Tam* —Kapi kottai *Mal* —Bannu *Kon* —Bunna

Habitat.— Coffea Arabica and several other species of the plant are luxuriantly cultivated in Southern India, Madras, Mysore, Coorg, Travancore and Cochin

Parts Used — Coffee beans or the dried seeds of coffee

Constituents — Alkaloids Caffeine (1 to 3 p c) adenine xanthine hypoxanthine guanosine proteids (11 to 14 p c), sugar legumin (10 p c) glucose dextrine (15 p c) Coffeo tannic acid (1 to 2 p c) fat volatile oil and ash (3 to 5 p c) consisting of alkaline carbonates and phosphates Dried seeds of Coffee beans yield the crystalline principle *caffeine* which is identicial with the *Theine* contained in tea By the roasting process a volatile oil called *Caffeol* is developed Coffee beans in which caffeine occurs partly free and partly in combination rarely contain more than 1 5%

The quality of caffeine present varies greatly in different species of coffee It is never very large in amount slightly under 2 0% of the dry seeds being the highest recorded Analyses of Arabian coffee show a range of between 0 7 & 1 6% whilst Liberian coffee varies from about 1 0 to 1 5% the wild Sierra Leone coffee (Coffea stenophylla) contains about 1 5% four species of coffee natives of Madagascar or of the neighbouring islands do not contain any caffeine

Action — The stimulating and refreshing action of coffee is mainly due to the presence of caffeine and a volatile oil Caffeine the principal alkaloid of coffee as a stimulant to the central nervous system and circulation and as a diuretic makes a very valuable therapeutic agent Cerebro spinal respiratory gastric and renal stimulant antisoporific efficient diuretic and antilithic assists assimilation and digestion promotes intestinal peristalsis lessens tissue waste and decreases the excretion of urea It reduces the amount of blood circulating in the brain and brings it to the nerve tissues under increased pressure It allays the sense of prolonged mental fatigue and keeps off sleep for some time It increases reflex action and mental activity Given in excess it disorders digestion as it retards salivary and gastric functions it leads to headache vertigo palpitation of the heart great restlessness convulsions and paralysis Coffee is more stimulating but less substaining than cocoa. Coffee berries possess febrifuge properties in their raw state It is contra indicated to children as it produces sleeplessness and thereby adversely affects their growth Among adults it hastens old age processes and lessens the length of life by disturbing metabolism

"Compared with tea coffee has only a slight retarding influence on salivary digestion but an equally detrimental effect on gastric

digestion As a stimulant it affects more directly the central nervous system the heart action is considerably increased in rate as well as strength Indirectly this results in an increased activity of the kidneys The respiration is deepened and the cerebral centres excited For this reason it often proves useful in cases of opium and alcoholic poisoning In some persons these effects are very mild, in others, they are severe producing nervousness and insomnia and coffee should then be withheld It removes the sensation of fatigue for which reason it is used by many nurses when on night duty, *It should never be given to children* ' (Pattee s Practical Dietetics)

Uses —Coffee is a palliative in spasmodic asthma in whooping cough delirium tremens, hysterical affections and in the palpitation of the heart, it is highly recommended in cholera infantum, successful in chronic diarrhoea Coffee and caffeine have been used as diuretic in dropsy The alkaloid caffeine and its salts e g caffeine citras caffeine soda benzoas etc, are largely employed in medicine It is said that in early stages of typhoid fever, coffee is almost a specific In the French Colonies where coffee is more used than in English as well as in Turkey where it is the principal beverage not only gravel but gout is scarcely known *Roasted coffee* has the disinfectant and deodorant properties A *strong infusion* of black coffee is useful as an antisoporific in cases of poisoning such as by opium alcohol and other stupefying or narcotic poisons Given in teaspoonful doses frequently at short intervals to patients after surgical operations it checks vomiting It is a good vehicle for the administration of quinine and sulphate of magnesia as it conceals the bitter and nauseous tastes of those medicines A strong cup of coffee is considered a good protection from the effects of malaria In their raw state coffee berries are prescribed for hemicrania and intermittent fevers It is well known that moderate quantity of coffee is not only not harmful but is even beneficial When taken in excess it produces harmful effects (Lt Col Chopra on page 70 of his I D of I 1933 edition)

N B —The substances which have been found as adulterants in ground coffee are very varied including cereals sawdust bark cacao husks acorns figs, lupine peas beans and other pulses and even baked liver Colouring materials are also used to improve the appearance of poor and damaged beans Artificial beans composed of such ingredients as flour chicory and coffee, or bran and molasses

have been manufactured, the mixture being ground up, made into a paste, and moulded into the form of the genuine article. A few seeds make a palatable infusion with water and are used to some extent as substitutes for coffee, although they lack its stimulating properties One of the best known is Negro Coffee, or Mogdad Coffee, the seeds of Cassia occidentalis The seeds of a species of Ipomea, the echro (Hibiscus esculentus), and the soya beans are also employed for the same purpose

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632 COFFEA BENGALENSIS, Roxb

A species of the same Natural Order, growing wild, and cultivated in the mountainous regions of Sylhet and Nepal, has properties and uses similar to those of the above species Their seeds are found to contain on analysis about 34 p c. of cellulose, 12 p c of water, 10 to 13 p c. of fatty matter, 15 5 p c of glucose, 10 p c. of legumin, 3 5 p c of chlorogenate of potassium and caffeine, a small percentage of oil and mineral substances, and Caffeotannic and Caffeic acids An empyreumatic oil is developed in roasting the seeds.

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633 COIX LACHRYMA, Linn.

(N O —Gramineae)

Eng —Job's Tears *Sans* —Gavedhu *Hind* —Gurlu *Punj* —Sanklee *Bom* —Gurmur

Habitat.— Job's Tears are the fruits of this grass, found in India and many tropical countries

Parts Used.— Root and fruits

Constituents — Leucin, tyrosin, histidin lysin, arginine, coicin

Action.— Blood purifier

Uses.— Root is used in menstrual disorders Fruits are used as food in some of the poorer districts of India and Japan In China they are accredited with medicinal properties (Chopra's 'I D of I ' PP 477)

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634 COLA ACUMINATA & C vera

See Sterculia acuminata

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tincture and the corm for the extract or wine of colchicum. The alkaloid colchicine is liable to be affected by high temperature. The corms should, therefore, be collected early in the summer and dried at a temperature not exceeding 65°C. Attention to this direction may increase the percentage of alkaloid. It would appear from the above analysis that both the corms and the seeds of C. luteum or '*Surinjan-i-talkh*' sold in the Indian market could be used for therapeutic purposes in place of C. autumnale. It may, therefore, be confidently expected that C. luteum will in future be more extensively employed in the preparation of galenicals in India than has hitherto been the practice " (Chopra's "I. D. of I." pp. 126 & 127).

Preparations.— Extract, dose ¼ to 1 grain.

Action —Alterative.

Uses.— Chiefly used in rheumatism, gout, etc. "Colchicum luteum is a very good substitute for the C. autumnale which is official in the B. P. There are two species commonly sold in the Indian bazars, one is sweet and the other bitter. The bitter variety is C. luteum or '*Surinjan-i-talkh*' which is distinguished from the sweet variety '*Surinjan-i-shirin*' by its bitter taste, smaller size, darker colour and a reticulated appearance of the corms. The medicinal properties of this plant were well-known to the Arabs. The Kashmir Hermodactyls or '*Surinjan-i-talkh*' was and is still used by the Mahomedan physicians as an alterative and aperient, especially in gout, rheumatism and diseases of the liver and spleen. In gout, it is combined with aloes, with ginger and pepper it is used as an aphrodisiac, a paste is made with saffron and eggs and is applied to rheumatic and other swellings; powdered root is sprinkled on wounds to promote cicatrisation. In Hindu medicine '*Tutham*' or '*Tuttanjana*' is the term applied to a collyrium made of copper sulphate and root of C. luteum. The corm of C luteum are occasionally adulterated with corms of the sweet variety and another plant, viz. Narcissus tazetta belonging to the same natural order, growing abundantly in Persia and which is supposed to have similar properties.

A variety known as C. speciosum, Stev., commonly grows in Badghis and Khorasan and finds its way into India.

The seeds of colchicum are not commonly sold in the Indian bazars " (Chopra's "I. D. of I." pp. 125 & 126).

637 COLDENIA PROCUMBENS Linn.

(N O—Boragineae)

Sans—Tripakshee *Hind*—Tripungkee *Beng*—Bursha *Tam*—Seruppadai.

Habitat—Found widely in South India

Parts Used.—Leaves

Uses—Leaves are applied to rheumatic swellings

(Chopra's I D of I pp 477)

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638 COLEBROOKEA OPPOSITIFOLIA, Sm

(N O—Labiatae)

Hind—Pansra *Punj*—Shakardana *Nepal*—Dosul

Parts Used.—Roots

Uses—Roots are used in epilepsy

(Chopra's I D of I pp 477)

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639 COLEUS AROMATICUS, Benth or C. amboinicus or C carnosus

(N O—Labiatae)

Sans—Pashanabhedi Asmantaka, Hansagar *Engl*—Country borage *Hind*—Patherchur Patharcheer, Amroda *Beng*—Pathar kuchi, Amlakuchi *Tam*—Kurpurvalli *Guj*—Ovapana *Mah*—Pan Ova

Habitat—This grassy plant is found or cultivated throughout India, Ceylon and Moluccas

Parts Used—Leaves

Constituents—Essential oil carvacrol

Preparations.—Juice of leaves dose—½ to 1 drachm

Action—Antispasmodic, antilithic cathartic stimulant and stomachic

Uses.—*Juice* mixed with sugar is given to children in colic, in asthma, chronic cough strangury calculus gonorrhoea, piles and dyspepsia Crushed *leaves* are used as a local application to the head in headache and to relieve the pain and irritation caused by stings of centipedes *Expressed juice* is applied round the orbit to

relieve the pain in conjunctivitis It is also given in chronic cough, fever, epilepsy and other convulsive affections This is called *Ovapana* from the aromatic taste and odour of its leaves resembling those of Ptychotis ajowan A favourite Indian dish called *Bajeh* is made of the chopped leaves

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640 COLEUS BARBATUS, Benth

Mah & *Guj*—Gurmal, Garmalu, Mainmul Cultivated to a small extent in Baroda Bassein etc of Bombay Presidency Fleshy sweet potato like roots are used in pickles (Bombay Govt Agri. Dept Bulletin)

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641 COLEUS MALABARICUS

Is a species found in Malabar and in the East Indies with aromatic leaves Its root is used in dysentery and stomach complaints.

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642 COLEUS SCUTELLARIOIDES

Is another species met with in Central India the root of which is like the above used in dysentery and digestive disorders

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643 COLEUS SPICATUS See Anisochilus Carnosus

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644 COLOCASIA ANTIQUORUM, Schott

(N O—Araceae)

Hind & *Ben*—Kachoo *Hind*—Arvi *Tam*—Seppankizhangu *Tel*—Chama *Fr*—Colocasie de l Inde *Ger*—Schild formiger Arum—See Arum Colocasia

Action—Styptic stimulant and rubefacient Used in scorpion sting

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645 COLOCASIA INDICA, See Alocasia Indica

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646 COLOCASIA MACRORRHIZA, Schott

Sans—Hastikarni Used in fevers

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647 COLOCASIA VIROSA, Kunth

Sans—Bish Kachu

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648 COLUTEA ARBORESCENS, Linn.

(N O—Leguminosae)

Punj—Braa

Parts Used—Leaves as purgative

(Chopra s ' I D of I pp 477)

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649 COLYCOPTERUS FLORIBUNDO

or Combretum extensum

(N O—*Combretaceae*)

Mal—Chempullanhi

Is a species found in Malabar and South India Tender leaves of this plant have laxative and *anthelmintic properties* Copper coloured tender leaves ground into paste and made into pills of five grains each are given to patients to cause the expulsion of round worms On chemical examination of an extract of the leaves, colour reactions were obtained which resembled those of Santonin The plant is known also by the name of *Combretum Extensum* Rao Bahadur Dr M C Koman says—' I have not the slightest doubt that it will prove to be a *good anthelmintic* and a *very efficient substitute* for Santonin especially as the latter is now sold at an exorbitant price "

(Chopra's I D of I ' pp 573)

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650 COMBRETUM PILOSUM, Roxb

Hind—Bhoree loth , Thoonia loth

Habitat—This shrub grows in Cachar district (Assam).

Parts Used—Leaves

Action—Decoction of leaves is anthelmintic

Preparations—Decoction of leaves

Uses—Decoction of leaves is useful as anthelmintic

(Chopra's 'I D of I ' pp 477)

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651 COMMELINA BENGALENSIS, Linn

(N O—Commelinaceae)

Sans—Kanchata. *Hind & Ben*—Kanchara. *Tam*—Kanang-Karai , Kanavazhiain *Ben*—Kanchira Jata Kanshira , Dholapata.

Habitat.—This weed is common in South India.
Action.—Demulcent, refrigerant and laxative.
(Chopra's "I. D. of I." pp. 477).

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652 COMMELINA NUDIFLORA, Linn.
(N. O.—Commelinaceae)

Tam.—Vazhapazhathu.
Uses.—Bruised plant is applied to burns, itches & boils.
(Chopra's "I. D. of I." pp. 477).

652A. COMMELINA OBLIQUA, Ham.
(N. O.—Commelinaceae)

Hind.—Kanjura *Ben.*—Jata Kanchura
Uses.— Used as an antidote to snake-poison. Useful in vertigo, fever and bilious affections
(Chopra's "I. D. of I." pp. 477).

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653 COMMELINA SALICIFOLIA, Roxb.
(N. O.—Commelinaceae)
Uses.—Used in dysentery & insanity
(Chopra's "I. D. of I." pp. 477).

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654. COMMELINA SUFFRUTICOSA, Bl.
(N. O.—Commelinaceae)

Santhal.—Dareorsa.
Uses.—Applied to sores

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655. COMMIPHORA MUKUL or C. Africana
See Balsamodendron mukul.

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656. COMMIPHORA MYRRHA.
See Balsamodendron myrrha.

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57. CONIUM MACULATUM, Linn.
(N. O.—Umbelliferae)

Ind. Baz.—Kurdanmana.
Constituents.—Alkaloids:—d-coniine, y-conceine, conhydrine, n methyl coniine, hesperidin.

Action —Neuretic and aphrodisiac.
Uses —Used in painful affections of skin
(Chopra s I D of I pp 477)

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658 CONNARUS MONOCARPUS, Linn.
(N O —Connaraceae)

Tam —Kutiél
Parts Used — Fruit and root
Uses — Pulp of fruit is used in eye diseases, decoction of root in syphilis
(Chopra s I D of I pp 477)

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659 CONOCARPUS LATIFOLIUS
or Anogeissus latifolia
(N O —Combretaceae)

Sans —Madhura tvacha, Vakavrakshe Dhavala *Eng* —Crane Tree *Hindi* —Dhaura *Tam* —Vellanaga *Tel* —Yellamuddi, Cheru man Shertinamu *Mah* & *Guj*—Dhavada, *Can* —Dinduga, Dindlu, Bejulu
Habitat —Himalayas to Ceylon
Parts Used —Gum and leaves
Constituents —Leaves contain tannic acid 15 5 p c. Ash contains carbonate of potash
Action —Demulcent and astringent
Preparations & Uses.—Decoction of the leaves (1 to 10), is given in doses of ½ to 1 ounce in diarrhoea and gonorrhoea Gum is used as a substitute for gum arabic and gum acacia

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660 CONVOLVULUS ARGENTENS & C. nervosus
or C. speciosa See Aygyreia speciosa

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661 CONVOLVULUS ARVENSIS, Linn.
(N O —Convolvulaceae)

Hind —Hiranpadi *Bom* —Hiranpag *Tam* —Naranji
Parts Used —Root
Constituents —Convovulin
Action.— Root is purgative, and is used as such.
(Chopra s "I D of I. pp. 477)

662 CONVOLVULUS PANICULATA, See Ipomoea digitata

663 CONVOLVULUS SCAMMONIA

Hind, Sing Arab, Pers & Punj—Sak munia

Habitat—Most of the bazar stuff is imported into India from Syria and Asia minor

Constituents—Scammony resin is obtained from the rhizomes

Action—Scammony is a hydrogogue cathartic and is largely used in dropsy and anasarca

(Chopra s I D of I pp 574)

664 COPTIS—TEETA, Wall

(N O—Ranunculaceae)

Sans—Mishamitrta. *Eng*—Gold Thread, Golden thread root *Hind*—Haladiya Bachnaga, Mahamirana, Mamira or Mamiran *Ben & Assam*—Tita *Sind*—Mahmira *Bom*—Mahmira

Habitat—Found in the Mishmi mountains east of Upper Assam Imported into Bengal in small rattan baskets each containing from one to two ounces of the rhizome

Parts Used—Dried root

Constituents—It contains neither tannic nor gallic acid but the root abounds in a compound of a yellow bitter principle *Berberine* to the extent of 8 5 per cent soluble in water and in alcohol

Action—A pure bitter tonic resembling Calumba, febrifuge Root, which is dark yellowish in colour has a bitter taste

Preparations—Paste, Powder dose—10 to 15 grains, Tincture, (1 in 8), dose—½ to 2 drachms, Infusion (1 in 32), dose—1 to 2 ounces Fluid extract of root is the most suitable preparation

Uses—As a bitter tonic it increases appetite restores digestive powers and removes flatulence and visceral obstructions It is useful in jaundice, debility convalescence after fevers debilitating diseases, atonic dyspepsia and in mild forms of intermittent fevers In catarrhal and rheumatic conjunctivitis, this root made into a paste with *Rasavanti* is used as a collyrium or eye salve A paste of the root is applied on sores also

N B—Roots of Picrorhiza and that of Thalictrum foliolosum are sold in the bazar as a substitute for the Coptis teeta root and are difficult to distinguish from it

665 CORALLOCARPUS EPIGAEA Hook

See Bryonia epigoea

(N O —Cucurbitaceae)

Sans —Patalagaruda *Hind* —Akasgaddah *Tam* —Akash garu dand

Constituents —Bitter principle like bryonin Used in dysentery and snake bite

(Chopra s I D of I pp 478)

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666 CORCHORUS ANTICHORUS Roeusch

(N O —Tiliaceae)

Bom —Baphali

Action — Demulcent Used in gonorrhoea

(Chopra s I D of I pp 478)

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667 CORCHORUS CAPSULARIS, Linn & C trilocularis

(N O —Tiliaceae)

Sans —Nadika Patta, Singgika *Eng* —Jute *Fr* —Corchore Capsulaire *Mah* —Kurtu Chantz *Guj* —Chunchido, Motichunch *Hind Ben* —Tita Pat Lalitapat, Koshta *U P & Punj* —Bawphal *Hind & Ben* —Pat *Hind* —Singhin Janascha *Tam* —Piratti kirai *Tel* —Parinta *Bom* —Tankal, Chunch

Habitat —Indigenous to many parts of India, a low country weed in Ceylon Extensively cultivated in Eastern Bengal

Parts Used —Leaves and seeds

Constituents —Capsularin, jute seed oil contains the glycerides of oleic and linolic acids *"Corchorin"* ($C_{22}H_{36}O_8$) active principle of the seeds which is a glucoside of bitter taste m p 174 175° has been isolated It gives a pentacetyl derivative, crystalline Corchogenin ($C_{16}H_{26}O_8$) forms a dibromide on bromination With Phenylhydrazine a solid m p 165 170° *Corchorin* forms with bromine a dibromide m p 100° (decomp) and on acetylation acetyl corchorin (m p 258° with decomposition)—Nirmal Kumar Sen, Dacca

Action —Leaves are demulcent, bitter, tonic, stomachic, laxative, carminative refrigerant and diuretic Seeds are bitter and purgative

Uses.— *Infusion* of the leaves is useful in atonic dyspepsia, liver disorders, and as a fever drink; also in some cases of chronic cystitis, gonorrhoea, dysuria, in worms of children, hepatic and intestinal colic and gastric catarrh *Leaves* and *tender shoots* are eaten and in the dried state known as *Nalita*. *Cold infusion* of dried leaves is used as a bitter tonic, it can be safely given to patients recovering from acute dysentery to restore appetite and improve strength. Six grains of the *powder* combined with an equal quantity of Curcuma longa has been used with success in acute dysentery. A *compound infusion* of the leaves with coriander and aniseed is a very good bitter stomachic and tonic Seeds are bitter, and are given in 60 to 80 grain doses in fevers and obstructions of the abdominal viscera. Pure jute-seed oil is suitable as a food

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668 CORCHORUS FASCICULARIS, Lam.

(N O —Tiliaceae)

Ind Bazar—Bhapali *Bom*—Hirankhori.

Action—Astringent, restorative.

(Chopra's "I D of I" pp 478).

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669. CORCHORUS OLITORIUS, Linn.

(N O —Tiliaceae)

Hind,—Koshta. *Ben*—Nalitapat

Uses—Used in fever and dysentery

(Chopra's "I D of I" pp 478).

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670 CORCHORUS TRILOCULARIS, Linn.

(N O —Tiliaceae)

Parts Used—Seeds.

Uses—Seeds are used in fevers

(Chopra's "I D of I" pp 478).

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671. CORDIA ANGUSTIFOLIA Dun

(N O —Boragineae)

Hind—Goond; Goondnee

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672 CORDIA LATIFOLIA Roxb

(N O —Boragineae)

Sans —Bahuvara , Sleshmataka , Selu *Eng* —Sebesten plum or fruit *Hind* —Bara Lasora *Arab* —Dibaka , Mukhitaha *Guj* —Gudan , Bargund *Mah* —Shelvan Bhokar *Bom* & *Pers* —Sapistan *Ben* —Bahubar , Bal phal Buro-bahuri *Tel* —Botuku , Nakkaeru *Tam* —Naruvilli *Mal* —Naruviri *Can* —Mannadikay Doduchallu *Kon* —Sharpala

There are two species—great and small, the adjective great or small is added to these names to distinguish the two species In the greater species i e C Obliqua the pulp is separable from the stone

Habitat — A small deciduous tree growing nearly all over India and cultivated in Bengal

Parts Used – Fruit, its mucilage kernel and bark

Constituents — Pulp of the fruit contains sugar gum extractive matter and ash bark contains a principle allied to *cathartin*

Action — Fruit is demulcent , bark is mild astringent and tonic

Uses — Ripe dried fruit is the Sebesten of the Indian Materia Medica *Fruit* is very mucilaginous and the *mucilage* is highly esteemed in coughs in diseases of the chest the uterus the urethra etc In larger quantities it is given in bilious affections as a laxative *Bark* is used in *infusion* as a gargle *Kernels* are a good remedy for ring worm , they are powdered mixed with oil and applied *Juice* obtained *from the bark* and administered in cocoanut milk relieves severe colicky pains Fruit is generally pickled and eaten when ripe in India Ashes of burnt Cordia Obliqua are recommended in *Haj ul gurba* for dusting over in cases of prolapsus ani Following compound syrups are recommended by Hakims in cases of bronchitis pneumonia and phthisis —

(1) Take of Liquorice Aniseed common mallow, *Hansraj* Maiden hair ferns each half a tola Hyssopus officinale and *Methi* each quarter tola Cordia myxabark and fruit 7½ tolas and poppy capsules with seeds 11 pieces Make a decoction and mix with sugar and reduce to the consistency of syrup 1 lb Dose —Two to four tolas thrice daily—(Haj ul Gurba)

(2) Take of *Zufa* 2 drs, Marsh mallow root 4 drs, Common mallow 4 drs, Liquorice 1½ drs, figs 5 poppy capsules 6 drs, aniseed 6 drs, Sebesten fruits 40, Jujub berries 40, boiling water 4 pints Macerate the whole for 12 hours, then boil down to half the quantity of water and strain Add 2 lbs of sugar and prepare a sysup Dose - ½ to 1 ounce to be diluted with water

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673 CORDIA MACLEODII, Hook f & Th

(N O—Boragineae)

Hind—Dahipalas

Uses—Used in Jaundice

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674 CORDIA MONOICA, Roxb

(N O—Boragineae)

Habitat—Fairly common in South India

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675 CORDIA MYXA, Linn

(N O—Boragineae)

Hind—Chokargond *Ben*—Buhul Bohodani *Tam*—Naruvali

Habitat—Fairly common in South India

Action—Mild tonic

(Chopra s I D of I pp 0478)

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676 CORDIA OBLIQUA, Willd

(N O—Boragineae)

Hind—Chotalasora *Ben*—Bahubara *Tam*—Naruvili

Action—Demulcent

Uses—Used in snake bite and affections of urinary passages

(Chopra s I D of I pp 478)

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677 CORDIA ROTHII, Rom & Schult

(N O—Boragineae)

Hind—Gondi

Parts Used—Bark

Preparations—Decoction of bark

Action —Decoction of bark is astringent

Uses —Decoction of bark is used as an astringent gargle

(Chopra s I D of I pp 478)

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678 CORDIA VESTITA, Hook f & Th

(N O —Boragineae)

Hind —Kumpaiman *Punj* —Kumbi

Action —Astringent

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679 CORIANDRUM SATIVUM, Linn.

(N O —Umbelliferae)

Sans —Kustumbari, Dhanyaka *Gr* —Koriyun *Fr* —Coriander cultive *Ger* —Gemeiner coriander *Eng* —Coriander *Hind* —Kottmir, Dhania *Arab* —Kusbara *Ben* —Dhane *Sind* —Dhano *Burm* —Nau nau *Mah* —Kothumbir (green leaves), Dhane (seeds). *Guj* —Dhana, Dhania *Pers* —Kishniz, Kushniz *Tel* —Kotumiri. *Tam* —Kottamalli *Mal* —Kottampalari *Can* —Kotambri beeja, Haveeja. *Kon* —Kottumbari

Habitat —A herbaceous plant extensively cultivated in all parts of India for its seeds

Parts Used -Fruit (coriander fruit) and leaves

Constituents — The green vegetable contains 84 00 moisture and the dried material contains Ether extract 3 12, Albuminoids 24 46 (contg Nitrogen 3 93), Soluble carbohydrates 43 30, woody fibre 9 75 and Ash 19 37 (contg Sand 1 50) p c respectively (Bombay Govt Agri Dept Bulletin) Fruits yield a volatile essential oil 1 p c, fixed oil 13 p c, fatty matter 13 p c, mucilage tannin, malic acid and ash 5 p c. Coriander oil contains Coriandrol (linal col) an alcohol *d pinene l pinene* geraniol and baborneol

Action -Fruit is aromatic, stimulant, carminative stomachic, antibilious refrigerant *tonic*, diuretic and aphrodisiac Fresh leaves are pungent and aromatic

Preparations -Infusion (cold) 1 in 40 dose —1 to 2 ozs, oil, dose 1 to 4 minims, powder and compound powder of the fried seeds containing black pepper, cloves and common salt, decoction of the fruit and poultice

Uses —*Fruit* is generally used by all classes as a condiment, and by some along with betel leaves, used to flavour purgatives and

to prevent griping It disguises the taste and smell of rhubarb and senna better than any other drugs In England, according to Bentley and Trimen, the oil is used in cookery and for flavouring gin, also to correct the griping qualities and bad taste of other medicines Oil is very useful in flatulent colic, rheumatism, neuralgia etc, dose is from 1 to 4 minims on sugar or in emulsion, the *dried fruit* has also similar effect, it is generally used in *infusion* or *decoction* in sore throat, flatulence, indigestion, vomiting other intestinal disorders common catarrh and bilious complaints In combination with cardamom and caraway it forms a good carminative An *eye wash* is prepared by Mahomedans by decocting the fruits for preserving the sight in small pox it is also useful in chronic conjunctivitis *Seeds* are generally chewed to correct foul breath and form one of the principal flavouring ingredients of curries, *roasted seeds* are useful in dyspepsia in doses of ½ to 1 drachm They are made into a *paste* and applied to relieve pain in cephalalgia and coughs, as a *gargle* they are useful in thrush and as a *poultice with* barley meal added applied to chronic ulcers and carbuncles *Juice of the fresh plant* is an application to erythema A strong *decoction in milk* (1 in 40) with sugar added to taste is given in cases of bleeding piles as well as in dyspepsia indigestion and flatulence, *cold infusion* of seeds or *powder* of fried seeds with a little sugar is very useful in colics of children also relieves internal heat and thirst Coriander is considered to lessen the intoxicating effects of spirituous liquors, and is used as a carminative in convalescence after diarrhoea In mixture *coriander water* (*aqua coriandari*) is pleasant and grateful and is useful in indigestion and other bowel complaints *Leaves* when green are eaten raw as well as used for preparing a sauce of *chutni* like the leaves of spearmint which is useful as carminative and antibilious

Following are some very popular and useful prescriptions —

(1) A preparation called *Dhana ni dala* or fried coriander is thus made —Fruits are lightly pounded, husks being removed, to this are added Cumin seeds black pepper, cloves and common salt The whole is stirred together, lime juice being subsequently added and the mass dried in the sun It is useful as digestive, carminative and stomachic

(2) A compound powder composed of Coriander, cardamom and caraway seeds in equal parts parched and pulverised and given after food in doses of 1 drachm is a very useful digestive

(3) A cooling drink is prepared from coriander seeds pounded with fennel fruit, poppy seeds flowers of Bauhinia Variegata, rose buds cardamoms cubebs, almonds and a little black pepper, it is sweetened with sugar

(4) Take of *Hijir ul Yahud* Coriander seeds aniseed, Physalis *minima* each 16 grains and water 2 chataks or 1/8 seer, strain To be taken at bed time Zad Garib recommends this as useful in diseases of the genito-urinary system, chordee, etc.

(5) Take of Coriander and chebulic myrobalan in equal parts Roast on fire and make a decoction To be taken for a week Useful in vertigo

(6) Take of Poppy seeds, Coriander, cotton seed, each 1 part in powder and sugar 2 parts To be taken with rose water twice daily for vertigo—(Haj ul gurba)

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680 CORONELIA GRANDIFLORA. See Agati grandiflora

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681 CORYDALIS GOVANIANA, Wall

Is a plant of the Genus Fumariaceae met with in Western Himalayas and known in Sanskrit as *Bhuichakri*, in Hindi & Bengali as *Bhut Kesi* Yellow juice of the plant is employed in the treatment of eye-diseases like *Mamiran* It is also tonic and antiperiodic in action

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682. CORYLUS AVELLANA, Linn.

(N O—Cupuliferae)

Hind—Fundak. *Eng*—Hazel nuts

Habitat—Abundant in the hedgerows and coppices, also cultivated.

Action—Tonic, stomachic and aphrodisiac

(Chopra's "I. D. of I." pp. 478)

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683 CORYLUS COLURNA, Linn

(N O—Cupuliferae).

Punj—Urni *Kash*—Winri

Parts Used—Nuts

Action—Nuts are tonic

(Chopra's I D of I pp 478)

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684 CORYPHA UMBRACULIFERA, Linn

(N O—Palmae)

Sans—Alpayushi, Katkali, Tali *Eng*—Tali pot or Fan Palm *Hind*—Bhajarbettu *Ben*—Talee *Tel*—Shreetalamu *Tam*—Shedalam, Talipanai *Mal*—Kutapana, Talipana *Can*—Shreetali *Kon*—Talat maddo

Habitat—South India

Uses—A kind of sago is obtained from the pith of this tree People beat it in mortars to flour and bake cakes of it which taste much like white bread, it serves them instead of corn before their harvest is ripe, it is generally used by poor classes, it is also prepared in the form of *conjee* which is like that of sago, arrowroot barley or oatmeal and almost equally nutritious Fruits stupefy fish

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685 COSCINIUM FENESTRATUM, Gaertn & Colebr.

(N O—Menispermaceae)

Sans—Daru haridrakam, Darvi *Eng*—Tree Turmeric *Ben*—Haldi gach *Bom & Hind*—Jhar haldi *Mah*—Jhade-halade *Mal & Tam*—Mara Manjal *Tel*—Manu pasupu *Can*—Marada arasina

Habitat—In all parts of India especially Western India

Parts Used—Stem.

Constituents—Stem contains Berberine and saponin in small quantities

Preparations—Infusion (1 in 20), dose—4 to 12 drs Tincture (1 in 10), dose—½ to 1 drachm Decoction, dose—½ to 1 ounce.

Action & Uses.—Root is bitter, stomachic, tonic, and is a very good substitute for Calumba. A *paste* of it is applied to the head

as a cooling application, and also to bruises contusions etc. It is very useful in the form of *infusion* or *tincture* in continued and intermittent fevers in general debility especially after fevers and in certain forms of dyspepsia, in ulcers and in snake bites

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686. COSMOSTIGMA RACEMOSUM, Wight.

(N O—*Asclepiadaceae*)

Goa—Gharphul *Can*—Gharahuvoo *Mah*—Shendvel, Shendori, Marvel *Tam* & *Mal*—Vettuvalli

Habitat—Sylhet Chittagong and Western Ghats from Konkan southwards to Ceylon

Parts Used—Root root bark and leaves

Constituents—Root contains some crystalline fatty acids a glucosidal acid resin related to Jalapin a gum, a sugar having the properties of dextrin, and a substance giving reaction of an alkaloid Root yields also an inorganic matter on incineration Root is devoid of astringency Powder of root mixed with milk of lime is said to have given off ammonia, an alkaloid and a glucoside

Action & Uses—This woody climber has a great medicinal reputation Its *leaves* are used to cure ulcerous sores. *Root bark* is given internally in 5 grain doses three times daily to act as an efficient cholagogue, in dyspepsia due to torpidity of the liver and accompanied by febrile condition, it has no purgative effect, but restores the natural colour of the stools, it is said to be even better than euonymin podophyllin etc. *Flowers* are sweet and eaten by poor people

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687 COSTUS SPECIOSUS Sm

(N O—*Scitaminaceae*)

Sans—Pushkara, Kashmeera, Kemuka *Mal*—Ienva *Hin*—Keu, Kust *Ben*—Keu, Kura *Tel*—Kashmeeramu *Tam*—Koestam. *Mal*—Channak koova, Narunchana *Can*—Pushkaramoola *Fr*—*Costus elegant* *Ger*—Practice Kostwur *Gr*—Kostus

Habitat—An elegant climbing plant found plentifully in Bengal and Kashmir

Parts Used—Root and tuber

Action—Root is bitter astringent stimulant and diuretic, anthelmintic depurative and aphrodisiac

Uses.—*Root* is useful in catarrhal fevers, coughs, dyspepsia, worms, skin diseases, and snake-bites. Tuber is cooked and made into a syrup or preserve which is very wholesome.

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688. COTONEASTER BUXIFOLIA, Wall.
(N. O.—Rosaceae)

Growing as a common plant on the Nilgiris and Pulneys.

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689. COTONEASTER MICROPHYLLA, Wall.
(N. O.—Rosaceae)

Constituents.—HCN-glucoside.
(Chopra's "I. D. of I." pp. 478).

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690. COTONEASTER NUMMULARIA, Fisch. & Mey.
(N. O.—Rosaceae)

Pers.—Siah-chob.
Constituents.—Sugar chirkhestite.
Action.—Aperient, expectorant and stomachic.
(Chopra's "I. D. of I." pp. 478).

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691. COTULA ANTHEMOIDES, Linn.
(N. O.—Compositae)

Hind. & *Punj.*—Babuna.
Preparations.—Infusion.
Uses.—Used in rheumatism; infusion is used as eye-wash.
(Chopra's "I. D. of I." pp. 479).

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692. COTYLEDON LANCINIATA
See Kalanchoe lanciniata.

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693. COTYLEDON RHIZAPHYLLA,
See Bryophyllum Calycacinum.

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694. CRATAEGUS OXYCANTHA, Linn.
(N. O.—Rosaceae)

Punj.—Ban-sangli.
Constituents.-Oxalic acid, young shoots contain HCN glucoside.
(Chopra's "I. D. of I." pp. 479).

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its root-bark and leaves, and small caltrops, ginger, carbonate of potash, honey and water is very useful in ascites, urinary disorders and in calculous affection A confection called *Varunadya guda* is prepared by adding to the fluid extract of the bark, treacle and a number of diuretic and aromatic substances *Fresh leaves* of C. roxburghii bruised well with a little vinegar, lime-juice or lime-water, or hot water, and applied to the skin as poultice or paste act as rubefacient and vesicant as efficiently as mustard flour; it takes 5 to 15 minutes to obtain rubefacient effect; if kept longer it acts as vesicant. *Fresh leaves and roots* mixed with cocoanut juice and ghee are used as food to reduce corpulence. *Leaf* is *smoked* in caries of the bones of the nose, and the smoke is exhaled through the nose. A *paste* of the leaves applied to soles of the feet to relieve swelling and burning sensation Sarangdhara says that in scrofulous enlargements of the glands under the lower jaw, a *decoction of the bark* of this tree is prescribed by several writers It is said to cure even old standing cases In internal or deep-seated suppurative inflammation a decoction of this bark and also of Boerhavia diffusa in the proportion of 5 to 2 parts respectively, is given internally, in doses of half to one ounce, it also relieves swollen testicles Other useful preparations of the bark are a compound *Ghrita* and Oil, known as *Varunadya Ghrita* and *Varunadya taila* which are prepared with the addition of several tonic, alterative, aphrodisiac and demulcent drugs

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697. CRESCENTIA CUJETE, Linn.

(N. O.—Bignoniaceae)

Ind. Baz—Kalabash

Action—Aperient, cooling and febrifuge.

(Chopra's "I. D. of I." pp. 479).

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698. CRESSA CRETICA, Linn.

(N. O.—Convolvulaceae)

Hind. & *Ben.*—Rudranti *Bom.*—Khardi. *Tam.*—Uppu Sanaga.

Constituents—Alkaloid

Action.—Tonic, expectorant and antibilious

(Chopra's "I. D. of I." pp. 479).

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699 CRINUM ASIATICUM, Linn or C. deflexum, C. latifolium, C bracteatum, C. toxicarium, or Amaryllis or Crinum zeylanicum
(N O —Amaryllideae)

Sans —Sudarshan, Vishamandala *Eng*—Poison bulb *Hind* —Chundar Badakanvar, Pindar *Ben* & *Urdu* —Sookhdursun, Bara kanur *Duk* —Naginka patta *Guj* & *Bom* —Nagdowan *Ben* —Gaerahonara patta *Tel* —Kesarichettu *Tam* —Tudaivachi, Vishamoongil, Vizhamungal *Mal*—Vishamula, Valutta polatali *Car* —Vishamoonguli *Kon* —Kirtmari *Mah* —Gadani kanda or Gadambhikanda

Habitat —Much cultivated in Indian gardens

Parts Used —Leaves and root (fresh bulb)

Action — Leaves and root are emetic diaphoretic and purgative

Constituents Lycorin

Preparations Succus (juice of the fresh bulb), dose —2 to 4 drachms, Syrup (1 in 3), dose —2 drachms as an emetic for children Dried roots require double the dose Poultice of leaves and powder of root

Uses — *Leaves* and *root* are a good substitute for ipecacuanha They act without griping purging or any other distressing symptoms Succulent *leaves* besmeared with castor oil and warmed or the *bruised leaves* mixed with the oil form a useful application for repelling whitlows and other inflammations at the end of toes and fingers, also as fomentations to inflamed joints and sprains *Juice* of the leaves with a little salt is used for earache and other ear complaints after being slightly heated, an *oil* is also prepared from th fresh juice and used for the same purposes *Roasted bulb* is used as rubefacient in rheumatism *Bruised leaves* are generally kept in cattle sheds as they are supposed to have the property of driving away noxious insects and parasites the smoke of the burnt leaves is regarded as poisonous to mosquitoes

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700 CROCUS INDICUS See Carthamus tinctorius

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701 CROCUS SATIVUS Linn or C. saffron
(N O —Irideae)

Sans —Bhavarakta Saurab Manglya Agnishikha, Kumkuma Mangal, Kusrunam Kashmirajanma *Eng*—Saffron *Arab* &

Pers—Zafrah Zipharana *Hind*—Zaffran Kesar *Ben*—Jafran *Bom*—Safran Kessar *Mah*—Kecara *Guj*—Keshar *Tel*—Kunkuma puvva, Kunkumma purru *Tam* & *Mal*—Kunkumappu *Can* & *Kon*—Kunkuma kesara *Fr* & *Ger*—Safran

Habitat—An autumnal dwarf herb a native of Levant in Asia Minor now cultivated on a small scale in Kashmir and around Quetta

Parts Used—Dried stigmas and tops of the styles of Crocus sativus which constitute the saffron of commerce compressed into cakes and called cake saffron the ordinary saffron being called Hay saffron

Constituents— (a) Three crystalline colouring matters—(1) a crocetin ($C_{24}H_{28}O_5$ M P 271° 273°) constitutes 0 7 per cent of saffron (2) B crocetin ($C_{25}H_{30}O_5$ M P 205 206°) constitutes 0 7% of saffron and (3) Y crocetin ($C_{26}H_{32}O_5$ M P 202 203°) constitutes 0 3 per cent (Chopra's I D of I pp 317) A volatile fatty oil, 8 to 13 4 per cent Crocin a glucoside soluble slightly in water freely in alkaline solution and alcohol and forming 65 p c. of polycroit (many colours) which is the colouring matter picrocrocein (bitter principle) wax proteids fixed essential 1 37 p c. oil mucilage sugar (glucose ?) ash 5 p c and moisture 12 p c

Action—It has a peculiar aromatic odour and a bitter pungent taste it is stimulant aphrodisiac and stomachic slightly anodyne and antispasmodic, it has also emmenagogue virtues in over doses it is narcotic poison It is used in small doses ¼ to ½ grain Ordinary dose is 1 to 3 grains The essential oil from C. Sativus when passed through pharmacological tests showed all the characteristic features of an essential oil therefore its aphrodisiac virtue is probably due to the slight stimulation of the central nervous system which is common to all essential oils [1]

Action & Uses in Ayurveda and Siddha—Katu rasam, Tikta nurasam, snigdam, vamyam, tridosha haram, in chardhi vranam, krimi, vyangam, head diseases kapha haram.[2]

Action & Uses in Unani—Hot 3°, Dry 1° Refrigerant, tonic, diuretic, stimulant, for vision, tones the uterus munzij aesafra [2]

(1) & (3)—Chopra's "I D of I" pp 317 (2) Therapeutic Notes.

Preparations.—Tincture, dose —5 to 20 minims, Iofusion, (Saffron tea—1 in 80), dose —1 to 4 ounces

Uses — It is used generally as a condiment for its aromatic odour and beautiful colouring matter Medicinally it is used in small doses, in fevers, melancholia, enlargement of the liver and in spasmodic cough and asthma, and in catarrhal affections of children It is given in anaemia, chlorosis and seminal debility ' As a stimulant and aphrodisiac, it is considered to be a sovereign remedy, not to be excelled in virtue by the whole range of drugs in the Materia Medica.' [1] It gives the urine a yellow colour It is given in rheumatism and neuralgia, and to children with ghee in looseness of the bowels It is given also to relieve flatulent colic, amenorrhoea, dysmenorrhoea leucorrhoea, etc. *Pastaries of saffron* are used in painful affections of the uterus *Externally* saffron is used in headache in the form of *paste*, also applied to bruises and superficial sores It is an excellent palliative for haemorrhoids To cage-birds when they are moulting or otherwise sickly, it is given, a few threads being infused in water which they drink Saffron is used in snake-bite also Following preparation is very useful in chronic diarrhoea, chronic discharges and seminal weakness —Take of Saffron 2, Opium 2, Cloves 4, *Safed Mirt* (dry white fruits of Piper Nigrum, deprived of their pericarps) 10, Henbane seeds 10, Pellitory root 10, balsam of Balsamodendron opobalsamum 1, Apium graveolens 1, dried ginger 2, Nux vomica seeds 10, Gum resin of Euphorbia resinifera 12, Almond Oil 20 and Honey 20 parts Make a confection Dose — 20 grs

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702 CROTALARIA ALBIDA, Heyne

or C. montana.

(N O.—Papilionaceae)

Known as *Banmethi* in Hindi, is met with in tropical regions in India, Ceylon, Burma, etc Its roots are used as a purgative.

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703 CROTALRIA ANGULOSA

(N O—Papilionaceae)

Sans—Sonapushpi, Dhavani, Vrihatpushpi is found in the tropical regions of the Himalayas and Ceylon, is known as *Bawsen*

(1) Chopra's "I D. of I." pp 479.

in Bengali and Hindi *Vutter khilloo killupai* in Tamil, *Ghelaghe rinta* in Telugu, *Ghagri* or *Kurkhil Dingala* in Marathi, and *Tirai* in Bombay. Its leaves diminish salivation for which their juice is used It is also prescribed both internally and externally in cases of scabies and impetigo

704 CROTALARIA BIFLORA, Linn

(N O—Papilionaceae)

Growing wildly in Southern India

705 CROTALARIA BURHIA, Hamilt

(N O—Papilionaceae)

Bom—Brunnu, *Punj*—Sis, Sassi, Khippi, Kharasan, *Sind*—Drunco, *Guj*—Ghangato, *Mah*—Ghagti, *Kon*—Ghagri

Growing in sandy plains of Sind and the Punjab, Western Rajputana and Gujrat has its branches and leaves used as a cooling medicine

706 CROTALARIA JUNCEA, Linn. or C Bengalensis or C fenestrata or C. fenninfolia

Sans—Jenapavera, Pulivanji, San *Eng*—Sunn Hemp or Sann Hemp, Bombay Hemp or Benval Hemp *Fr*—Crotalaire jonciforme *Ben*—Sonpat Shun Shone, Ghore sun, San *Hind*—Masina, Mustanpat, San *Bom*—Maesapat, Taagambharee, Santag *Duk*—Janab *Guj*—Sun, Sana *Mah*—Tag Sonabu *Tel*—Janamu *Tam*—Wakkwooganapan, Shanabo Janappanar, Shanal, Sanapu, *Mal*—Janapa, Pulivanji *Can*—Sanabu, Sanabina pundi *Sind*—Tagasana, Sini

Habitat.—Throughout the plains of India, especially Mysore, Deccan and Southern India

Parts Used—Leaves, roots and seeds

Constituents—Leaves contain an abundance of mucilage, a little solid fat, and a resin soluble in ether

Action Leaves are refrigerant, demulcent, emetic and purgative, emmenagogue and abortive Root is astringent, seeds are corrective of blood

Preparations—Infusion (1 in 10), dose —1 to 2 ounces Powder of seeds dose —10 to 20 grains

Uses — Bitter *leaves* are used externally and internally in the form of infusion in gastric and bilious fevers accompanied by skin diseases such as impetigo and psoriasis They are also given to increase the flow of menses as emmenagogue *Seeds* purify the blood *Seeds* in powder mixed with oil are used to make the hair grow *Root* is useful in colic and as astringent in epistaxis also The plant *is grown mainly for* —(1) a coarse fibre called *Sann Taga* or Bengal hemp used for making ookum and surgical tow, (2) as a fuel for *gul* or sugar making, and (3) as a green manure The use of hemp to produce euphoria is very widespread in India, Asia and Africa A preparation of hemp called *Esrar* (*Secret*) is smoked together with tobacco Hemp in other forms is chewed In Bengal and Bihar *ganja* is largely smoked and *bhang* is used to a small extent, in the U P *ganja charas* and *bhang* are all largely used, in the Punjab *charas* and *bhang* are to a great extent consumed, in Sind *bhang* is largely consumed and *ganja* & *charas* are used to a lesser extent, in Bombay and Madras Presidencies and Central Provinces, *ganja* is largely consumed *bhang* to a lesser extent and *charas* very little. The use of *bhang* in some parts is combined with religious and social observances The conclusions of the Hemp Drugs Commission India (1893 94) were that the moderate use of hemp drug appeared to cause no appreciable physical injury and no injurious effect on the mind or moral injury The popular belief that the hemp drugs lead to insanity was not justified by the data before the Commission Excessive consumption on the other hand was physically and mentally injurious, it produces and intensifies moral weakness and depravity Manifest excess leads directly to loss of self respect and thus to moral degradation The effects of hemp drug habits and their prevalence in India are being systematically investigated by Lt Col. Chopra and his results are awaited eagerly

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707 CROTALARIA MEDICAGINEA Lamk

(N. O —Papilionaceae)

Punj —Gulabi *Hind* —Gulabi *Mah* —Jangam *Guj* —Ranmethy

Habitat — Growing wildly in Southern India

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708. CROTALARIA PROSTRATA, Roxb.

(N. O.—Papilionaceae)

Ben.—Chota-jhunjhun. *Tam.*—Seri-gally-gista.

Uses—Used in derangements of the stomach.

(Chopra's "I. D. of I." pp. 479).

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709. CROTALARIA RETUSA, Linn.

(N. O.—Papilionaceae)

Ben.—Bil-jhunjhun. *Bom.*—Ghagri. *Tam.*—Potu-gally-gista.

Habitat.—Southern India.

Constituents—There is an alkaloid.

Uses—Used in scabies & impetigo.

Chopra's "I. D. of I." pp. 479).

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710. CROTALARIA SERICEA, Retz.

(N. O.—Papilionaceae)

Sans.—Ghuntarava. *Hind.*—Jhunjhunia. *Ben.*—Pipuli-jhunjun.

Uses.—Used in scabies and impetigo.

(Chopra's "I. D. of I." pp. 479).

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711. CROTALARIA STRIATA, DC.

Constituents—There is an alkaloid.

(Chopra's "I. D. of I." pp. 479).

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712. CROTALARIA VERRUCOSA, Linn.

(N. O.—Papilionaceae)

Sans.—Sanapuspi. *Hind.* & *Ben.*—Jhanjhania. *Tam.*—Vatta-Killu Killuppai; Gulugiluppaichedi. *Tel.*—Ghalegherinta.

Habitat.—Southern India.

Uses—Used in scabies and impetigo.

(Chopra's "I. D. of I." pp. 479).

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713 CROTON AROMATICUS, Linn.

Baragachi. *Bom*—Gansur. *Goa.*—Gonsurang. *Tam.*—Bhutan-

(N. O.—Euphorbiaceae)

Tam—Vidpune.

(Chopra's "I. D. of I." pp. 479).

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719 CROTON RETICULATUS, Heyne

(N O —Euphorbiaceae)

Bom —Pandhari

Parts Used — Bark

Action.—Bark is bitter and stomachic

(Chopra s I D of I pp 479)

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720 CROTON TIGLIUM Linn

(N O —Euphorbiaceae)

Sans —Naepala Jayapala , Kanakaphala , Titteriphala *Eng* — Purgative croton Croton oil seed *Hind* & *Duk* —Jamalgota *Bom* —Geyapal *Guj* —Nepal *Ben* & *Punj* —Jaipal *Mah* — Jeyapal Mogli erand Arabi erand Nepalcha bi *Tel* —Naepal vaema Nepala vithalu Nepalavitua. *Tam* & *Mal* —Naervalam , Chuduram Valam *Can* —Japala beeja , Nepala *Kon* —Japal. *Arab* —Hab-ul salatina Batu Dand *Pers* —Bedanjir e khatai , Dund (Oil) *Eng* —Croton oil *Fr* —Huile dectiglium *Ger* — Krotonol *Burm* —Kanako *Malay* —Bori *Java* —Cheraken

Habitat.— Found throughout India plentiful in Eastern Bengal extending to Assam and Burma

Parts Used —Seed and fixed oil from the seed

Constituents —Seed contains a fatty fixed oil tiglinic acid crotonic or quartenylic acid and croton oil Fats present in croton oil are glycerides of stearic palmitic myristic and lauric acids and of several volatile acids of the same series like acetic butyric, valerianic and tiglic acids Croton oil is composed of —(1) Crotonoleic acid which appears to be the active principle (2) Tiglic acid or Methyl crotonic acid , (3) Crotonol which is non purgative but an irritant to the skin (4) several volatile acids to which the odour is due and (5) several fatty acids Crotonoleic acid is a mixture of croton resin with inact ve fatty acids

Action Seeds leaves, bark and root all possess drastic purga tive properties Seeds are powerful drastic purgative and vermifuge in over do.es it is an acro narcotic poison Oil is a powerful hydrogogue cathartic and externally a vesicant producing irritation inflammation papular and pustular eruption The activity of croton oil is a vesicant externally and as a purgative interoally is attributed to

the presence of crotonoleic acid which is said to occur in the free state in which it is freely soluble in alcohol, and in combination as a glyceride The glyceride does not possess poisonous properties but the free acid acts as a powerful irritant to the skin and as a purgative in the intestines The crotonal glyceride is attacked and split up like other glycerides by the ferments of the juices of the stomach and the crotonoleic acid is set free, which then exercises its purgative influence A similar result may be obtained by administering crotonoleic acid as a pill enclosed in keratin The drug is also a stimulant.

Action & Uses in Ayurveda and Siddha—Katu rasam, ushna veeryam, katu vipaka, kapham, krimi, vatam, udharam dipanam, drastic purgative, blood diseases

Action & Uses in Unani—Hot 4°, Dry 4°, purgative of balgham souda and viscid akhlath, dries the ruthoobath, gout, lumbago balgham diseases convulsions of children " (Therapeutic Notes)

Preparations—Oil, dose —¼ to 1 minim, Liniment, and Powder of the seeds, dose —2 to 5 grains

Uses— It is given only when a drastic and violent purgative is required, as in dropsy and cerebral affections like apoplexy, convulsions insanity, and ardent fevers etc, attended with highblood pressure, where complete evacuation of the bowels is desired *Seeds*, before they are used, are boiled in cow dung and water and after drying and their outer skin and embryo (the little leaflike body found between the two halves of the kernel) are removed, they are boiled two or three times in milk and then enclosed in a raisin for administration *Seeds* are employed in very minute doses in the form of *pills*, prepared with great care, the dose being ¼ to ½ grain, mixed with extract catechu and honey and gum acacia Or, the seeds after being broiled and deprived of oily matter, are powdered and given mixed with equal part of powdered cumin seeds, in doses of 5 to 10 grains Seeds *half* roasted over a lamp or candle flame and the smoke inhaled through the nostrils relieves a fit of asthma. *Expressed oil from the seed* is useful in dropsy, obstinate constipation, intestinal obstructions lead poisoning, and as a preliminary laxative in leprosy and as a revulsive in apoplexy, the dose being 1 drop or 1 minim on sugar or in emulsion with sweet oil or butter or made into a pill with bread crumb As a *blister*, the oil is applied to the

scalp in acute cerebral diseases, to the cord in spinal meningitis, to the chest in chronic bronchitis and to the throat in laryngitis "The oil has been tried as counter irritant and vesicant in rheumatism, synovitis, paralysis and painful affections of joints and limbs" (Chopra's I D of I' pp 574 & 575)

In lock jaw and mania it is of great advantage, a few drops placed at the base of the tongue will produce catharsis It is particularly valuable in cases where a minute and effectual dose is required, but it must not be resorted to except in cases where it is desirable that a speedy irritant action on the intestines should be produced and in cases where the condition of the patient prevents him from swallowing In minute doses it is given with fresh ginger tea to children in whooping cough Should it cause griping, vomiting or too violent purging a good large draught of lime juice is the best antidote, and it may be safely repeated in half an hour if the vomiting etc continue A useful liniment is made for external use, by mixing half an ounce of croton oil with 3 to 4 ounces of sesamum, cocoanut or other bland oil For bronchitis and rheumatism a drachm of croton oil mixed with 12 drachms of mustard oil will form a good liniment and for chronic rheumatism a mixture consisting of 1 part of the croton oil to 8 parts of cocoanut oil will form a suitable liniment It will form a useful application also in asthma, gout, paralysis, neuralgia and acute laryngeal affections and arthritis

Following Ayurvedic prescriptions are useful in the various diseases in which they are employed —

(1) *Inchhavedi alica*—Take of mercury, sulphur, borax and black pepper, one part each ginger three parts croton seeds nine parts, rub them together with water and make into two-grain pills These are given in fever with constipation as also in ascites and anasarca (Rasendrasarasangrah)

(2) *Rukkeshee Rasa* —Take of chebulic myrobalan five parts, croton seeds one part soak them in the milky juice of Euphorbia nerifolia and make into four grain pill These are given with a decoction of the root of Ipomœa turpethum or Baliospermum montanum as a drastic purgative in obstinate constipation— (Rasendrasarasangrah)

(3) *Mahamrutha Rasa* —Take chebulic myrobalan pulp of Cassia fistula emblic myrobalan root of Baliospermum montanum, Picrorrhiza kurroa milky juice of Euphorbia nerifolia root of Ipo-

mœa Turpethum and the tubers of Cyperus rotundus each one tola, pound them to a coarse powder and boil in 4 seers of water till the latter is reduced to one-eighth Then take a tola of husked croton seeds, tie them in a piece of thin cloth and boil them in the above-mentioned *decoction till the latter is reduced to the consistence of a fluid extract* To this extract add a powder composed of 8 parts of purified croton seeds, three parts of ginger and two of black pepper mercury and sulphur, in quantity sufficient to make a pill mass, rub them together for twelve hours, and make into two-grain pills These are given with cold water in tympanitis colic, ascites &c, as a drastic purgative *After* the operation of *this medicine, rice should* be *given with* curdled milk and sugar (Bhavaprakash)

Toxicology — The seeds are said to be used in Java for killing fish, and the oil has been shown to have same effect upon the carnivora as upon man When eaten, the seeds cause nausea and eructation, followed by flatulent distension of the abdomen, colic and diarrhoea *A single seed is reported to have proved fatal* The oil in the dose of 1 drop, occasions more or less an acrid and burning sensation in the fauces and oesophagus, a sense of warmth in the stomach nausea and sometimes vomiting In an hour or two, some gurgling or slight colic is perceived in the bowels followed somewhat sudd-nly by a watery stool with tenesmus, and heat about the anus Within 24 hours eight or ten more stools follow, and there is but little general disturbance of the economy, except considerable weakness Sometimes, instead of producing evacuations, the oil causes epigastric uneasiness and oppression, palpitation of the heart, headache, feverishness, perspiration and sleep It would appear that the acrid principle of the oil is not the sole cause of its cathartic op-ration for even after being thoroughly washed with alcohol and rendered mild to the taste, as well as incapable of pustulating the skin, it is still strongly purgative *No cases of poisoning by croton* seeds or oil in India appear to have been recorded (Dymock) The drug is also used in snake-bite

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721 CRYPTOCORYNE SPIRALIS, Fisch or *Ambrosinia spiralis* (N O—Aroideae)

Tam—Nattu atrividayam; *Tel*,—Nattati-vasa, *Eng*—East Indian root

Found in Bengal, Madras and the Deccan This contains neither emetine nor cephaeline Its root (rhizome) is used as a tonic and antiperiodic like the tuber of Aconitum heterophyllum It is employed in decoction In combination with other drugs it is a remedy for infantile vomiting and cough, and in the case of adults for abdominal complaints and fever

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722 CRYPTOSTEGIA GRANDIFLORA, Br

(N O—Asclepiadaceae)

Bom—Vilayati vakhandi *Tam*—Palai

Parts Used—Leaves

Action—Leaves are toxic

(Chopra s I D of I pp 480)

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723 CUBEBA OFFICINALIS, Miq See Piper cubeba

(N O—Piperaceae)

Sans—Sungadha muricha *Eng*—Tailpepper, Cubebs *Bom*, *Hind* & *Ben*—Sitalachini, Kabab-chini *Guj*—Tadamiri *Mah* & *Kon*—Kankola, Himsimiri *Gwalior*—Kankol mirch *Arab*—Kababh Kibabeh *Tel*—Toka miriyalu, Chalava miriyalu *Tam*—& *Mal*—Val mulaku *Can*—Gandhamenasu, Balmenasu *Pers*—Kibabeh, Hab-el arus *Gr*—Mahilyun, Karifiyun

Habitat—This climbing woody bush is indigenous to Java, Sumatra and Malay Archipelago, but the dried unripe full grown fruits of the shrub called Cubebs are obtainable in the Indian bazars, being imported from Singapore, and are also cultivated to a small extent in India especially in the Mysore State

Parts Used—Dried immature full grown fruits called the Cubebs

Constituents—An active principle 3 p c, a volatile essential oil 10 to 15 p c, oleo-resin 3 p c containing cubebin 2 p c., and cubebic acid 1 p c, fatty matter wax, starch oil gum 8 p c and ash 5 p c, (malates of magnesium and calcium) The volatile essential oil has a pleasant characteristic odour and a greenish to greenish blue colour [1] Analysis of Indian Cubeb Oil and B P Cubeb oil in Indian Laboratories has shown that the difference between the two specimens is negligible and it appears that the Indian

(1) Bom. Govt. Agri Dept Bulletin

oil is in no way inferior in medicinal properties to the oil of commerce" [2]

Action —Stimulant, carminative, diuretic and expectorant

Preparations.—Powder, dose —10 to 20 grs Paste, Infusion, dose —1 to 2 oz, and oil, dose —5 to 10 drops given with mucilage or syrup in water

Uses —It is used as a carminative spice and condiment, as stimulant to the mucous membrane in diseases of the genito-urinary organs such as gonorrhoea, gleet, leucorrhoea and other vaginal discharges of women, as expectorant during fevers and in the coughs of old age The volatile essential oil is also used, though to a small extent in genito-urinary diseases like cystitis, gonorrhoea and gleet [3] A *mixture* of potassium nitrate and cubebs in *powder*, 10 grains each, is a good remedy for gonorrhoea For gleet and chronic gonorrhoea 30 grains of powdered cubebs mixed with 5 grains of alum given thrice daily As expectorant, 10 grains of cubeb-powder in 30 drops of mucilage in an ounce of cinnamon water, given thrice a day is beneficial in bronchitis and laryngitis Cubeb produces tension of the vocal cords and clears the throat of the tenacious mucous and, therefore, it is much used by singers *Cubeb powder* is best taken in milk and the *oil* in mucilage. Cubeb is regarded by Hakims as an excellant of gravel and stone from the kidneys and bladder Externally a paste made from it in rose water is applied to the head in headache Following are some useful remedies containing cubebs in their composition —

(1) Take of Cubebs, liquorice, long pepper Chebulic myrobalans, and Alpinia Chinensis equal parts by weight, powder them and mix them together Place the mixture in 15 times its weight of water and prepare a compound decoction by boiling till the whole is reduced to quarter its volume—Dose of this compound decoction is one ounce three or four times a day It may be converted into an electuary with honey This is useful in acute and chronic bronchitis.

(2) Take of cubebs, Cedrus deodar, and fruit of Helicteres ispra 160 grains each, Eclipta of the black variety, Black pepper, Pellitory root, *Guggul*, Sun seeds, Crotalaria juncea seeds, each 7 drachms and *gugul* 12 tolas and honey sufficient quantity to make a pill mass. Make into pills weighing half tola each. Dose —One pill twice a day in epilepsy —(*Ilaj ul-Gurba*)

(3) Take of Cubebs 5, Mastich gum 4, silicate of lime 3, Dryobalanops camphora 3 cardamoms 4 Cassia lanceolata ½, Curcuma aromatica 4, Iris pseudocorus rhizome 3, and nitrate of potash 4 parts, Reduce the whole to a fine powder Dose —drs 1 to 2 Used in gonorrhoea, gleet, leucorrhoea and chronic diseases of the genito urinary organs

724 CUCUMIS ACUTANGULUS

See Luffa acutangula

725 CUCUMIS AGRESTIS, Naud

Hind —Takmak *Indian Languages* —Shendad , Shinde *Can* —Puttikai *Eng* —Gourd small, egg shaped.

This is a wild variety of the melon, cultivated in the Deccan (Bom Govt Agri Dept Bulletin)

726 CUCUMIS ANGUINUS

(N O —Cucurbitaceae)

Sans —Chirvite , *Ben* —Kakura , *Fr* —Concombre serpent

Found in Eastern Bengal and remarkable for the long and serpentine form of its edible vegetable fruit It is diuretic and aperient

727 CUCUMIS COLOCYNTHIS

(N O —Cucurbitaceae)

Gwalior —Indrajau ki jhad. Found in Gwalior State

Parts Used.—Root

Uses —Root is used in fever

728 CUCUMIS MELO, Linn

(N O —Cucurbitaceae)

Sans —Kalinga , Kharvuja *Eng* —Sweet or Musk melon , Melon *Hind & Mah* —Khurbuj , Sakkar Teti *Sind* —Gidro *Mah.*—Valuk. *Ben* —Khermuj *Guj* —Turbuch *Tel* —Velipandu. *Tam* —Vaelapalam , Vellari verai *Can* —Kalingada *Kon* —Bach ng Fr.—Cataloup *Ger* —Melonegurke Extensively cultivated in gardens as well as in the sandy basins of rivers and found particularly in the

North West and in Northern Bengal The fruit is eaten raw and cooked especially its pulp or *juice* forms a nutritive, demulcent, diuretic and cooling drink. It is beneficial as a *lotion* in chronic and acute eczema as well as tan and freckles and internally in cases of dyspepsia Pulp mixed with cumin seeds and sugar candy is a cool diet in hot season *Seeds* yield a sweet edible *oil* which is nutritive and diuretic, useful in painful discharge and suppression of urine The same benefit is attributed to the seeds of all the species of Cucumis *family* Pounded seeds and *sugar-candy half a tola each*, forms a nutritive diet *Root* of this plant is found to contain emetic principle; therefore it has emetic and purgative properties The composition of the seeds and other parts of the plants is similar to those of water melon. The whole fruit is useful in chronic eczema, Hypoxanthine (Sarcine) is found to exist in this plant Jacobabad in India is famous for this fruit For further particulars see Citrullus vulgaris

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729 CUCUMIS MEMORDICA, Linn.

(N. O —Cucurbitaceae)

Sans —Ervaru, Karhati *Ben* —Phuti (ripe), Karcha (unripe). *Hind* —Tuti, Phut *Tel* —Pedda dosrai; Pedda kai *Tam* —Kakrikai Seeds are used as a cooling medicine

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730 CUCUMIS PSEUDO—COLOCYNTHIS, Royl

(N O —Cucurbitaceae)

Sans —Indrayan *Hind* —Bishlambhi. This is a bitter substance (Chopra's "I D of I" pp 480).

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731 CUCUMIS SATIVUS, Linn

(N O —Cucurbitaceae)

Sans —Sakusa, Trapusha, Sukasa. *Eng* —Common Cucumber. *Hind & Duk* —Kankri *Ben* —Khira, Sasa *Guj* —Kakri. *Mah* —Kakdi *Hind* —Khira *Bom* —Kankri *Tel* —Dosekaya. *Tam* —Mulluvellari *Mal* —Mullanvellari, Kakkari *Can* —Mullusavte, Sautekayi *Kon* —Towshay *Arab* —Bazarula

Habitat.—Found wild in the Himalayas from Kumaon to Sikkim, but it is cultivated throughout India

Parts Used.—*Seeds and leaves*

Constituents.—Fixed oil, starch, resin and sugar. "Seeds contain much farinaceous matter, blended with a large portion of mild oil."[1]

Preparations.—Cold Infusion (1 in 10), dose :—2 to 4 drs., Powder; Paste and Confection.

Action.—Fruit is nutrient and demulcent. Seeds are cooling and diuretic.

Uses.— "Cucumbers can, with advantage, be eaten raw as a desert flavoured with lemon juice, pepper, salt, etc., to enable the body get the maximum amount of the vegetable juices and their vitamins. They are also used cooked as a vegetable. The large variety which, when ripe, is called '*tavas*' in Marathi, is much used in pickles, in curries and eaten raw."[2] The five species belonging to this genus which are akin to one another in action are :—Citrullus vulgaris, Cucumis melo, C. sativus, C. utilissimus and Benincasa cerifera. Their seeds are always used together and are cooling, diuretic and highly nourishing. "Indians dry and grind the seeds into a meal, as an article of diet."[3] *Leaves*, boiled and mixed with cumin seeds, roasted and powdered, are administered in throat affections in doses of 30 grains or more. Powdered and mixed with sugar they are powerfully diuretic. In sunstroke pieces of cucumber are placed on the head so that the patient may breathe moistened air, in order to neutralise the heat of his body. Following preparations are very popular among Hakims.—

Confections :—(1) Take of seeds of Cucumis sativus, C. melo, and Citrullus vulgaris and Raisins, each one ounce; chicory 2 ounces, sugar 10 ounces and water 1 lb. Boil the four kinds of seeds in water and strain; then add sugar and vinegar and prepare a syrup in the usual way. Dose :—half to one ounce mixed with water, three or four times a day Useful as a valuable diuretic in strangury and as a refrigerant in remittent and inflammatory fevers. (2) Take of seeds of C. sativus, C. melo, Citrullus vulgaris, Daucus carota and Lagenaria vulgaris each 10 parts; kernel of sweet almonds 10, Pistacia lentiscus galls 6, Buchanania latifolia 6, Poppy seeds 5. Seeds of Pinus gerardiana 4, Cardamoms 5, Tribulus terrestris 6, root and seeds of Piper longum each 5 parts, Eulophia campestris or Vera

(1), (2) & (3)—Bombay Govt. Agri: Dept. Bulletin.

(*Salamisri* Punjabi) 5, dry ginger 5, *Asparagus adscendens*, *Satavar* 5, Butheagum seeds of Rumex maxtimus 5, and sugar 20 parts. Mix and make a confection. Used in seminal weakness and urinary disorders.

Powder :—Take of seeds of C. sativus, seeds of Lactuca sativa and seeds of Portulaca oleracea each 9 parts, Opium 1, and Henbane seeds 5 parts. Reduce these to a powder. Dose :—1 to 3 drachms. Useful in painful diseases of the bladder and of the urethra.

Paste :—Take of seeds of C. sativus, Chicory, Portulaca oltraces, Lettuce seeds and black Hellebore, equal parts. Mix and make a paste. Dose :—grains 10 to 15. Used in fevers by Unani physicians.

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732. CUCUMIS TRIGONUS, Roxb.
and C. Pseudo-colocynthis ; Var., Pubescens.
(N. O.—Cucurbitaceae)

Found, the former in the upper Gangetic plain, and the latter on the lower range of the western Himalayas.

Eng.—Bitter gourd. *Sans.*—Vishala. *Hind.*—Bislambi ; Jangli-Indrayan. *Mah.*—Takmaki ; Karit ; Katvel. *Tam.*—Kattu-tumatti ; Thummittikai ; Hatt-ttumatti. *Tel.*—Adavi-puchcha ; Kodisella. *Can.*—Hal-mekki. *Kon.*—Karanti.

These plants occur in two distinct varieties ; the wild bitter form (Pahadi Indrayan or hill colocynth) having smooth fruits with green and yellow streaks like colocynth, and the pubscent or semi-cultivated form with velvetty fruits which are sweet when ripe and are eaten as a vegetable when green Fruit is appetiser and is useful in bilious disorders. Wild bitter fruits are never eaten, but are used sometimes medicinally in the same way as Citrullus vulgaris. Seeds are cooling and are beaten into a paste with the juice of Cynodon dactylon and applied to herpatic eruptions. In Malabar the plant is supposed to be alexipharmic and to have the power of removing pains and aches. Fruit pounded and boiled with cow's milk and applied to the head is supposed to prevent insanity, strengthen the memory and remove vertigo. Modern investigation has shown that the medicinal properties of this gourd do not differ from those of Colocynth. A decoction of the root (1 in 70) is useful as a purgative. It is stated to be milder in effect than the pulp of the fruit and causes less irritation. The drug is also used in snake-bite.

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733. CUCUMIS UTILISSIMUS, Roxb. & Linn
(N. O.—Cucurbitaceae)

Sans.—Karkati; *Ben.*—Kakura; *Mah.*—Tarkakdi.

Is a variety of the species of C. melo cultivated in gardens in Bengal, U. P., Deccan and the Punjab. Seeds are diuretic and useful in promoting the passage of sand and gravel, i.e., suppression of urine. "Seeds like those of other cucurbitaceous fruits contain much farinaceous matter blended with a large proportion of a mild oil"—(Bombay Govt. Agri. Dept. Bulletin). Two drachms of the seeds rubbed into a pulp with water and milk are given; and the powder of seeds, 2 drachms, combined with twenty grains of rock-salt is given, with much benefit in painful micturition and suppression of urine. Fruit is sweet, refrigerant and beneficial in strangury and hematemesis. "The fruit is eaten both raw and cooked; when the fruits are a little more than half-grown they are pickled. The seeds are dried, ground into a meal and employed as an article of diet, and a mild oil extracted from the seeds is used in food. 'Experience as well as analogy prove these seeds to be highly nourished and well-deserving of more extensive culture'—Roxburg)"—(Bombay Govt. Agri. Dept. Bulletin).

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734. CUCURBITA ALBA.
(N. O.—Cucurbitaceae)

(*Mah.*—Kohla).

The fruit is never eaten raw but is much esteemed as a cooked vegetable and is made into a sweetmeat called '*halva*' or '*kohale-pak*'. The water, got after squeezing the pulp chopped very fine, is used in the Indian water biscuits or *papads*. (Bombay Govt. Agri. Dept. Bulletin).

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735 CUCURBITA CEREFERA & C. pepo.
See Benincasa cerefera.

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736. CUCURBITA CITRULLUS.
See Citrullus vulgaris.

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737. CUCURBITA LAGENARIA.
See Lagenaria vulgaris.

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738 CUCURBITA MAXIMA, Ducbesne

(N O—Cucurbitaceae)

Sans—Punyalatha, Dadhiphala *Eng*—Red gourd, Great Pumpkin or Spanish Gourd *Ben*—Saphuni, Kumra. *Hind*—Pila kobola, Kashiphala, Kaddu, Mithakaddu *Deccan*—Dangar. *Guj*—Pilun kohalun *Mah*—Lal or Tambda Bhopla *Sind*—Prala kalu, Sukkar kohala *Tel*—Gummadi kayi *Tam*—Poosnalni, Nalla pusini, Pusini *Mal*—Chakkerakumpalan *Can*—Gumbalo, Kumbalakai, Chinikavi *Kon*—Duddini *Fr*—Gourge *Ger*—Riesenkurbis

Habitat—This creeper is extensively found very frequently on the roofs of houses all over India.

Parts Used—Seeds, pulp and fruit stalk.

Constituents—Similar to those of other Cucurbitaceous plants—saponin, fixed oil, resin, proteins, sugar and starch The fresh vegetable contains 89 50 moisture and the completely dried material contains Ether extract 1 00, albuminoids 6 12 (containing Nitrogen 0 98), soluble carbohydrates 77 33, woody fibre 8 55 and Ash 7 00 (containing sand 0 17) p c respectively —Bombay Govt Agri Dept. Bulletin

Action.—Seeds are anthelmintic, taeniacide and diuretic. Oil from the seeds is a nervine tonic.

Preparations.—Paste of the seeds freed from husks

Uses.—*Fruit* is largely used by Indians in their curries. The shoots and young leaves are used as a pot herb, the seeds are eaten. (Bombay Govt. Agri Dept Bulletin) *Seeds* are given with sugar in tape-worm. They are given at bed time, followed next morning with a dose of castor oil. As a diuretic they are given in gonorrhoea and urinary diseases Dose —4 to 8 drachms with sugar or honey *Pulp* of the fruit is often used as a poultice to boils carbuncles, unhealthy ulcers etc *Dried pulp* of the fruit is a remedy in haemoptysis and haemorrhages from the pulmonary organs it is given in the form of a *confection* The part of the *fruit stalk* which is in immediate contact with the ripe gourd is removed and dried and made into a *paste* by rubbing with water and given as a specific for bites of venomous insects of all kinds chiefly for that of the centipede Other uses are like those of the five chief Cucurbitaceous

plants, viz ; C. cerefera, C. citrullus, C. melo. C. sativus and C. utilissimus.

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739. CUCURBITA MOSCHATA, Duchesne.

Eng.—Melon Pumpkin ; Musk Melon. *Mah.*—Kashiphal ; Kala Bhopala. (Bombay Govt. Agri. Dept, Bulletin).

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740. CUCURBITA PEPO, DC.

See Lagenaria vulgaris

(N. O.—Cucurbitaceae)

(*Sans.*—Kurlaru ; *Hind.*—Safed kaddu, *Ben.*—Shada kumra. *Bom.*—Kaula ; *Tam.*—Pottai-gummadi). Seeds are anthelmintic. Leaves are used in burns. As-0.009 mg. in 100 g. fruit). (Bombay Govt. Agri. Dept. Bulletin).

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741 CUMINUM CYMINUM, Linn. See Carum carui

(N. O.—Umbelliferae)

Sans.—Ajaji ; Jeetaka ; Hrasvanga ; Kunchika ; Ajmoda ; Jira. *Eng.*—Cumin Seed ; Caraway Seed. *Hind.* & *Ben.*—Safed Jeera ; Zira ; Shiajira ; Jira. *Sind.*—Zero. *Pers.*—Zeera ; Zira. *Guj.*—Safed Jiraun ; Zero. *Tel.*—Jeelakara ; Jirana ; Jiraka ; Jilakhrah. *Tam.*—Shumai-shombu ; Cheerakum ; Jeerakam ; Shirágam. *Mal.*—Cheerakam ; Jeerakam. *Can.*—Jeerigay. *Kon.* & *Mah.*—Jeera. *Arab.*—Kamun ; Kammon. *Fr.*—Anisacre ; Cumin officinal. *Ger.*—Venedischer Kummel.

Habitat.—Extensively cultivated as a cold-season crop on the plains and as summer crop on the hills in Northern India, Himalayas and the Punjab, Baluchistan, Kashmir, Kumaon, Garhwal, Chamba, etc., also imported from Persia and Asia Minor (Eastern Europe).

Parts Used.—Fruit or seed ; essential oil.

Constituents.—Fatty oil, resin, mucilage, gum ; protein compounds, malates and an essential oil to which the aromatic odour and taste is due. A valuable essential oil 'thymene' rich in 'carvone obtained from the seeds, contains cuminol or cumic aldehyde 56 p. c., a mixture of hydrocarbons, cymene or cymol, terpene, etc. Thymol occurs in fairly large proportions in the oil of ajowan, which is distilled from the fruits in India. "This essential oil is colourless

weight to all the other ingredients; powder them all and mix. Add two parts of sugar to one of the powder and make into a confection with honey and clarified butter. Dose :—one drachm. This medicine is prescribed in chronic diarrhoea and dyspepsia with loss of appetite. [Cumin seeds resemble those of coraway but they are larger and of a paler colour; caraway seeds are used as carminative during convalescence after diarrhoea.] *Cumin Oil* can be readily converted artificially into thymol; thymol is used as an anthelmintic against hookworm infections and also as an antiseptic, forming part of many proprietory preparations. Oil distilled from wild caraway seeds is sparingly used in medicine, but finds ready employment in flavouring wines, scenting soaps and in perfumery. An *oil* known as *Jirakadya taila* used in eczema is made thus :—Take of powdered cumin seeds, eight tolas, minium or red lead four tolas, prepared mustard oil three seers, water twelve seers, boil them together in the usual way for the preparation of medicinal oils—(Bhavaprakasa). The following powder is given in gonorrhoea and high-coloured urine.—Take of Cuminum cyminum 4 parts, Calamus draco (Dragon's blood) 2 parts, Nitrate of potash 5 parts, Coriander seeds 5 parts and Rose buds 2 parts. Mix and make a powder. Dose :—20 grs. This drug is used in snake-bites also.

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742. CUMINUM NIGRUM. See Nigella sativa.

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743. CUPRESSUS SEMPERVIRENS, Linn.

(N. O.—Coniferae)

Hind.—Sara. *Bom.*—Saruboke.

Parts Used.—Wood and fruits.

Constituents.—Essential oil.

Action.—Wood is astringent; fruits are anthelmintic. (Chopra's "I D of I." pp 480)

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744 CURANGA AMARA, Juss.

(N. O.—Scrophularineae)

Constituents.—Glucoside curagin.

Action.—Febrifuge. (Chopra's "I. D. of I." pp. 480).

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745. CURCULIGO ORCHIOIDES, Gaertn & C. uncifolia

See Hypoxis brevifolia and H. orchioides.

(N. O.—Amaryllidaceae)

Sans.—Hemapuspi; Talamulika; Musali *Eng.*—Black musale. *Hind.* & *Guj.*—Musalikand; Kalimusli. *Gwalior.*—Mussulkund. *Ben.*—Talamuli, Sadamusli. *Tel.*—Naelatadi-chettu or gadda. *Tam.*—Nilap-panaik kizhangu; Nilappanang Kilangu. *Mal.*—Nellapana Kilongu *Can.*—Neladali *Mah.* & *Kon.*—Bhuyimaddi. *Pers.*—Mosali. *Sinh.*—Hin bin-tal.

Habitat.—Occurring wild in sandy situations of hotter regions of India and Ceylon. N. B.—C. orchioides is the *'kala musli'* (black variety) of the bazar and has to be distinguished from the tuberous root of *Asparagus adscendens* which goes by the name of *'Safed musli'* (white variety).

Parts Used.—Tuberous roots; bulbs

Constituents.—Resin, tannin, mucilage, fat, starch and ash containing oxalate of calcium etc. Root contains a good deal of mucilage.

Action.—Bitter aromatic tonic, demulcent, diuretic and restorative. Roots are alterative and tonic.

Action & Uses in Ayurveda and Siddha.—Seeth veeryam, polyuria, white leprosy, aphrodisiac, prameham with constant discharge. (Therapeutic Notes).

Action & Uses in Unani.—Hot 2°, Dry 2°, Aphrodisiac, tonic, nervous diseases, reeh (Trerapeutic Notes).

Preparations.—Confection and powder.

Uses.—*Tuberous roots* constitute the (black) *kala-musli* and the white variety *safed musli* of the bazar. Bulbs of *Kala musli* are used in scorpion bites. *Roots* are prescribed usually combined with bitters and aromatics in the form of *electuary*, the dose being one tea spoonful twice a day; sometimes the drug is given with warm milk and sugar in doses of two drachms in gonorrhoea, dysuria, menorrhagia, leucorrhoea and menstrual derangements. In cases of piles, asthma, jaundice, diarrhoea and colic, the tubers are administered as follows.—They are washed and freed from rootlets, cut in slices by a *wooden* knife, dried in the shade and then given in doses of 180 grains beaten up with an equal quantity of sugar in a glass of milk in the form of a thick mucilage. As the roots con-

tain a good deal of mucilage they are used as demulcent alterative and tonic during convalescence after acute illness, dose —1 to 2 ounces of the root in warm milk and sugar The tuber forms an ingredient of several medicines intended to act as aphrodisiacs, of which the following are examples —(1) Take of the root of Aspara gus racemosus Saphaeranthus mollis, *gulancha* seeds of Butea fron dosa, and the tuberous roots of *musali* equal parts, powder and mix. Dose is about a drachm with honey or clarified butter useful in the debility of old age (Bhavaprakash) (2) Take of *Kali musli Safed musli Salebmisri* Talmakhana *Bijbund, Inderjava Tudri surkh* and *Tudri safed Dalchini Kalanjan, Sakakul Barman surkh* (red) *Barman safed* (white, equal parts and Misri 12 parts Mix and make a powder Dose —45 to 90 grains with milk— (Zad Garib), (3) *Musalyadi Churna* containing Curculigo orchioides Tribulus terrestris Bombax malabaricum Mucuna pruriens and Cocculus cordifolius, is given in doses of 20 to 60 grains with milk in luecorrhoea and other menstrual derangements due to general debility

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746 CURCUMA AMADA, Roxb or C. matico

(N O —Scitaminaceae)

Sans —Karpura haridra *Eng* —Mango ginger *Ben* —Amahalda Pholija *Dek* —Amkiboki adrak *Bom* —Amba haladar *Hind* —& *Mah* —Amahaldi *Mah Can* & *Kon* —Amba halad *Tel* —Shadgrandika *Tam* —Arukamlaka Mamidiallam

Habitat —Bengal and hills on the West Coast of India

Parts Used —Rhizome

Constituents —Essential oil resin sugar gum starch albuminoids crude fibre organic acids and ash

Action —Carminative cooling aromatic bitter sotmachic and astringent

Preparations —Infusion and Paste

Uses—*Fresh root* is used as a perfume and as an ingredient in *chutneys* like ginger, also medicinally when fresh and dried *Tubers* have an agreeable fragrant smell and aromatic taste They are useful in prurigo *Tubers* rubbed with the leaf juice of Caesalpinia bonduc is given for worms rubbed with the juice of Jasmina grand flora into thin *paste* it is applied to skin complaints of children

characterised by small blebs into which hairs grow soon after *i e* 10 or 12 days after birth *Infusion of the root* is employed to give the flavour of the mango artificially to confectionery Rhizomes are also used *externally* in the form of *paste* as an application for bruises and skin diseases generally combined with other medicines used for improving the quality of blood

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747 CURCUMA ANGUSTIFOLIA, Roxb

(N O—Scitaminaceae)

Sans—Tavakshiri *Eng*—Curcuma starch, East Indian Arrow root *Hind*—Tikora *Ben*—Tikkur *Mah*—Tavakeera *Tam*—Artimavu, Konkai *Mal*—Koova *Can*—Koove huttu *Kon*—Koove-pitto *Ger*—Schmal blattrige kurkume

Habitat—A native of tropical Himalayas and Oudh. Other species which are the source of arrowroot grow wild in jungles in various parts of India, and they are the following—C leucorhiza, C montana, C aromatica, C. longa, C. rubescens and Hitchenia caulina

Parts Used—Tubers

Constituents—Starch, sugar gum and fat

Action—Cooling demulcent and nutritious

Preparations—*Conjee* and Confection

Uses—Indian arrowroot is highly valued as an article of diet. It is largely manufactured and exported from Malabar and Travancore Tubers are dried and powdered and a *flour* is prepared, and this starch forms the chief source of Indian arrowroot It is an excellent diet in the form of *conjee* in cases of dysentery, dysuria, gonorrhoea etc also useful in typhoid fevers, ulceration of the bowels and bladder In cases of difficult and painful micturition it is best administered in the form of thin *conjee* prepared like barley water with milk and sugar added Made into a *confection* with the addition of a small quantity of cardamoms it forms a cooling, stomachic food useful in cases where a demulcent is needed, and in all cases where barley is indicated

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748 CURCUMA AROMATICA, Salisb

(N O—Scitaminaceae)

Sans—Vanaharidra *Eng*—Wild Turmeric, Yellow Zedoary, Cochin Turmeric. *Hind*—Jangli haldi *Ben*—Ban halad *Bom*—

Ran-hald, Ambe-haldi, *Guj*—Kapur kachali *Mah*—Vedi halad *Tel*—Adavipasupu, Kasturi pasupa. *Tam*—Kasturi manjal. *Mal*—Kattumanjal. *Can*—Kadarasina, Kasturi arishina. *Kon*—Ranhalad *Arab*—Judwar *Burm*—Kiyasanoin *Sinh*—Duda kaha.

Habitat—Found wild all over in Bengal and largely cultivated in gardens

Parts Used—Tuber or rhizome

Constituents.—A volatile essential oil, resin, starch mucilage sugar, gum, albuminoids and *curcumin*— a yellow colouring matter

Action.—Similar to that of C. longa, tonic, stimulant and carminative

Characteristics.—The rhizomes are of a pale yellow colour have an agreeable fragrant smell and the *fresh root* has a camphoraceous odour

Uses.—Uses are similar to those of Curcuma longa *Dried rhizome* is used as an aromatic adjunct to other medicines used in skin diseases and impurities of the blood In the form of powder in doses of 3 to 6 grains it is given to promote eruptions in exanthematous fevers It is also used externally boiled in oil as an application to sprains and bruises Useful in snake-bite also

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749 CURCUMA CAESIA, Roxb

(N O—Scitaminaceae)

Ben—Nilkanth, Kalahaldi, *Bom*—Narkachura, *Hind* & *Guj*—Narkachura, Kalihaldi, *Mah*—Kalihalad, *Tel*—Manu pasupu.

Is found cultivated in gardens in Bengal. It is one of the two Zerumbads of Persian writers on Materia Medica. It is chiefly used as a cosmetic. It is considered to have nearly the same medicinal properties as C. Zerumbet. It is used as a domestic remedy in the fresh state much like C. longa Its *paste* is applied to bruises, contusions and rheumatic pains

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750 CURCUMA LONGA, Linn

(N O—Scitaminaceae)

Sans—Rajani, Gauri, Vamavat, Haridra, Nisha. *Eng*—Saffron, Turmeric. *Hind Duk* & *Punj*—Haldi. *Kash*—Lidar *Ben*—Halud *Mah* & *Kon*—Halad *Guj*—Halder, Halada.

Punj —Halja *Pers* —Serd Chubah, Zard chobah, Daraserda. *Arab* —Zirsud, Uruk es suff, Kurkum *Tel* —Pasupu, Haridra. *Tam* & *Mal* —Manjal. *Can* —Haldi, Arasina *Sinh* —Haradul, Khaka *Burm* —Tanum. *Malay* —Kooneit *Fr* —Curcuma long

Habitat —Extensively cultivated all over India In Bombay Presidency there are two varieties (1) with hard rich-coloured oval rhizomes, chiefly used in dyeing known as *'lokhandi halad'*, and the other with softer, larger, lighter coloured long rhizomes which are usually used for eating

Parts Used.—Tubers and rhizomes

Constituents.—An essential oil 1 p c. resin, an alkaloid, curcumin—the yellow colouring matter, turmeric oil or turmerol. Turmeric oil is a thick, yellow, viscid oil Curry powder owes its aromatic taste and smell to this oil ' Turmeric Oil obtained by distilling in steam turmeric grown in the Chittoor district of the Madras Presidency was examined. The yield of the oil obtained was 5 8% Turmeric oil *though examined several times since 1868*, the constituents recorded in literature were —d a phellandrene and an alcohol called turmerol of formula $C_{13}H_{18}O$ or $C_{14}H_{20}O$ A systematic examination of the oil revealed that the oil did not contain any phenols, aldehydes or ketones Caproic acid $C_6H_{12}O_2$ (0 1%) was found to be present as free acid while valeric $C_5H_{10}O_2$ (0 1%) as a combined acid. The oil was distilled at 20 m m. into various fractions ranging between 70° to 180°C. The lower fractions contained d sabinene $C_{10}H_{16}$ (2 0%), d a phellandrene $C_{10}H_{16}$ (4%), Cineol $C_{10}H_{18}O$ (3 0%) and d Borneol $C_{10}H_{17}OH$ (2 5%) The middle fractions were sesquiterpene hydrocarbons mainly Zingiberene $C_{15}H_{24}$ (30 5%) while the higher fractions were mixtures of the sesquiterpene hydrocarbon and sesquiterpene alcohol $C_{15}H_{26}O$ (50 5%) Considerablo changes in optical rotations in the fractions of the whole oil were observed from time to time '

Formation of Curcumone from Turmerol —

A sesquiterpene alcohol $C_{15}H_{26}O$ has been isolated and purified The pure alcohol has the following constants Boiling point 163.4°/11 m. m., d 30° 0 9506, and n 30° 1 5151

Turmerol is a monocyclic tertiary sesquiterpene alcohol of formula $C_{15}H_{26}O$ The body to which the formula $C_{13}H_{18}O$ or $C_{14}H_{20}O$ was assigned might have been a mixture of the alcohol $C_{15}H_{26}O$ and the hydrocarbon $C_{15}H_{24}$

Rupe in 1909 found that the fraction 158° 162°/11 m m on treatment with alkali yielded a ketone curcumone $C_{13}H_{18}O$ which formula was later modified by him as $C_{12}H_{16}O$ Its structure as 2 methyl 2 p-toyl methyl ethyl ketone $CH_3C_6H_4$ $CH(CH_3)$ CH_2CO CH_3 was finally confirmed by Rupe s synthesis in 1924

It has been shown that the original oil does not contain the ketone but it is formed by the action of alkali on the alcoholic constituent turmerol $C_{15}H_{26}O$

Turmerol on dehydrogenation with sulphur and selenium gave neither cadalin nor eudalin

During catalytic reduction with platinum black and hydrogen, termerol was converted into a saturated alcohol $C_{15}H_{30}O$ showing the presence of two double bonds

The alcobol on oxidation with dilute nitric acid yielded p toluic. p toluic, terephthalic and oxale acids

On oxidation with aqueous $KMnO_4$ as well as with powdered $KMnO_4$ in acetone solution turmerol gave an acid of melting point 42° 43°, equivalent 178 and molecular formula $C_{11}H_{14}O_2$ perhaps identical with the acid obtained by Rupe by oxidation of curcumone Curcumic acid $C_{11}H_{14}O_2$ melting at 42° 43° has the structural formula as p methyl 3 methyl hydrocinnamic acid $CH_3C_6H_4CH(CH_3)$ CH_2COOH (N C. Kelkar, Indian Institute of Science, Bangalore)

Action — Aromatic, stimulant. tonic and carminative Internally juice is anthelmintic.

Action & Uses in Ayurveda and Siddha.—Katu tikta rasam, veeryam, ruksham varnyam, in prameham pandu, rakta dosham, krimi, vranam, pinasam. (Therapeutic Notes)

Action & Uses in Unani.—Hot 3°, Dry 3° Removes liver obstruction dropsy, jaundice, externally used for ulcers anl inflammation (Therapeutic Notes)

Preparations.—Powder, Paste, Ointment, Oil, Lotion, inhalant and Confection.

Uses.—*Rhizomas* are boiled, dried and made into powder, which gives a yellow colour and which is employed largely as a colouring agent and as condiment entering largely into the composition of Indian pickles and curry powders *Juice* of the fresh rhizome is

applied to recent wounds bruises and leech bites *Internally* it is used as an anthelmintic *Root* is usefully administered in intermittent fevers *In doses of 15 to 20 grains twice a day it is given for* flatulence, dyspepsia and weak state of the stomach, it is used both externally and internally in skin diseases due to impurity of the blood A *paste* of turmeric and the leaves of Justicia adhatoda with cow's urine is rubbed on the skin in prurigo (Chakradatta) Several other combinations of the sort are in vogue, such as turmeric and *nim* leaves, turmeric and the ashes of the plantain tree etc Turmeric *is also given internally with cow's urine in* prurigo and eczema Mixed with gingelly oil it is applied to the body to prevent skin eruptions Turmeric paste mixed with a little lime and saltpetre and applied hot is a popular application to sprains, bruises, wounds and inflammatory troubles of the joints In small pox and chicken pox a coating of turmeric *powder* or *thin paste* is applied to facilitate the process of scabbing and *decoction* of turmeric (1 ounce of the bruised *root to 20 ounces of water) is* applied *as a lotion* to relieve the burning in catarrhal and purulent opthalmia popularly known as country sore eye', and conjunctivitis A piece of rag soaked in it, and kept constantly over the affected eye relieves the burning and moderates the urgency of the symptoms Its *powder* is sprinkled on ulcers to stimulate them to healthy action Tubers sold in the market for dietary purposes are boiled and are on no account used for dyeing *Turmeric for dyeing* is sold *separately* and Indian women use it to smear their hands and faces with and is called in Tamil *'Kappumanjal'*—Manual of Jail Industries (1931, Madras) *Ghee* mixed with powdered turmeric, is given to relieve cough A paste of turmeric alone or combined with the pulp of *neem* leaves is used in ringworm, obstinate itching eczema and other parasitic skin diseases In piles an *ointment* made of turmeric, hemp leaves onions, and warm mustard or linseed oil gives great relief when the piles are painful and protruding also effective in eczema itches, etc. In pemphigus and shingles, the part first smeared with a thick coating of mustard oil and then dusted on with turmeric powder is cured within 3 or 4 days In catarrh and coryza the *inhalation of the fumes* of the burning turmeric from the nostrils causes a copious mucous discharge and gives instant relief; the *fumes* are also used to relieve hysterical fits The inhalation is taken at night and no fluid is allowed for some hours afterwards *Smoke* produced by sprinkling

powdered turmuric over burnt charcoal will relieve scorpion sting when the part affected is exposed to the smoke for a few minutes Turmuric and alum powder in the proportion of 1 to 20 is blown into the ear in chronic otorrhoea With borax as a *paste* it is applied to reduce indolent swellings It is given in urinary diseases *Milk* boiled with turmuric rhizome added to it, and then sweetened with sugar is a popular remedy for cold *Internally* turmuric is given in affections of the liver and in jaundice Following *powder* is a good digestive —Take of turmuric, long pepper, ginger, cardamoms, ten grains each in powder and black pepper powder five grains Mix well and make a compound powder Following confection is highly recommended in obstinate skin complaints —*Haridrakhanda* —Take of turmuric 64 tolas, clarified butter 48 tolas, milk 16 seers, sugar 12 tolas and boil them together over a gentle fire in an earthern pot Then add black pepper, long pepper, ginger, cinnamon cardamom, *tejapatra baberang* seeds root of Ipomea, Turpethum, the three myrobalans, flowers of Mesua ferrea, tubers of Cyperus rotundas and prepared iron each 8 tolas in fine powder and prepare a confection Dose —one tola every morning in prurigo, boils, urticaria and chronic skin eruptions—(Bhaishajyratnavali) A cure is effectel in 7 days

Tests —Good turmeric should be of a reddish orange appearance when broken or cut in two and should also have a moist feeling

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751 CURCUMA ZEDOARIA, Rosc. or Zerumbet
or Amomum zerumbet
(N O —Scitaminaceae)

Sans —Krachura, Kachura, Shati or Sati *Eng* —Round Zedoary *Hind* —Gandamasti, Kakhur, Kachura. *Ben* —Sutha, Shori, Sati *Bom* —Kachura. *Pers* —Jadvar khata, Kazhur *Duk* —Katchoor *Mah*—Kuv, Kachur *Can* & *Kon* —Kachora. *Tel*.—Kichili gaddalu, Kachooramu. *Tam* —Kastori manjal, Nirvisham, Pulan kizhanga, Kichilic kizhanga. *Mal* —Pulan kizhanna, Adavi kachhola. *Burm* —Thanu wen *Smh* —Hinhurh *Arab* —Aurakula kappura

Habitat —Cultivated in gardens in many parts of India, especially in Eastern Bengal and in districts of Chittagong and Tipperah

Parts Used —Tubers and leaves

Constituents —An essential oil, a bitter soft resin organic acids, gum, starch, resins sugar, curcumin arabins, albuminoids, crude fibre and ash.

Action & Properties—Stimulant, carminative, expectorant, demulcent, diuretic and rubefacient. Root, which possesses an agreeable camphoraceous smell, is cooling, diuretic and aromatic

Uses—*Root* is useful in flatulence and dyspepsia, and as a corrector of purgatives It is generally chewed by Indians to correct a sticky taste in the mouth especially by singers for cleaning the throat, it is also used in cases of irritation of the fauces and upper part of the wind pipe. In cases of cold and fever it is given in decoction together with long pepper, cinnamon, liquorice and honey or sugar-candy to relieve cough and bronchitis, the *pounded root* is applied as a *paste* to the body, combined with alum it is applied to bruises. As demulcent, expectorant and aromatic its dose is about one drachm. It is an odoriferous ingredient of the cosmetics used for the cure of chronic skin diseases caused by impure or deranged blood *Fresh root* checks leucorrhoeal and gonorrhoeal discharges *Dry root powdered* and mixed with the powdered wood of the Caesal pinia sappan makes the red powder called "*abir*" which is mixed with water and thrown over the body during the Holi festival of the Hindus But of late, many a concern is engaged in the preparation of a food (called "Sati Food in Bengal) for children and invalids by reducing the *roots into powder* This is a good substitute for many foreign foods for infants For worms the *juice* from the tubers is given to children *It is generally used in combination with other medicines as also in the preparation of medicated oil. Juice of the leaves is given in dropsy*

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752. CUSCUTA CHINENSIS Lamk

(N O—Convolvulaceae)

Is a parasitic twiner

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753 CUSCUTA REFLEXA, Roxb

(N O—Convolvulaceae)

Sans—Amaravela. *Eng*—Dodder *Ben*—Algusi, Haldi algusilata. *Punj*—Nilathari, Viradhar; Amil, Zarbuti (seeds) *Gwalior*—

Amarbel *Hind* & *Punj*—Akasbel, Aftimum; Kasus *Duk*—Akas pawan, Amalwel *Guj*—Akaswel *Mah*—Nirmuli *Tel.*—Sitama purgonalu *Pers*—Tukhm i kasusa

Habitat—Common throughout India, abundant in Bengal plains It has no root under the ground but only grows as a parasitic twiner on other plants and hence called *akasuel* (sky twiner) or amarwel (immortal twiner), because it grows during the rains and every year the growth is afresh on the same plant

Parts Used—Plant—seeds, stem and fruits

Constituents—Quercetin resins and an alkaloidal principle called Cuscutine slightly bitter and soluble in ether and chloro form.

Action—Plant is regarded as alterative, purgative and anthel mintic. Seeds are carminative and anodyne Stem is purgative

Preparations.—Cold infusion, decoction powder and poultice

Uses.—*Cold infusion* of the seeds is given as a depurative and carminative in pains and stomach aches *As poultice* they are also applied locally *Seeds* are used along with sarsaparilla to purify blood *Stems in decoction* are useful in constipation, flatulence, liver complaints and bilious affections *Varalians* of the dodder are highly useful in piles *Externally* they are used against itch and other skin diseases. The *fruits* are used in fever and cough

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754 CYAMOPSIS PSORALIOIDES, DC.

(N O—Papilionaceae)

Sans—Bakuchi, Gorani *Hind*—Gowar *Eng*—Cluster bean, Field vetch *Guj* & *Mah*—Guar, Gawar *Can*—Chavli kai, Guvar kai *Kon*—Chitquimitqui

Habitat—A minor garden crop grown in Sind and in the west of India (except in Northern Gujarat), as a vegetable for human consumption and as pulse and fodder chiefly for cattle and horses

Varieties—There are many varieties, but the chief grown in the Bombay Presidency are "*Sotia Gouar*', '*Pardeshi*', "*Deshi*", '*Makania*" and "*Wakadia*"

Parts Used—Pods, seeds and foliage.

Constituents.—Some samples of '*guvar*" cultivated in the Bombay

Habitat —Grows wild in Southern India.
(Chopras 'I D of I pp 481)

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756 CYANANTHUS Sp Hk f & T
(N O —Campanulaceae)

Punj —Murra
Parts Used —Flowers
Uses —Flowers are used in asthma.
(Chopras I D of I pp 481)

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757 CYANOTIS AXILLARIS, Schultes
(N O —Commelinaceae)

Hind —Soitraj *Bom* —Itsaka. *Tam* —Nirpulli, Vazhukkai-pillu *Tel* —Amaratakada
Habitat —This is a weed of cultivated fields
Uses.—Externally applied in ascites
(Chopras I D of I pp 481)

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758 CYANOTIS CUCULLATA
(N O —Commelinaceae)

Habitat —This is a well known weed of cultivated fields.
(Chopras I D of I pp 481)

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759 CYANOTIS TUBEROSA, Schultes
(N O —Commelinaceae)

Parts Used —Root
Uses —Root is used in continued fever

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760 CYCAS CIRCINALIS, Linn.
or C. inermes
(N O —Cycadaceae)

Hind —Jangli madan must ka phul *Bom* —Buzoorbutu *Duk.*— Pahadi nadanmastaka phul *Mah* —Malabari supari *Tam* —Madan akamapu. *Tel* —Ranaguva Kamakshi *Mal* —Rinbadam Todda pana, Eenthakay *Burm* —Mudang *Smh* —Madoo guss *Goa* —Amdesamotapana

Habitat—Malabar Coast and dry hills in west of Madras

Parts Used—Male bracts nuts and stem.

Constituents—Bracts or scales contain in a dried state much albuminous and mucilaginous matter soluble in water but no alkaloid or other principles found that would account for its narcotic action but a glucoside *cycasin* is found It yields a gum resembling tragacanth and also a kind of sago or flour

Action.—Male bracts are used as narcotic they have a property that intoxicates insects that rest upon them also stimulant and aphrodisiac.

Uses—*Bracts are powdered* up with other substances and made into a confection useful in seminal weakness *Flour* or a kind of sago (called in Malabar *Indum podi*) made from the nuts and the stem is reckoned superior to the flour of Caryota but inferior to rice and eaten by the hill tribes and the poorer classes when rice is scarce during famine-times The fruit bearing cone reduced to a poultice and applied to the loins removes nephritic pains

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761 CYCAS REVOLUTA Willd

(N O—Cycadaceae)

Chinese—Wu lou tzu has an expectorant tonic and nutrient action (Chopra's I D of I pp 481)

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762 CYCAS RUMPHII Miq

(N O—Cycadaceae)

Tam—Wara gudu. *Malay*—Todda maram.

Parts Used.—Resin and scales

Uses.—Resin is applied to malignant ulcers, scales are used as anodyne (Chopra's I D of I pp 481)

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763 *CYCLAMEN PERSICUM, Miller*

(N O—Primulaceae)

Ind Bazar—Bakhur-i Maryam.

Constituents—Glucoside Saponin and Cyclamin

Action.—Emetic, emmenagogue purgative and diuretic

Uses—Used as a fish poison and as an antidote to snake-poison. (Chopra's "I D of I" pp 481)

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764 CYDONIA VULGARIS, Pers See Pyrus cydonia

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765 CYLISTA SCARIOSA, Roxb

(N O —Papilionaceae)

Sans —Nadimshpava *Mah* & *Kon* —Ran ghevada *Guj* —Kamalawel *Tel* —Karuchikkudu *Can* —Kadlenare

Habitat —This perennial twiner is found growing in the woods of the Konkan, Deccan, Canara and Orissa

Parts Used —Woody tapering root

Constituents.—Tannins, starch and a soft yellow tenaceous resin, but no alkaloid

Action —Root is astringent

Uses— *Root* in the form of decoction is a remedy for dysentery diarrhoea and leucorrhoea Dose is from half to one ounce *Externally* the root is applied as poultice along with other drugs, to reduce tumours *Root* when cut gives out a reddish viscid juice which on drying becomes black and brittle and this may be seen adhering to the short pieces of the dry root, which are offered for sale in the bazars

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766 CYMBOPOGON CAESIUS, Staph

(N O —Gramineae)

Eng —Inchi grass

Constituents —Borneol is a constituent of the oil from *Inchi* grass Oil does not undergo any change in keeping, it is sweet smelling and resembles palmrosa oil in odour (Kishorilal Moudgill Trivandrum)

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767 CYMBOPOGON CITRATUS & C. FLEXUOSUS

or C. schoenanthus See Andropogon citratus

(N O —Gramineae)

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768 CYMBOPOGON FLEXUOSUS, Stapf

(N O —Gramineae)

Eng —Cochin or Malabar grass

This grass is similar to C citratus, and grows wild in Travancore and other parts of Southern India and is also cultivated to some extent in the northern part of Travancore and in Cochin State

Constituents.—Yields an oil not distinguished in commerce from that obtained from C. citratus

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769 CYNANTHUM IPECACUANHA *or* C VOMITORUM
See *Asclepias asthmatica*

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770 CYNARA SCOLYMUS
See Helianthus tuberous

Eng—Globe Artichoke, *Hind*—Hatichuk, Kunjor

This is a perennial plant, a native of the north of Africa and south of Europe, but cultivated in gardens and hill gardens of Bombay Presidency and thrives in most parts of India. There are several varieties named in seed lists but the kinds most generally grown are those known under the names of Green Globe and Purple Provence

Parts Used—Immature flower heads of which the fleshy receptacle and base of the involucral scale is edible and is a most delicious vegetable

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771 CYTISUS CAJAN See Cajanus indicus

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772 CYNODON DACTYLON, Persoon
(*N O*—*Gramineae*)

Sans—Granthi, Sveta, Doorwa, Bhargavi *Eng*—Bermuda grass, Dog grass, Hurriallee grass, Couch grass, Creeping panic grass *Hind*—Doorva *Ben*—Durba *Snd*—Harialı, Chhil har *Mah*—Haryali, Doorva *Punj*—Talla, Kabbar, Dub *Tel*—Garike, Haryali, Gerike, *Tam*—Arugu, Aruvam pillu, Mooyar pul *Mal*—Karuka pullu *Can*—Garikae, Ambate-hullu *Kon*—Jirbankura *Fr*—Chiendent *Ger*—Wucherndu Hundzal n

Habitat—This elegant perennial grass grows everywhere throughout India.

Parts Used—Herb and root stalk

Action—Fresh juice is demulcent astringent and diuretic Plant is acid haemostatic and laxative

Uses—*Fresh expressed* juice of the grass is useful in haematuria, in vomiting and as an application in catarrhal ophthalmia also to cuts and wounds as it checks bleeding for this purpose bruised

grass may also be applied, *juice* when sniffed up in case of epistaxis proves a valuable styptic and stops bleeding Fresh juice is used also in cases of dropsy, anasarca, chronic diarrhoea and dysentery *Decoction of the roots* is valuable in cases of vesical calculus and in secondary syphilis *Cold infusion of the grass* stops bleeding from piles, it is generally given with milk, useful in dysuria and irritation of the urinary organs Root crushed and mixed with curds are given in cases of chronic gleet dose is two drachms of the roots The plant is used in scorpion sting "The rhizome of this grass, which is said to resemble cough grass (i e Agropyrum repens) in medicinal properties, is being substituted in the market to true cough grass, and may be easily distinguished from the *genuine drug* (cough grass) by the fact that its section is blackened by solution of iodine owing to the presence of abundant starch

773 CYNODON LINEARIS

Sans—Nila Durva

Is a species found in Bengal whose root stalk is used like the leaves of C dactylon

774 CYNOMETRA RAMIFLORA, Linn

(N O—Caesalpiniaceae)

Mal—Irripa *Tam*—Irapu, Irudbu *Ben*—Shingr

Found in Western Peninsula and Malabar, the root of which has purgative properties Leaves boiled in cow's milk and mixed with honey are applied to scabies leprosy and other scaly cutaneous diseases An oil is also prepared from the seeds and used for the same purpose

775 CYPERUS BULBOSUS

(N O—Cyperaceae)

Growing in the sandy plains in Kathiawar and on the Coromandal Coast (*Guj*—Thegi) the tubers of which are starchy and cooked and eaten like potatoes They are of much value in famine times

776 CYPERUS CANESCEUS

Is a species found in Bengal and the East Indies where the leaves are used as a remedy for colic and amenorrhoea

777 CYPERUS DISTACHYOS

Is a bush found in Bengal, where the leaves are used as diuretic and sudorific

(Chopra's I D of I pp 481)

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778 CYPERUS INUNDATUS, Roxb

(N O—Cyperaceae)

Hind & *Ben*—Pati

Parts Used—Tubers

Action—Tubers are tonic and stimulant

(Chopra's I D of I pp 481)

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779 CYPERUS IRIA Linn

(N O—Cyperaceae)

Bur—Buro chooch

Action—Tonic stimulant stomachic astringent

(Chopra's I D of I pp 481)

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780 CYPERUS JUNCIFOLIUS Klein

(N O—Cyperaceae)

Punj—Mutransialian

Action—Cordiachal stomachic

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781 CYPERUS PERTENUIS C hexastachyus

(N O—Cyperaceae)

Sans—Mustaka *Bom*—Musta *Can*—Konnari gadde *Eng*—Indian Cyperus *Hind, Ben* & *Duk*—Nagara motha *Mal*—Kora, Kizanna *Mah* & *Ben*—Lavala *Pers*—Muskezamin *Sind*—Jata *maktu* *Tam*—*Mutta Kachi* *Tel*—*Kala tunga* *Mustc*

Habitat—Damp places in Bengal

Parts Used—Tubers

Constituents—See C. *rotundus*

Action—Refrigerant, aromatic stomachic and alterative

Preparations—Decoction (1 in 20), dose—1 to 2 fluid ounces, Oil

Uses—*Root* or *tuber* is given in torpid liver chronic fevers dyspepsia and derangements of the bowels In chronic fevers it

relieves thirst and heat of the body It is also useful in ascites and as anthelmintic for round worms In conjunction with valerian the root is given in epilepsy As astringent it is useful in diarrhoea The *decoction of it* is used in gonorrhoea and in syphilitic affection A decoction of the following powder is given in fevers —Take of *Nagarmotha*, Solanum indicum, Cocculus cordifolius, ginger and emblic myrobalans, each equal parts Powder them all and divide into five parts One part is taken daily in decoction with a little honey and long pepper as a febrifuge In dysentery *Nagarmotha Mocharas, Lodhra*, flowers of Woodfordia floribunda, unripe Bael fruit and the seeds of Holarrhena antidysenterica are ground with whey and molasses and given in doses of 1½ drachms Root yields an *oil* which is used as hair tonic and perfume, and it is used in the preparation of medicated oils

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782 CYPERUS ROTUNDUS Linn

(N O —Cyperaceae)

Sans —Musta , Mustaka , Bhadramusta , Kurubilva , *Eng* —Nut grass *Hind* —Korehi jhar *Ben* —Moothoo , Mutha , Nagarmothee , Sada kufee *Bom* —Musta *Guj* & *Mah* —Barik motha , Bimbal *Tel* —Tungamusti , Gandala , Tunga musthalu *Tam* —Korai kizanghu , Tunga gaddai *Mal* —Karimuttan , Kora kizanna *Can* —Tangahullu , Koranari gadde , Abdalhullu *Kon*—Bhadramusti *Sinh* —Kalanduru

Habitat —It is a plentiful species occurring throughout the plains of India, especially South India

Parts Used —Tuber or bulbous root

Constituents —Fat, sugar gum carbohydrates essential oil albuminous matter starch fibre and ash There are traces of an alkaloid

Action – Stimulant tonic demulcent diuretic anthelmintic, stomachic carminative, diaphoretic astringent, emmenagogue and vermifuge

Action & Uses in Ayurveda and Siddha.—Katu tikta kashaya rasam, seeth veeryam pitta kapha haram vrahi dipanam, pacha nam, in trishna rakta dosham, jwaram, aruchi krimi (Therapeutic Notes)

Action & Uses in Unani—Hot 2°, Dry 2°, diuretic, emmenagogue, aphrodisiac, dries the futhoobath in stone bladder, strengthens memory, chronic fevers, palpitation loss of appetite, in scorpion bite (Therapeutic Notes)

Uses.—*Tubers* are useful in infusion or as soup in fever, diarrhoea, dysentery, dyspepsia, vomiting, cholera, etc. *Bulbous roots* are scraped and pounded with green ginger, mixed with honey and given in cases of dysentery, gastric and intestinal disorders, in doses of about a scruple The Romans used it as emmenagogue in uterine complaints In larger doses it is used as an anthelmintic to get rid of worms Fresh tubers are applied to the breast in the form of paste or warm plaster as a galactagogue Paste is applied to scorpion stings and when dried to spreading ulcers Following decoctions are recommended for use in fevers —

(1) *Shadanga Paneeja* —Take of the tubers of Cyperus rotundus, red sandal wood root of Andropon muricatus, Oldeolandia herbaceæ, Pavonia odorata, and dry ginger each ooe drachm, water two seers, boil down to one seer This decoction is given as a drink for appeasing thirst and relieving heat of the body in fever It may be taken *ad libitum*

(2) Take of Cyperus rotundus 5 Solanum jacquini 4, Gentian root 4 Cocculus cordifolius 4 Dried ginger 6, Oxalis corniculata 6 Red sandalwood 4 and Poopy capsules 6 parts. Mix and make a decoction To the decoction when ready add honey and long pepper powder Dose —oz ½ to oz ½ Useful in recurrent or relapsing fever

(3) Take of Andropogon muricatus 4, Cyperus rotundus 5, Chicory 3 flowers of Woodfordia floribunda 4 March mallow root 5, Common mallow 6 Carum nigrum 7, Dried ginger 6, Pimpinella anisum 6, Myrtus communis 4, Poppy Capsules 4, Cardamoms 6 Mint, Spearmint 4 Calumba root 6, Onosma bracteatum 4 Pomegranate flowers 4 and sugar 10 parts Mix and make a decoction in the usual way, dose —oz. ½ to 1½ ozs Useful in long standing fever, cachexia anorexia, chronic diarrhoea, and dyspepsia

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783 CYPERUS SCARIOSUS, Br See C. rotundus.

(N O—Cyperaceae)

Family which grows in the Gwalior State of India.

Gwalior.—Nagarmowtha, *Sans*—Nagar mustaka, *Hind* & *Ben*—Nagar motha *Mah*—Lawala *Tam*—Koraik kizhangu), bulbs of which are used as digestive (Chopra's I D of I pp 481).

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784 CYPERUS TEGETUM See C esculentus

N B —Cyperus is a genus of sedges containing about sixty species The best varieties being C. corymbosus, C tegetum, C. esculentus These varieties are glabrous rush like sedges which grow to a height of about 2 to 4 feet (Tamil name for sedge is corah ') Several species of Cyperus *occur in* South India

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785 DAEDALACANTHUS ROSFUS T Anders

(N O —Acanthaceae)

(*Mah*—Dasamuli having ten roots)

Is a native of Western India Its root boiled in milk is a popular remedy for leucorrhoea, dose is one drachm In the southern Konkan it is given to pregnant cattle to promote the growth of the foetus.

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786 DAEMIA EXTENSA R Br or Asclepias echinata

(N O —Asclepiadeae)

Sans—Phala kantak *Hind*—Utranajutuka, Utran, Sagovani *Punj*—Trottoo *Guj*—Nagaladudheli *Ben*—Chhagal bati, Chagul banti. *Smd*—Kharyal, Dudhavela *Kon* & *Mah*—Uttarani, Utarni *Tam*—Uttamani, Veliparutti *Tel*—Jittupaku, Gurtichettu, Dusta puchettu. *Mal*—Veliparitte *Can*—Talavaranaballi, Juttuve, Halakoratige.

Habitat.—This common twiner is found throughout India

Parts Used—Leaves roots and root bark

Constituents—Leaves like those of tobacco and adhatoda contain an alkaloid named *Daemine* soluble in ether alcohol and water and not crystallizable The ash from the dried and powdered leaves was found to amount to 15 33 p c Root is also found to contain an alkaloid having similar properties There is a bitter glucoside also

Action—The plant is extremely irritant Flowers and leaves are emetic, expectorant and anthelmintic Its actions are similar to those of scammony

Preparations.—Decoction of the leaves, dose —1 ounce, juice of the leaves, dose —1 drachm, powder of the root or root bark, dose —5 to 10 grains Oil and Poultice

Uses—*Decoction of the leaves* is given to children as an anthelmintic, in doses not exceeding three tablespoonfuls, 'in one to two ounce doses it is a good expectorant' (Chopra), *decoction or juice of leaves* is useful also in asthma and snake bite "*Powdered leaves* in doses of 5 to 10 grains are also good expectorant (Chopra), *Externally* the juice combined with lime is applied to rheumatic swellings A mixture of the juices of these leaves and of the leaves of Ocimum sanctum obtained by squeezing them between the palms of the hands is a stimulating emetic, 'honey is also added to the decoction of the leaves to help the expectorant effects (Chopra), combined with ginger, the juice of the leaves is given in rheumatism. *Fresh leaves made into a pulp* are used as a stimulating poultice in carbuncle with benefit Juice of the leaves is employed in the preparation of a *medicinal oil* used in rheumatism amenorrhoea and dysmenorrhoea and the *root bark* is used as a purgative in rheumatic cases in doses of 1 to 2 drachms mixed with cow's milk. The plant is extensively used in Bombay Presidency for its emetic and expectorant properties

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787 DALBERGIA EMARGINATA, Roxb

(N O—Papilionaceae)

Sans—Krishna sunsapa. *Ben*—Kalasessoogachh *Mah Tam*—Kalasunsapa. *Can*—Kateyvadi

Is a tree growing in Maharashtra and in Bengal, useful as a bitter tonic, stimulant and appetiser (stomachic) in dyspepsia, diarrhoea leprosy, obesity, worms etc.

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788 DALBERGIA LANCEOLARIA, Linn. or D frondosa,

Is a beautiful plant of Papilionaceae

(*Hind*—Bithua, Takoli, *Ben*—Chakemdia, *Nepal*—Bandersuns, *Raj*—Passi; *Bom*—Jakoli, Takoli, Harrani, Gengri, *Mah*—Kanrehi, Dandusa, *Tam*—Nalvalangee, *Tel*—Erra pachchani, Pedda sophora, Pasarganni)

round on plains from Western Himalayas down to Ceylon Bark, oil obtained from the seeds, leaves and roots are employed medicinally Bark along with that of Flacourtia ramontchi is an external application during intermittent fever

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789 DALBERGIA OOGEINENSIS
or ougeinensis Roxb
See—Queinia dalbergioides Benth
(N O—Papilionaceae)

Is another species of the above family found in Bengal, Sub Himalayan tract Central India and West Coast

Sans—Trinisha, Sejanduna, *Gwalior*—Tinsa, *Ben*—Jarul gachh *Hind*—Sandam,, Terrichcha *C P*—Kalaphalas *Mah*—Syandan, *Bom*—Tanach *Tel*—Tella motuku, *Can*—Kari mutal

Has stimulant and astringent properties *Bark* when incised furnishes gum (a kino-like exudation) which is useful in diarrhoea, dysentery, leprosy, leucoderma and gonorrhoea A decoction of the bark is given when the urine is high coloured In the C P, the bark is used as a febrifuge Leaves and seeds are also used medicinally

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790 DALBERGIA SISSOO, Roxb or Sisu
(N O—Papilionaceae)

Sans—Kapila sinsapa, (ash coloured), Shingshupa *Eng*—Black wood, Rosewood *Hind*—Sisam *Sind*—Shisham *Ben*—Sishu *Punj*—Talisafedar *Tam*—Nuku kattai *Tel*—Sissukarrha *Mah*—Tali, Sissu, Pivala sesaba. *Can*—Hambadavu

Habitat—Bombay Presidency

Parts Used—Bark, roots, leaves and mucilage

Action—Bark or raspings of the wood are alterative, roots are astringent, Leaves are bitter and stimulant

Uses—*Dried bark* and *fresh leaves* are used as a local astringent and haemostatic in various forms of haemorrhages, epistaxis, haemostatic haemoptysis, haematemesis, menorrhagia, bleeding piles and also for varicose veins *Raspings* of the wood are useful in leprosy, boils, eruptions and to allay vomiting *Oil* is applied externally in cutaneous affections *Mucilage* of the leaves mixed with sweet oil is a good application in excoriations *A decoction* of the leaves is given in the acute stage of gonorrhoea

791. DALBERGIA SPINOSA, Rxb

See Drepanocarpus spinosus

(*Burma*—Techinya *Tel*—Chikanki).

Is a species met with in the tidal forests along the coasts from Chittagong to Tennasserin, also in the Ghats and on the coast of the Western Peninsula. Roots of this tree absorb alcohol and a teaspoon ful of the powder of the root in a tumblerful of water is sufficient to destroy in less than half an hour the evil effects of alcohol even in cases bordering on delirium tremens

792 DALBERGIA SYMPATHETICA, Nimmo

(*Bom*—Peatguli *Mah*—Chinchino, Pentgul *Goa*—Titabh *Kon.*—Katikamto)

Is a plant of the Hills in the Western Himalayas Leaves are used in Goa as an alterative Bark is used as a *lep* to remove pim ples. Foilage resembles that of the Tamarind and is eaten by cattle

793 DALBERGIA VOLUBILIS, Roxb

Is a tree of the Sub Himalayan tract from Kumaon eastwards Central and Southern India.

(*Mah*—Alai, Manganver, *Hind*—Bhatia, *Bom*—Alai; *Tam*—Punali, Bandagarjana, *Tel.*—Bandeegurjan, *Mal*—Rongeli Juice of the leaves is applied to aphthae and used as a gargle in sorethroat. Root-juice with cumin and sugar is given in gonorrhoea

794 DAPHNE OLEOIDES Schreb

(N. O—Thymelaeaceae)

Punj—Mashur, *Bom*—Pech

Action—The drug is poisonous (Chopra's 'I D of I, pp 482)

795. DATISCA CANNABINA, Linn

(N. O—Datiscaceae)

Hind & *Bom*—Akalber, Akalbir, Akkalber *Punj*—Bha ngjala; Bujrbanga *Kash*—Veglangel, Teherg

Habitat—A large tree, the bark of which has a yellow appea rance, growing in tropical and sub-tropical Himalayas from Kashmir to Nepal

Parts Used—Herb, root and bark.

Constituents —Leaves and roots contain a glucoside *datiscin*, a resin and a bitter principle Datiscin occurs as colourless silky needles or scales, little soluble in cold water, sparingly so in warm water and ether Crystals are neutral and bitter in taste

Action.—Bitter, stomachic alterative febrifuge, expectorant and laxative.

Preparations.—Infusion of the plant (1 in 10), dose —½ to 1 ounce, Powder, dose —5 to 15 grains

Uses —Infusion of the herb is given in scrofula, intermittent fever with vomiting and in catarrh of the throat and the bronchi. Bruised root and leaves are applied to the head in headache as sedative

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796 DATURA ALBA, Nees, or D nilhummatu

(N O —Solanaceae)

Sans —Umatta vrikshaha, Kanaka-dattura, Dhustoora, Krishnaunmatta, *Eng* —Thornapple *Hind* —Sadah dhatura, Safed dhatura, Kaladhatura. *Punj* —Tattur, Dattura. *Ben.*—Dhutura. *Mah* —Dhotari. *Duk* & *Guj* —Dhatoura. *Pers* —Tatulah, Kouz masab *Arab* —Jouz ula mathil, Jouz masal, Jouz asrad. *Tel.*— Ummatha, Umetta Dhaturamu. *Tam.*—Umatai, Umathan *Mal* — Ummatum, Ummam Ummatha. *Can* —Ummattay *Kon* —Dutro *Kath.*—Dathir *Burm* —Padayin. *Smb* —Attana. *Malay* —Kachu bang *Fr* —Datura fatesux. *Ger* —Weichaariger stechapfel.

Habitat —This plant exists in different species distinguished by prefixes denoting the colour of the flowers—white, purple, etc. These species are found growing commonly in waste places throughout India, from Kashmir to Malabar.

"D Stramonium is indigenous to India and grows abundantly throughout the temperate Himalayas from Kashmir to Sikkim. There are two varieties of D fastuosa, the black variety is known as "*Kala dhatura*" in Hindi and the white variety is known as '*Safed dhatura*" D fastuosa var alba (*Safed-dhatura*) is widely distributed in the temperate Himalayas from Kashmir to Sikkim. It is particularly abundant along the east and west of the outer Himalayas and covers a region of over 1000 miles It grows abundantly in Kashmir and around Simla, and is to be found along the roadside and in villages, but is rarely seen on the wild uncultivated hills

In the deep valley of the Sutlej it is particularly plentiful miles of the country being literally covered with this plant [1]

Parts Used—The whole plant—leaves, seeds and roots dried leaves and the dried ripe seeds, and fruit

Constituents—Leaves contain a poisonous alkaloid—*daturine* mucilage, albumen and ash 17 p c which contains potassium nitrate 25 p c Seeds contain the active principles daturine resin mucilage proteids, malic acids, scopolamine and ash 3 p c. Daturina daturin an alkaloid identical with atropine combined with malic or daturic acid and consisting of alkaloids hyoscyamine, atropine and hyoscine It is a tropate of tropin and occurs in light feathery crystals, dose—1/120 to 1/40 grain in solution generally given with dilute sulphuric acid There are marked variations in the alkaloidal content of D stramonium grown in different localities These vary from 0 47 to 0 65 per cent The mixed Indian seeds from D fastuosa give a total alkaloidal content of 0 23 per cent. consisting chiefly of hyoscyamine and hyoscine in proportion of 2 to 1, together with a little atropine The capsules contain 0 1 per cent of total alkaloids consisting chiefly of hyoscine only. The seeds of D fastuosa (D alba variety) contain 0 216 per cent of hyoscine 0 034 per cent of hyoscyamine, and traces of atropine [2]

Action— Datura leaves closely resemble Stramonium leaves in appearance and have a similar characteristic odour and a bitter taste [3] The plant as a whole has narcotic anodyne and antispasmodic properties, analogous to those of belladonna, it causes dilatation of the pupil when locally applied in watery solution equal in effect to atropine solution of the strength of 1 in 120 Dried seeds are thought to be more powerful soporific than the leaves. "Vaidyas regarded the drug as intoxicant, emetic, digestive, antispasmodic, and healing The black variety is considered to be more powerful."[4]

Action & Uses in Ayurveda and Siddha.—Tikta rasam, ushna veeryam katu vipaka *Leaves* —Swasam, kasam, externally for fomentations ulcers, poisonous bites, earache *Fruit* —Vatha diseases, karappan granthi, sore *Seeds* —Diarrhoea, antipoison, intoxicant, fevers Externally for piles, vatha diseases. Black variety is more potent and aphrodisiac. (Therapeutic Notes).

Action & Uses in Unani— Cold 4°, Dry 4°. Sedative, hypnotic,

anti nuzla, antispasmodic in asthma, aphrodisiac (Therapeutic Notes).

Preparations—Tincture Extract, Liniment Pills, Paste or Plaster, Poultice, Decoction Confection, medicated oil and ghee

Uses— The leaves and seeds of the variety Alba were made official in the Pharmacopoeia of India and galenical and other preparations like tinctures and plasters were frequently used [5] The different species of this plant possess the same medicinal properties although the purple variety is generally regarded as the more valuable Much caution is necessary in its employment as, in overdoses it acts as a violent narcotic poison Both the black and the white varieties of this plant have long been noted for their intoxicating, narcotic, anodyne and antispasmodic properties, they produce temporary insensibility in ordinary doses *Seeds* are in popular use in India by the dissipated and the depraved in combination with *sabja*, toddy, rice beer, *majun ganja* and the like, to increase their stupefying effect *Smoking* of the dried leaves and stem (10 to 20 grains to begin with subsequently increased to 30 grains) in a pipe or in cigarettes is found to relieve spasmodic asthma and kindred affections When the leaves fail the dried seeds may be tried The earlier in the attack it is employed the greater are the chances of success Dried leaves and seeds of D stramonium are used in the British and the U S Pharmacopoeias as antispasmodic in such conditions as asthma whooping cough etc [6] A good plan for the asthmatic is to adopt the habit of smoking the drug the last thing at night whether an attack is threatening or not at any rate he should keep a cigarette or a pipe of it already filled and ready by his bed side for using it immediately on the commencement of the attack *But in all cases it should be immediately discontinued if it produces giddiness, a feeling of sickness or any other unpleasant symptom* The smoking has also proved beneficial in chronic coughs, hard and dry, with violent paroxysms and scanty expectoration

For rheumatic swellings of the joints, lumbago, sciatica, neuralgia painful tumours, nodes, glandular inflammations such as mumps etc., the *local application* of dhatura leaves relieves pain by acting as antispasmodic, when applied in the form of *poultice* (made by bruising the fresh leaves into a polp and mixing them with the aid

of a little water, with an equal weight of rice flour) or *epithem* which consists of steeping a few entire leaves in arrack or any other spirit and placing them whilst wet over the seat of pain and securing them in that position by a bandage or as *fomentation* made by infusing the leaves in boiling water in the proportion of one ounce to each pint of liquid, and applied as hot as can be borne by means of two or more thickly folded clothes or preferably flannels alternating with one another Tender and fresh leaves of Dhatura may be used along with ghee or *tailam* to cover the inflamed areas according as the wound requires, *Samana* or *Sodhana* treatment The *liniment* (prepared by macerating for seven days one ounce of the bruised seeds in a pint of sesamum or other bland oil and straining) is also similarly useful These preparations are useful in relieving the pain attendant on painful or difficult menstruation, and in some painful affections of the uterus they are more advantageously placed on the lower part of the abdomen They also prove beneficial especially the liniment in relieving neuralgic pains, especially of the face, it is well rubbed in over the seat of pain and along the space immediately in front of the ear or rather in the narrow space between the ear and the jaw

The tincture of datura (1 in 8) is a useful and cheap substitute for opium, twenty drops of the tincture being equal to one grain of opium, dose of the tincture is from 5 to 20 drops The *extract* is a convenient substitute for the extract of belladonna in ¼ to ½ grain doses employed successfully in mania and epilepsy Mixed with glycerine it may be applied to prevent mammary abscesses In tetanus or lock jaw consequent on a wound apply locally the poultices of the leaves to the wound previously cleansed by the irrigation of tepid water and renew them three or four times a day and internally administer the tincture of datura, in doses of 20 to 30 drops in water, three or four times daily, regulating the dose according to effect produced, and continue (unless the spasms previously yield) till the full dilatation of the pupil is produced with some degree of giddiness, drowsiness or confusion of ideas, then stop the medicine this is recommended in the absence of more effective agents

If the spasms abate it, if they recur at more distant intervals and are less severe and prolonged when they do occur, the medicine in smaller doses at longer intervals may be continued till the spasms cease altogether; but if, under the use of the remedy, after it has

produced its specific effects on the system the spasms show no sign of abatement, no good but perhaps harm will result from continuing it ' In addition to the above means *datura liniment* should be well rubbed in along the spine several times daily Further details of treatment are the same as those advocated in the use of belladonna Employed as above directed datura may be used with safety provided that the case is carefully watched by the doctor and the medicine administered or discontinued on the development of its physiological effects In cases of guineaworm a *datura poultice* is very useful in relieving the pain and hastening the expulsion of the worm Roasted leaves applied to the eyes give relief in ophthalmia, similarly they are useful in enlarged testicles, boils, etc.

Fresh juice of the leaves is a popular household application to subdue pain and inflammation in glandular swellings such as mumps in ophthalmia, ear ache, tooth ache, to relieve pains of gout and rheumatism and to inflamed breasts Fresh juice may be used alone or mixed with opium Leaves are also applied as anodyne poultice to inflamed breasts to check the inflammation and excessive secretion of milk A *paste* made of turmeric and datura fruits is also a useful application in such cases *Leaves boiled in oil* or the *oil* itself are a good application to haemorrhoids anal fissures and other diseases of the rectum leading to tenesmus, an *oil* prepared by boiling datura seeds and sesamum oil with an alkaline water made from the ashes of Colocasia Indica is used in psoriasis The oil is also rubbed on in rheumatic and other pains of the limbs, &c , applied also in skin diseases as pediculi lice etc. Internally *juice* of the leaves is administered with curdled milk in gonorrhoea. It is also a popular internal remedy for the prevention of hydrophobia The treatment consists in giving the medicine previous to the time of the development of hydrophobia The treatment is to give the following medicine two weeks after the patient has been bitten i e, between the 15th and 25th days —In the morning after the 15th day a desert spoonful of wood charcoal powder is given, half an hour after, an ounce of the juice of the black datura leaves is given which is soon after followed with palmyra jaggery or something else check vomiting Then the patient is bound lest he does mischief to others and is kept in the sun for 4 or 5 hours until noon Then the patient gradually becomes mad and does many things like the mad dog (evidence of the patient having been bitten and of his total recovery) In the

afternoon many pots of cold water are poured over his head although this causes great annoyance to the patient and he resents it to the utmost. Food is now given such as salt fish, brinjal horse gram, Bengal gram, etc The patient is then considered out of danger and is given a simple light diet In case of treating a person already suffering from hydrophobia the front part of his head is scratched with a lancet so as to make it bleed a little and the ground leaves of the black datura rubbed and the juice given internally

The above method of treatment is one of the several modes employed by Vaidyas The root of datura alba is boiled in milk and this milk is administered with the addition of clarified butter and treacle in insanity Seeds, on account of their narcotic effect are used by criminals such as thieves, robbers, etc., in sweetmeats, *hooka bhang* and in spiritous liquors also with the aid of their smoke, in order to stupefy their victims Seeds are also considered to have a strong aphrodisiac effect They are employed by Hakims in the preparation of a medicated ghee, it is recommended to be rubbed on the genitals twice a day to stimulate them, and about 4 grains of the ghee is also given internally once a day Seeds ground and made into *pills* and laid upon the decayed tooth relieve tooth ache, *but greatest caution should be taken in applying the medicine, since it is a powerful narcotic drug* The toxic properties of datura seeds were well known to the ancient vaidyas and there is frequent mention in the literature of their use for suicidal and homicidal purposes Besides the galenical preparations made from D Stramonium, it is the main ingredient of cigarettes and the fumigating powdered employed in Asthma [1] Seeds are useful as astringent in bowel complaints, also fevers with catarrhal and cerebral complications skin diseases as lice etc., in which a paste of the seeds and juice of the leaves form useful applications Following are useful domestic preparations —(1) Dried datura leaves 15 grains are smoked in a pipe for relief of asthma and paroxysmal cough (2) Take of datura leaves 1 oz and boiling water 1 pint, for use as a hot fomentation, in cases of dysmenorrhoea lumbago and pleurodynia (v) Take of the seeds of datura 2, Mercury sulphide 1, *Trikatu* (compound preparation of equal parts of *Pipali, Miri* and *Sunta*) 1 and Aconite 1 part Mix, rub the whole together with lemon juice, and make a pill mass, dose —5 to 8 grains, useful

(1) to (7) Chopra « "I D of I

in fever, catarrhal bronchitis and cough (4) *Kanaka Asava* is a wellknown preparation useful in cough, asthma and phthisis, given in doses of half to two tolas twice after meals, and a teaspoonful with 10 drops of honey and a little water given to children with bronchopneumonia even with 101 to 103 degrees temperature (F) gives great relief The chief ingredients of it are —Datura, Adhatoda vasaka Glycyrrhiza glabra, Piper longum, Woodfordia floribunda and Vitis vinifera

N B — The alkaloidal content of D fastuosa is undoubtedly low but it grows so abundantly that it would be worth while using it in medicine not only in the form of ordinary galenical preparations but also for extraction of the alkaloids hyoscyamine and hyoscine ' (Lt Col Chopra)

(Chopra s I D of I pp 482)

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797 DATURA FASTUOSA, Linn

(N O —Solanaceae)

Sans —Krishna dhatura *Hind & Ben* —Kala dhatura *Tam* —Karu umattai

Constituents —Similar to Dalba

Uses —Used in snake bite

(Chopra s I D of I pp 482)

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798 DATURA METAL, Linn

(N O —Solanaceae)

Constituents —Alkaloids hyoscyamine, hyoscine atropine

Uses —Same as other species

(Chopra s I D of I pp 482)

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799 DATURA STRAMONIUM, Linn

(N O —Solanaceae)

Ben —Sada dhatura *Punj* —Tattu Dattura *Tam* —Umattai

Constituents —Atropine hyoscine, hyoscyamine

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800 DAUCUS CAROTA, Linn D vulgaris

(N O —Umbelliferae)

Sans —Shikha mulam, Shekhamulama, Garijara *Eng* —The Carrot *Sind* —Pitai Gajar, Petaigagar *Hind, Mah Guj & Ben* —

Gajar *Arab*—Jazar *Pers*—Gazar, Zardak *Kol*—Pita kande, Gajjara gedda *Tam*—Gajjara kilangu *Can*—Gajjari, Man jal mulangi *Kash*—Mormuj, Bulmuj *Fr*—Carotte Cultive *Ger*—Gemeiner Mohre, Karotti

Habitat—Indigenous to Kashmir and Western Himalayas, now largely cultivated in India for culinary purposes

Parts Used—Root and fruit

Constituents— The fresh vegetables (yellow and red carrots) contain —

	Yellow Carrots	Red Carrots
Moisture	81 40 p c	77 86 p c
Completely dried material contains —		
Ether Extract	1 72	1 12
Albuminoids (contg Nitrogen 1 23)	7 63	7 05 (contg Nitrogen 1·2%)
Soluble carbohydrates	74 96	73 60
Woody fibre	6 56	10 50
Ash (contg Sand 0 48 p c)	9 08	7 71 (contg sand 0 92)

(Bombay Govt Agri Dept Bulletin)

Root contains carotin hydrocarotin sugar starch pectin malic acid lignin albumen, extratives salts and a volatile oil Fruit contain volatile oil and a fixed oil the two principal constituents are a terpene belonging to Wallach's pinene group and an oxygenated body standing in near relation to cineol Carrots are exceptionally rich in iron a small proportion of which exists dissolved in cell sap and which is entirely precipitated by boiling As 0 00 mg in 100 g root

Action—Carrot has a beneficial influence on the kidneys and dropsy and prevents the brick dust sediment sometimes found in the urine As antiseptic it prevents putrescent changes within the body Seeds are used as aphrodisiac and nervine tonic. Carrots cleanse the blood Seeds are aromatic stimulant and carminative

Preparations—Infusion (1 in 10) dose —½ to 1 ounce FL Extract dose —5 to 30 minims, Powder

Uses—Seeds are used for producing abortion Fruits are recommended in chronic diarrhoea. Raw carrots after being thoroughly cleansed can be eaten with advantage for worm trouble

(Bombay Govt Agri Dept Bulletin) A *decoction* of carrot is a popular remedy for jaundice in Europe *Externally* the fresh *root* when scraped forms a good stimulating poultice for foul ulcers Raw rasped carrot made into an ointment with lard is much used in burns and scalds Carrots beautify the complexion Root is eaten either raw or boiled and seasoned with various spices or it is cooked with milk and sugar or *ghi* it is also pickled The pickle is prepared by boiling the roots and adding salt mustard seed and chillies, and it will keep good for one or two months The roots of coarser varieties are sometimes dried and ground into flour and eaten with milk or whey Carrots are also given as food to cattle and horses, either raw or cooked and the leaves and tops are highly valued as fodder, especially in seasons of drought Bombay Govt Agri Dept Bulletin

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801 DAVALLIA TENUIFOLIA, Wall

Refer Chopra's I D of I

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802 DEBREGEASIA VELUTINA

(N O—Urticaceae)

Grows on the hills of south India

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803 DELPHINIUM AJACIS, Royle

(N O—Ranunculaceae)

There is an alkaloid in this

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804 DELPHINIUM BRUNONIANUM Royle

Kumaon—Nepari, *Garhwal*—Kasturi, *Ravi*—Sapfulu, *Pangi*—Mundwal *Punj*—Laskar, *Hind*—Samp phali

Is an erect herb of the Ranunculaceae family, met with in the Punjab Himalayas and Western Tibet the leaves of which have a strong scent of musk and are offered to idols Juice of the leaves destroys ticks in animals especially in the sheep The plant is considered so poisonous that the dew from the leaves falling on grass is said to poison cattle and horses

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805 DELPHINIUM CAERULEUM Jacq

Is another species of the same Family met with in the same region from Kumaon to Sikkim, and known in the Punjab as *Dak*

bangu, the root of which is used as an application to kill maggots in the wounds of goats

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806 DELPHINIUM DENUDATUM Wall

(N O—Ranunculaceae)

Sans—Vishalakarani, Nirvishi *Pers*—Mafarfin *Arab*—Zhadvar, antila *Nepal*—Nilobikh *Bom & Hind*—Jadwar, Nirbishi

Habitat—Punjab West temperate Himalayas

Parts Used—Tubers (roots) and seeds

Constituents—Some species contain the alkaloids *delphinine* and *staphisagrine* both soluble in alcohol In ether delphinine is soluble but not staphisagrine As alkaloid *delpho curarine* (*Merck*) has been extracted from the root

Action—It is *alterative stomachic tonic* and *anodyne* It is considered to be a great antidote to poison particularly snake poison and the poison of Aconitum ferox Alkaloid *delphinine* is an antidote against muscarine and digitaline,

Preparations—Decoction (1 in 10) dose—2 to 4 drachms, Powder, dose 2 to 5 grains, Pill

Uses—*Root* is chewed to cure toothache, used as an adulterant for aconite *Decoction of rootlets* is used as a tonic in doses of 2 to 4 drs. during convalescence from fevers As an alterative it is given in syphilis and rheumatism. Following two preparations are generally recommended for use—(1) Decoction—Take of the tuber of Delphinium denudatum 5 drs stems and leaves of Onosma bracteatum 2 drs Make a decoction in the usual way, used in *nervous diseases, paralysis low fevers* and chronic liver diseases Dose—2 to 3 drs (2) Pill—Take of Delphinium denudatum. 1 dr, Amber (Cetacea) 10 grs, Saffron ½ dr, rub them together and mix with rose water to make a pill mass dose—2 to 5 grs, used as a tonic in diseases of the heart and brain in spermatorrhoea and in weakness of the genitals

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807 DELPHINIUM ELATUM, Linn. var *D. incisum* & *D. ranunculifolium*

(1% alkaloid is found in this drug)

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808 DELEPHINIUM PACIFLORUM, Royle.

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809 DELPHINIUM SPECCIOSUM, Jauka.

Used to destroy ticks in animals.

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810 DELPHINIUM ZALIL, Aitch et. Hemsl

Hind.—Asbarg *Bom.*—Gul-jalil.

Anodyne and diuretic, used in jaundice and dropsy; contains an alkaloid and a glucoside.

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811. DENDROBIUM CRUMENATUM, Sw.

(N O—Orchideae)

There is an alkaloid in this

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812 DENDROBIUM MACRAEI, Lindl.

(N O—Orchideae)

Sans—Jivanti, Jivani, Jivaniya; Jivishtesta; Sakashresta; Yasasvini, Jivbhadra, Mangalya *Hind*—Jaivanti; Jivanti; Jiba; Sag *Ben*—Jebat, Jivanti *Mar*—Jivanti.

Habitat—A much branched plant often found on Jambul trees; Sikkim, Khassia Hills, Konkan, Nilgiris, and common on hills of South India

Parts Used—Plant, root and stems

Constituents—Two resinous principles termed *Alpha* and *Beta. Jibantic acids* and an alkaloid called *Jibantine.* The *B* acid is bitter and soluble the *A* acid is insoluble in ether and slightly bitter.

Action—It is described by Sanskrit writers as cooling, mucilaginous, light, strengthening and *tridoshaghna* (cure of the disorders—*Vata, pitta* and *kapha*) Demulcent and tonic

Uses—As a tonic it is given in debility due to seminal discharges. The whole plant is used in decoction along with other drugs having similar properties Used in snake-bite also

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813 DENDROCALAMUS STRICTUS, Nees.

(N. O—Gramineae)

Hind—Bans kaban; *Pan* Karail; *Bom*—Bas; *Tam*—Kanka.

Constituents—Siliceous matter

Action—Tonic and astringent.

Uses—Leaves are eaten by animals

814 DERRIS ELLAPTICA Benth

(N O—Papilionaceae)

Malay—Tubah

Parts Used—Bark and roots

Constituents—Glucoside derrid anhydro derrid, tubo toxin, derrin

Action—Fish poison and larvicide

Uses—Used as a fish poison and larvicide

(Chopra's *I D of I* pp 483).

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815 DERRIS SCANDENS Benth.

(N O—Papilionaceae)

Ben—Noalata, *Punj*—Gunj, *Tam*—Nala tige

Habitat—Grows wild in Southern India

Parts Used—Bark in snake bite

Action—*Bark is cholagogue and is fish poison*

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816 *DERRIS ULIGINOSA*, Benth

(N O—Papilionaceae)

Ben—Panlata *Mah*—Kajarvel, Kirtana (worm killer)

Habitat—East Himalayas, Western Peninsula and Ceylon

Parts Used—Bark.

Constituents—Bark contains a neutral crystalline principle, wax two resins, two colouring matters and alkaloid and glucose, an acrid glucoside allied to saponin, gum and mineral matter 8 p c.

Action—Alterative and insecticide, bark is a fish poison

Preparations—Decoction (1 in 10), dose—2 to 8 drachms, Medicated Oil or *ghrita*

Uses—Bark is used as a fish poison and also to kill worms and insects which infest leaves and flowers As an alterative it is given in rheumatism, chronic paralysis and dysmenorrhoea in the form of a *ghrita*, combined with asafoetida, garlic plumbago root and used externaly in rheumatism.

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817 DESMODIUM GANGETICUM, DC.

See Hedysaram gangeticum

818 DESMODIUM GYRANS

(N O—Papilionaceae)

Is a small herb found in Upper India distinguished by the spontaneous movements of its leaflets and is known as telegraph plant

819 DESMODIUM LATIFOLIUM, DC.

(N O—Papilionaceae)

Tam—Chithamalli

Roots of which are alterative and tonic, and used in fever, diarrhoea vomiting bowel complaints, insanity and ulcers

820 DESMODIUM POLYCARPUM, DC

(N O—Papilionaceae)

Santh—Boephol

Used in fainting and convulsions.

821 DESMODIUM PULCHELLIUM, Benth.

(N O—Papilionaceae)

Sans—Lodrom *Tam*—Venkalothi

Decoction of bark is used in haemorrhage, diarrhoea, poisoning and eye diseases. Flowers are used in biliousness

822 DESMODIUM TILIAEFOLIUM G Don

(N O—Papilionaceae)

(*Hind*—Sambar)

Its roots are carminative tonic and diuretic

823 DESMODIUM TRIFLORUM DC.

(N O—Papilionaceae)

Is growing about 2 to 3 feet high throughout tropical India (Southern India)

Hind.—Motha, Kodaliya. *Ben*—Koolaliya, Kodalia. *Bom.*—Jangli methi *Punj*—Chamyar, Marara. *Tel.*—Moohoodoo, Moordoo, *Mah & Kon*—Ran methi *Pers*—Muskh zamin *Arab*—Sad koofi. *Kash*—Chumkat. *Tam.*—Siru pullady *Mal.*—Kunta mandu.

Roots are considered carminative, tonic and diuretic and used in bilious complaints. Leaves are galactagogue, ground with cow's

milk they are given daily in the morning They are also given to children for diarrhoea due to indigestion and also in convulsions Fresh plant well bruised its juice is applied to abscesses and wounds that do not heal readily It is reputed to have diuretic action also

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824 DICHROA FEBRIFUGA, Lour

(N O—Saxifragaceae)

Hind—Basak *Bhutan*—Singanamook. *Lepcha*—Gebokanak *Nepal*—Aseru

Habitat—Himalayan regions, the Khasia mountains

Parts Used—Root and leaves

Constituents.— The root bark occurs in the form of small chips and has a faint aromatic odour It is soft and corky in structure and almost tasteless If chewed it causes a sensation of nausea (Dymock)

Constituents— The root bark contains a crystalline glucoside termed *'dichroin'* probably the active principle It also contains another crystalline principle insoluble in water but soluble in alkaline fluids It does not contain any tannin —(Sanyal)

Action—Root is emetic and febrifuge

Uses—It is generally given in the form of decoction of the root in fevers whether quotidian tertian or quartan Decoction first acts as an emetic and is used by natives of Sikkim and Bhutan as a febrifuge The drug taken in the crude state causes nausea, vomiting and depression of the circulation

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825 DICHROSTACHYS CINEREA W & A

See Mimosa cinerea

(N O—Leguminosae)

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826 DICLIPTERA ROXBURGHIANA. Nees

(N O.—Acanthaceae)

Punj—Kirch.

This is a tonic.

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827 DECOMA TOMENTOSA, Cass.

(N O.—Compositae)

Tam—Nevananji Chapala.

This drug is febrifuge

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828 DICTAMNUS ALBUS, Linn

(N O—Rutaceae)

Eng—Bastard Dittany

Parts Used—Root and root bark

Constituents—A crystalline toxic alkaloid 'dictamine', crystalline saponin dictamnolacton, essential oil

Action—Aromatic and bitter

Uses—Used in intermittent fever nervous diseases and amenorrhoea (Chopra's I D of I pp 483)

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829 DIGITALIS PURPUREA Linn

(N O—Terophulariaceae or Terophularineae)

Eng—Foxglove

Action—Digitalis purpurea is more effective than D companulata or D alba but D ambigua from Austria shows a therapeutic activity equal to D purpurea D lutea, one of the American grown species is as good as D

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830 DILIVORIA ILICIFOLIA See Acanthus Ilicifolia

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831 DILLENIA INDICA Linn or D speciosa

(N O—Dilleniaceae)

Sans—Bhavya *Hind* & *Ben*—Chalta *Monghyr*—Chilta *Assam*—Chalita Oteneah *Santal*—Korkot *Garo*—Panpui *Uriya*—Rai Oso *Nepal*—Rampha *Lepcha*—Phamsikol *Bori*—*Mik*—Karambel Mota Karmal *Tam*—Uva *Tel*—Pedda Lalinga *Can*—Bettakanagala *Kon*—Kadukanagali, Vadlikarmal *Sinh*—Hondapara Wampara

Habitat—Tropical forests in the Western Peninsula Bihar and the Himalayas from Nepal to Assam, and from Sylhet to Ceylon

Parts Used—Fruit, bark and leaves

Constituents—Inner kernels consist mostly of pectous matter, of a jelly like consistence Chief ingredients of the calyces of the fresh ripe fruits are tannin glucose and malic acid, but their percentage is much greater in the dry calyces than in the fresh ones

Action and Uses—Juice of the fruit mixed with sugar and water is used as a cooling beverage in fevers and as cough mixture

Bark and the leaves are astringent Fruit is slightly laxative and acid, but is apt to induce diarrhoea if too freely indulged in

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832 DILLENIA PENTAGYNA

(N O —Dilleniaceae)

Can —Kangal, Karmal

Grown in forests of North Kanara (Bombay Presidency) Fruits are a cooling food for cattle

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833 DINEBRA ARABICA Jacq

(N O —Dioscoriaceae)

Sans —Alu, Madhvalu *Eng* —Goa Potato Chinese Yam, Yam or Sweet Yam *Ben* —Maualu. *Mah* —Goradu, Kangar *Bom* —Kante-kangi *Hind* —Man alu *Tam* —Kata kelenga

Grown in Konkan and North Kanara of Bombay Presidency there is an alkaloid in this drug

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834 DIONYSIA DIAPENSIAEFOLIA Boiss

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835 DIOSCOREA ALATA, Linn

(N O —Dioscoriaceae)

Eng —Yam

Is a garden crop of the Deccan, Konkan and Gujarat of the Bombay Presidency Its tuber used as a vegetable Fresh vegetable contains 73 00 moisture, and the completely dried material contains Ether extract 0 44 p c Albuminoids 7 85 p c (containing Nitrogen 1 26 p c.) soluble carbohydrates 86 19 p c., woody fibre 1 48 p c and Ash 4 04 (cong Sand 0 47 p c) p c. respectively, there is a toxic alkaloid in this drug (Bombay Govt. Agri Dept Bulletin)

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836 DIOSCOREA ACULEATA, Linn.

Sholapur & Poona —Loca, *Broach* —Kharia. *Bijapur* —Huulig yan hullu, *Sind* —Kali Kauli, Drub grass, *Karnatak* —Halgyan hullu, Ululgyan hulli Nari balada hullu,

Habitat — This annual grass is one of the commonest weeds of irrigated crops in the Bombay Presidency

Composition —

	Before flowering	In flower	After flowering
Moisture	72·23	58·91	66·90
Ether extract	0·79	0·86	1·27
Albuminoids	1·01	1·56	1·06
Carbohydrates	17·56	19·03	14·67
Woody fibre	6·32	6·32	12·31
Ash	2·09	2·29	3·79

Uses — This is considered an excellent fodder In Sind this grass is a favourite food of buffaloes In the flowering stage this grass is fed green and has a marked effect in increasing the flow of milk This grass does not make good hay The high moisture content is apt to cause it to rot to a considerable degree in a silo

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837 DIOSCOREA BULBIFERA Linn Var sativa

(N O —Dioscoreaceae)

Eng —Yam *Hin* —Zamin kand *Mah* —Konfa ootadu Karanda Karinda *Guj* —Goralu *Can* —Heggenasu *Tam* — Karu karinda [1]

In its wild state it is extremely bitter The yellow fleshed tubers being acrid require special preparation before being used as food, there is a poisonous glucoside in this plant [1] The small potato like *tubers* on the vine dried and *powdered* are used as application to sores and are given internally in 1 drachm doses with a little cumin and sugar in milk as a remedy for syphilis piles and dysentery Powder made into a bolus with butter is given to check diarrhoea *Roasted tubers* of the cultivated variety made into balls with ghee and sugar candy are a reputed remedy for piles Under cultivation the plant loses its bitterness and is much grown for the tubers which are roasted and eaten

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838 DIOSCOREA GLOBOSA. Roxb & Prain.

Is a variety of D alata found abundantly in Bengal

Sans —Pindalu *Eng* —Globose-yam, *Hind Ben* & *Bom* — Chopri alu, *Guj* —Kamodio *Tam*—Gunapendalam.

Action —Anthelmintic, used in intestinal worms leprosy, gonorrhoea, piles abdominal tumours and poison

(1) Bombay Govt Agri Dept. Bulletin.

839 DIOSCOREA HIRSUTA Dennst

(N O —Dioscoreaceae)

Constituents —There is a toxic alkaloid

Action —The toxic alkaloid behaves like picro toxin

(Chopra s I D of I pp 483)

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840 DIOSCOREA OPPOSITIFOLIA, Linn

(N O —Dioscoreaceae)

Sans —Sarpakhya *Bom* —Marapasapoli *Tam* —Avatengatige

Parts Used —Root

Uses.— Root is used to reduce swelling, in scorpion sting and snake bite

(Chopra's I D of I pp 485)

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841 DIOSCOREA PENTAPHYLLA Linn

(N O —Dioscoreaceae)

Hind & *Bom*—Kanta alu *Tam* —Kattu valli Kalangu

Parts Used —Tubers

Action — Tonic

Uses.— Tubers are used for swelling

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841 A DIOSCOREA PURPUREA, Roxb

Sans —Raktalu, *Eng* —Red Yam, *Hind* & *Ben* —Lal gurania alu *Mah* —Ratalu),

They are important as a source of food and are used also medicinally on account of their acrid or bitter nutritive and aphrodisiac properties, useful in bilious affections burning, phlegm and eye diseases

(Chopra s "I D of I" pp 483).

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842 DIOSCOREA RUBELLA Linn

Is a variety of D alata.

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843 DIOSCOREA SATIVA, Linn

Hind —Ratalu *Bom* —China *Tam* —Goradu used externally

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844 DIOSCOREA TRIPHYLLA Linn.

Is very acrid and its tubers are sometimes used as a plaster to dispense swellings Tuber is used in Burma as a poison and its

Burmese name is *choo-ay-go*. In Sanskrit it is called *pashpoli* (strangle cake) ;

Bom—Manda. *Tam*—Tsiagri-muten.

When taken internally it causes great irritation in the mouth and throat, vomiting of blood, a sense of suffocation, drowsiness and exhaustion ; and a piece of the tuber the size of an apple is sufficient to cause death in 6 hours. Nevertheless the Burmese use it as an article of food after it has been cut in thin slices, repeatedly washed and steamed in an earthen pot. The constituents in D alata and D edulis found by Payen are respectively :—Water 79 64 & 60 72 , Nitrogenous matter 1 93 & 4 48 ; Nitrogen-free extractive 17.33 & 32 47 , and Ash 1 10 & 0 89 , and Fat 0.35 and Cellulose 1 09 in D edulis only In dry substances, Nitrogen is 1.52 in D. alata and 1 82 in D. edulis, and carbohydrates in D. edulis only 82 66 The nitrogen-free extractive of D. alata contained cane-sugar 4 79 per cent cellulose 18 per cent and starch 25.19 per cent.

(Chopra's "I. D of I " pp. 484).

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845 DIOSPYROS CANDOLLENA, Wight.

(N O—Ebenaceae)

Sans—Nila-vriksha *Tam* –Kammaram

Parts Used—Bark.

Preparations—Decoction of the bark.

Uses.—Decoction of the bark is used in rheumatism and swellings

(Chopra's "I D of I." pp. 484).

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846. DIOSPYROS EBENUM, Koenig.

(N..O.—Ebenaceae)

Eng.—Ebony. *Hind.* & *Bom.*—Tendu. *Tam.*—Acha.

Actior —Astringent.

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847. DIOSPYROS EMBRYOPTERIS, Pers. D. glutinosa; D. cordifolia ; D. urginiana.

(N. O.—Ebenaceae)

Sans.—Tinduka. *Eng*—Indian Persimon ; Gab ; Wild mangosteen. *Ben.*—Gabz. *Hind.*—Taindu ; Gab. *Mah.*—Timar ; Temburani. *Kon.*—Bandarooku. *Guj*—Temru. *Tam.*—Tumika ;

Tumbilik kay *Can*—Bandadamara *Tel*—Tumil, Tumikichettu *Mal*—Panichhi maram *Fr*—Plaque-miner visqueux *Bom*—Tendu

Habitat—Throughout India especially in Bengal

Parts Used—Fruit, bark and dried seeds

Constituents—Tannin, *pectin and glucose Unripe fruits*, flowers, and bark contain a large quantity of tannin Fruits contain about 12 8 p c astringent acid closely related to gallo tannic acid

Action—*Bark* and *unripe fruit have* astringent and styptic properties

Uses—An *infusion or decoction of the rind of the fruit* is useful in chronic dysentery and diarrhoea. *Bark* is made into a *paste* and applied to boils and tumours Infusion of the fruit is used as a gargle in aphthae or stomatitis and sore throat A solution of one ounce of the extract Diospyros in a pint of water is a valuable vaginal injection in leucorrhoea *Juice of unripe fruit* is given in chronic diarrhoea and dysentery, it is also used in hæmorrhages from the internal organs, applied to fresh wounds it acts as styptic by checking the bleeding The *ripe fruit* is edible and useful in diseases of the blood gonorrhoea and leprosy *Oil* extracted fom the seeds is also used in dysentery and diarrhoea *Seeds* are also given in diarrhoea as an astringent *bark* is used in intermittent fevers in the form of infusion The drug is also used in snake-bite

848 DIOSPYROS MALABARICA

(N O.—Ebenaceae)

Is a species found in Malabar where its young leaves and fruits are used in aphthae and ophthalmia, bark in fever and gastralgia Seeds yield an oil which is employed as a mild purgative

849 DIOSPYROS MELANOXYLON

(N O—Ebenaceae)

Sans—Tumvuru, Kenduka *Hind*—Kendu *Ben*—Kend *Bom*—Temru. *Tam*—Tumbi *Fr*—Plaqueminier a bois noir *Ger*—Schwarzholzbaum.

Is a species found on the Coromandal Coast where the astringent bark is applied to ulcerations, and mixed with black pepper it is given in dysentery, dyspepsia, diarrhoea, and as a tonic.

850 DIOSPYROS MONTANA, Roxb

(N O —Ebenaceae)

Sans —Tumala *Hind* —Lohari *Ben* —Ban gal *Bom* —nlu *Tan* —Muchi tanki

The fruits of which are poisonous

(Chopra s I D of I pp 484)

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851 DIOSPYROS PANICULATA, Dalz

(N O —Ebenaceae)

Sans —Tinduk. *Tam* —Kar nthuvari

Parts Used — Leaves fruit and bark

Action —Leaves are a f sh poison

Preparations — Decoction of the fru t

Uses.— Leaves are used as a fish poison Decoction of the fruit is g ven in gonorrhoea to purify blood and in biliousness. Powdered bark is used in rheumatism and ulcers

(Chopra s I D of I pp 484)

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852 DIOSPYROS TOMENTOSA Roxb

(N O Ebenaceae)

Sans —Kakatinduka kakinduka *Hind* —Tumal *Ben* —Makra gav s kend *Tam* —Chilta turuki

Is a species found in most parts of Bengal and U P

Action —Raw fruit is acrid costive and alleviative of the vitiated wind Ripe fruit is alleviative of vomiting and bile, it is a little phlegm exc ting —(Kaviraj N N Sen Gupta) Alterative

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853 DIPLOSPORA SPHAEROCARPA Hook

(N O —Rubiaceae)

Is found in the Western Ghats from Bombay southwards Berries are known as wild coffee Percolated liquor from roasted and powdered seeds has a remarkable pleasent taste having a marked flavour of coffee Seeds contain an alkaloid which can be separated in the same manner as caffeine an astringent a id an aromatic body, some fat one or more sugars and 4 p c. of mineral matter

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854 DIPTEROCARPUS ALATUS Roxb

(N O—Dipterocarpaceae)

Ben—Garjan *Hind* & *Bomb*—Garjan ka tel *Tam*—Yennai

Habitat—Several species of Dipterocarpus plants grow in Chittagong Burma and Siam

Parts Used—Essential Oil

Constituents—Resin contains a crystalline acid Plant yields an oleoresinous extract popularly known as gurjanbalsam or wood oil

Properties—Oil has a pale grey or light brown colour and may be as thick as honey It resembles copaiba balsam.

Preparations—Balsam.

Uses—Balsam of this is a substitute for oil of copaiba, and is used in the treatment of gonorrhoea in doses of ½ to 1 teaspoonful in mucilage milk or gruel twice or thrice daily At one time the balsam was used both internally and externally in the treatment of leprosy but it has since been discontinued

N B—The gurjan oil procurable in Indian Bazars is chiefly the product of D laevis and D alatus.

(Chopra's I D of I pp 484)

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855 DIPTEROCARPUS CAMPHORA.

See Camphora officinarum

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856 DIPTEROCARPUS INCANUS Roxb.

See D alatus.

Ben—Garjan

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857 DIPTEROCARPUS INDICUS. Bedd.

Tam—Ennei

Resin is used in rheumatism.

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858 DIPTEROCARPUS LAEVIS. Ham—See D alatus.

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859 DIPTEROCARPUS TUBERCULATUS. Roxb.

(N O—Dipterocarpaceae)

Burm—Eng

Found in Chittagong and Burma which yields as oleo resin is used with asafoetida and cocoanut oil as an application for large ulcers

Constituents —Essential Oil

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860 DIPTEROCARPUS TURBINATUS. Gaertn
D incanus, D laevis, D alatus

(N O —Dipterocarpaceae)

Eng —Gurjun oil tree Wood oil tree *Hind* & *Ben* —Garjan, Tihya-garjan Telugu garja i *Sinh* —Horatel *Bom* —Gurjun *Burm* —Kanyensi *Mah* —Duhun el ga an *Tam* —Yennai, Challani

Habitat —Forests of Eastern India from Bengal, Burma to Singapore

Parts Used.—Oleo-resin (balsamic exudation from the trunk) This thick honey like oleo-resin or liquid is known as garjan balsam It is usually found in the bazars in three principal varieties,—the pale, the red or reddish brown and the black or dark brown

Constituents —Balsam contains an essential volatile oil also a dry transparent resin containing a crystallizable acid, garjanic acid and volatile matters

Action.—Stimulant diuretic, demulcent and alterative It is excreted by the genito-urinary tract which it stimulates and renders antiseptic. It has copaiba like odour and taste without the persistent acridity of copaiba It is soluble in water, benzol chloroform and essential oils It has all the advantages of copaiba as an expectorant without the disadvantage of exciting an eruption

Uses —Half to two drachms of the *balsam* in an ounce of the malt extract three times a day given in cases of chronic bronchitis acts admirably Its essential *oil* has been successfully administered in the treatment of gleet gonorrhoea in the advanced stages, leucorrhoea and other vaginal discharges leprosy and certain other skin diseases Dose is about a tea spoonful twice or thrice daily, given floating on *ommes* or other aromatic water like dill water or made into an emulsion with 3 to 4 times the quantity of lime water or in mixture containing 5 drachm each of the oil and mucilage in an ounce of dill water *Oleo resin* is applied to indolent ulcers, psoriasis, leprosy etc., in the form of an *emulsion* or *ointment* made with three parts of lim-

water to one of the oil; in leprosy the affected parts are rubbed with it thoroughly and diligently twice a day and each time for about two hours, also internally it is given in a mixture containing a drachm each of the oil and mucilage with 4 times the quantity of lime water twice daily, better with the addition of 5 to 10 drops of chaulmoogra oil to each drachm of the garjan oil

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861 DODONAEA VISCOSA. Linn. D angustifolia

(N O—Sapindaceae)

Sans—Sanatta, Aliar *Punj*—Ban mendru, Dhasera, Dawaka jhar *Hind*—Aliar *Bom & Mah*—Zalhmi, Bandari, Bandurgi *Tam*—Valari, Virali. *Tel*—Bandaru *Can*—Biodrike *Smh*—Eta, Wardlla.

Habitat—Throughout India, from the Indus eastwards and southward to Ceylon and Malacca.

Parts Used—Leaves

Constituents—Leaves contain 2 acid resins, gum, albumen, tan nin and ash, alkaloid Saponin Of the two resins one is nin and ash, alkaloid Saponin Of the two resins one is insoluble in ether, both are soluble in chloroform alcohol, liquid ammonia and in fixed alkalies

Preparations—Juice Powder Poultice and Tincture (1 in 10), dose—15 to 30 minims

Action—Alterative, laxative, febrifuge sudorific and tonic

Uses.—Leaves are viscid and have a sour and bitter taste. They are used in baths and fomentations and bruised leaves as poultice in gout and rheumatism. In the Punjab they are applied as poultice to snake bites and their juice is given internally Powdered leaves applied over a wound heal it without leaving a white scar. It is applied to burns and scalds also

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862 DOLICHANDRONE FALCATA. Seem.

(N O—Bignoniaceae)

Hind—Hawar, *Bom*—Manchingi, *Tam*—Kadatathie.

Action—Abortifacient and a fish poison

Varieties—Three, black, white and red.

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863 DOLICHANDRONE STIPULATA, Benth

(N O—Bignoniaceae)

Burm—Petthan

Which contains an alkaloid

(Chopra's I D of I pp 484)

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864 DOLICHOS BIFLORUS Linn.

Var—D uniflorus (Lamk) or D uniflorus

(N O—Papilionaceae)

Sans—Khalakula Kulastha, Kulatha *Eng*—Horse gram Plant *Hind*—Koolthee Kulti *Sind*—Kulitha, gagli *Ben*—Kulti, Kurti kalai *Mah*—Hulga Kulthi *Bom*—Koolthee *Guj*—Kulti *Tel*—Ulavalu *Tam*—Kollu *Mal*—Kullu, Kollu Mutira *Can*—Huruli Hulge *Fr*—Dolic a deux fleurs *Kon*—Kulithu

Habitat—A common twining plant growing all over India, especially in Bombay and Madras Presidencies

Parts Used—Seeds

Constituents—Of the grain with husk—Albuminoids, starch, oil fibre, ash and phosphoric acid enzyme urease An analysis of some samples of *Kulthi* grown in the Bombay Presidency showed the following results—Moisture 4 30 to 10 25, Ether extract 0 65 to 1 84, Albuminoids 20 75 to 22 25 (containing Nitrogen 3 32 to 3 56), Soluble carbohydrates 56 04 to 63 20 woody fibre 4 85 to 5 50, and ash 4 20 to 7 45 (containing Sand 0 72 to 1 70) p c respectively' (Bombay Govt Agri Dept Bulletin) The analyses of fresh *kulthi* fodder grown at Poona gave figures as follows—Moisture 71 5, Ether Extract (fat etc) 0 6, Proteids 3 4, Digestible carbohydrates 12 9, woody fibre 7 5 and ash 4 1 p c respectively, total 100 per cent

Action—Astringent, diuretic and tonic

Preparations—Decoction of the grain (1 in 10) dose—½ to 1 ounce, Powder

Uses—Mukerjee notes that a mixture of *Kulthi* unripe hael fruits and Amaranthus spinosus (*Kanta notia*) is used by *goalas* (cattle feeders) in Bengal to stimulate the flow of milk in their animals. Pulse is boiled whole and given to horses Seeds form

a good food for bullocks If the plants are cut when in flower, they are excellent for all farm animals, and especially in mixtures are considered as particularly good for milk animals For scrofula the *decoction of the grain* with pepper powder added is given and for diarrhoea one tola of the expressed juice of the fresh plant and ¼ tola of catechu mixed together is given thrice daily A decoction made of ¼ seer of the pulse and five pieces of cachew nuts is useful in cases of haemorrhage from the bowels etc. A decoction of this grain is given to females during parturition to promote discharge of the lochia, also used in leucorrhoea and menstrual derangements With asafoetida, ginger powder and *hidalone* added the decoction is given in colic. A soup is a diet in sub-acute cases of enlarged liver and spleen, also a diet in piles Pulse is a demulcent in calculus affections, coughs, etc. For this a decoction of the pulse with 30 grains of *Saindhava* added is used Its decoction is also employed to reduce corpulence Pulse is eaten in the form of soup and porridge and is very extensively used as a pulse for human food in the Bombay Presidency A *powder* of the seeds is applied to the skin to check cold sweats

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865 DOLICHOS BULBOSUS

(N O—Papilionaceae)

Sans & *Ben*—Sankhalu, *Hind*—Chana, *Ben*—Cola *Fr*—Dolic bulbueux, *Ger*—Knollenbohne

Found in tropical India distinguished by nodular roundish beans which are eaten raw and cooked

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866. DOLICHOS CATIANG—See Vigna catiang, Walp.

(N O—Papilionaceae)

Is a native of India.

Sans—Rajamasha *Eng*—Cow pea, Cow gram. *Hind*—Lobia, Raish, Lota *Sind*—Chanura, Craunro *Ben*—Barbati, *Bom*—Lobeh *Mah*—Chavli *Guj*—Chola. *Assam*—Urohi mahor pat *Tam*—Caramunny pyre *Tel*—Boberlu, alu sundi; duntu pesulu *Can*—Ala sandi, Tadagunny *Fr*—Dolic catjang

Is cultivated in the tropical zone, especially in Sind and Malabar (India).

Constituents —Church gives following analysis of *Chavli* —

	Cream	with Husk
Water	12 5 p c	12 7 p c.
Albuminoids	24 1	23·1 ,,
Starch	26 8	55 3 ,,
Oil	1 3	1 1 ,,
Fibre	1 8 .	4 2 ,,
Ash	3 5	3·6 ,,
	100 0	100 0

(Bom Govt Agri Dept Bulletin)

Action—It is considered hot and dry diuretic and difficult of digestion

Uses.—In Malabar as well as in the Bombay Presidency, the green pods and the leaves which have an agreeable taste and are rich in fats are eaten as tonic foods Pulse is cooked in many ways both split and whole There are a considerable number of varieties of *chavli* on the market varying much in the colour of the flower, the colour of the seed and the length or appearance of the pod The small seeded varieties proved themselves much superior to others for fodder purposes in Kirkee Dairy Farm If *chavli* is cut as a green fodder is excellent for cattle especially for milk cows Bom. Govt. Agri Dept Bulletin

867 DOLICHOS CYLINDRICUS or D sinensis.

Sans —Nispava Rajamasa *Ben* —Baravati *Hind* —Lovia.

Is a specie with long pods which when tender are eaten as vegetables and otherwise the ripe dried beans are as pulses

868 DOLICHOS FABAEFORMIS

Fr —Dolic en form de feves

as D catiang

Is a species found in Southern India having the same properties

869 DOLICHOS FALCATUS Klein

Tam.—Kattamara.

Root is used in piles, constipation ophthalmia and skin diseases. Decoction of the seeds is a specific for rheumatism.

870 DOLICHOS LABLAB. Linn.

See also Phosphocarpus tetragonolobus.

(N O—Papilionaceae)

Sans—Simbi *Hind & Urdu*—Sim *Mah*—Val, Wal papri; Chavdari ghevda, Pawta, Ghevda. *Eng*—Flat bean, Goa bean; Indian Bean *Ben*—Makham Sim, Shim *Bom*—Pauti *Guj & Sind*—Val *Tam*—Avarai, Mochai *Tel, Can & Kon*—Alsande. *Fr*—Chevaux defrise bean *Can*—Avaray

Habitat—This is a native of India; numerous varieties are cultivated on a large scale in the Bombay Presidency and South India. There is a bitter variety of *Val* known as '*kadva*' in the Deccan. Outside India this is known as the hyacinth bean

Constituents—Following shows the analysis of two typical samples of *Val* grown in the Bombay Presidency—

	Val (White) Poona No 1	*Kadva* (White) Poona No. 2
Moisture ..	9 55 p. c.	9 08 p. c.
Ether Extract ..	2 03 ,,	1 11 ,,
Albuminoids (contg Nitrogen 3 07)	23 44 ,,	20 75 ,, (contg Nitrogen 3 32)
Soluble carbohydrates .	53 26 ,,	58 38 ,,
Woody Fibre . ..	7 42 ,,	6 78 ,,
Ash (contg Sand 0 10)	4 30 ,,	00 ,, (contg Sand 0 05)
	100 00	100 00

(Bombay Govt Agri Dept Bulletin)

Action—Seeds are aphrodisiac and stop nose bleeding, roots are poisonous

Uses—Green pods with their skin when tender are used as a vegetable, it is useful in phlegmatic disorders. The plants after removal of seeds are fed to cattle

N B—In most of the varieties the flowers are white, but one vigorous variety grown in the Konkan has purple flowers.

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871 DOLICHOS LIGNOSUS.

Fr—Dolic l g neux.

Is a species found in Western India, the tender leaves and pods of which are eaten as vegetables Constituents of the grain with husk are :—Albuminoids 20 5 p c., starch 53 5 p c., Oil 2 2 p c, Fibre 5 8 p. c. and Ash 3 7 p. c.

872 DOLICHOS MINIMUS

Fr —Dolic tres petit

Is a species found in Central India, the seeds of which are poisonous

873 DOLICHOS PRURIENS.

See Mucuna pruriens.

874 DOLICHOS SESBAN.

See Sesbania aegyptica

875 DOLICHOS SINENSIS.

Mah —Dang chavli

Is a large variety usually grown in gardens in the Bombay Presidency. It is a strong climber with a pod with some 5 or 6 inches long and rather dark seed Pods are picked while green and take, but very unworthily the place occupied by French beans in European cookery

(Bombay Govt Agri Dept Bulletin).

876 DOLICHOS SOJA.

See Glycine soja.

Eng —Soya bean *Ger* —Soja bohne. *Ben* —Gari kulaj. *Hind* —Bhatwan *Kumaon* —Bhut

Is a species cultivated in some parts of India for its seeds which are eaten and which contain a high percentage of protein and fat

877. DOLICHOS TRANQUEBARICUS

Is a species found in North India where its fruit is used as food.

878. DOLICHOS TRILOBATUS

Is a species found in Bengal where its tender leaves are used as vegetables and as a laxative.

879 DOLICHOS UNIFLORUS
See D biflorus

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880 DOLOMAEA MACROCEPHALA DC.
(N O—Compositae)
Parts Used—*Root in eruptions*
(Chopra s I D of I pp 484)

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881 DOPATRIUM JUNCEUM Ham
(N O—Scrophularineae)
Abounds in paddy fields of South India

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882 DOPATRIUM LOBELIOIDES Benth

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883 DOPATRIUM NUDICAULE Ham

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884 DOREMA AMMONIACUM Don
(N O—Umbelliferae)
Ind Bazar—Ushak
Constituents—Essential Oil
Uses—Used in enlargement of liver and spleen
(Chopra s I D of I pp 484)

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885 DOREMA AUREUM Stocks
resembles D ammoniacum
(N O—Umbelliferae)
(Chopra s I D of I pp 484)

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886 DORONICUM HOOKERI Clarke
(N O—Compositae)
Punj—Daruna j akrabi
Root is aromatic and tonic
(Chopra s I D of I pp 484)

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887 DORONICUM PARDALIANCHES Linn.
(N O—Compos tae)
Ind Ba—Daruna j akrabi.

Cardiac, tonic, useful in nervous depression, melancholia and in scorpion bite

(Chopra s I D of I pp 485)

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888 DORONICUM ROYLEI, DC.

(N O —Compositae)

Punj —Darunaj akhrabi Similar to D hookeri

(Chopra s I D of I pp 485)

88[illegible] DORSTENIA INDICA, Wall

(N O —Urticaceae)

(Chopra s I D of I pp 485)

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889 DORSTENIA INDICA Wall

See Polypodium quercifolium

(N O —Caryophyllaceae)

Is a s herb grow on the hills in South India

(N O —Labiatae)

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890. DRACAENA CINNABARI, Balf

(N O —Liliaceae)

Hind —Hiradukni *Tam* —Kandamurgarittam

Action— Astringent

Constituents —Benzoic acid cinnamic acid

(Chopra s I D of I pp 485)

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891 DRACOCEPHALUM MOLDAVICUM, Linn.

(N O —Labiatae)

Hind —Tukhm ferungmushk

Seeds are demulcent

Constituents —Essential Oil

(Chopra s I D of I pp 485)

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892 DRACOCEPHALUM ROYLEANUM Royle

(Chopra s I D of I pp 485)

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897. DRYNARIA CORDATA. Willd

(N. O.—Caryophyllaceae)

Habitat.—A glabrous herb growing on the Nilgiris & Western Ghats to about 4000 ft. in shady corners.

(Chopra's 'I. D. of I.' pp. 485)

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898. DRYNARIA QUERCIFOLIA, Linn.

See Polypolium quercifolium.

(N. O.—Polypodiaceae)

Mah. & *Bom.*—Basingh, Ashvakatri, Wandurbasingh. *Sans.*—Ashva Katri.

Habitat.—Throughout India, in the plains or very low down in the mountains, on trees or rocks.

Action.—Root is bitter, tonic & astringent to the bowels.

Uses.—In phthisis, hectic fever, dyspepsia & cough; vaidyas use it in typhoid fevers.

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899. DRYOBALANOPS AROMATICA, Gaertn.

D. camphora.

(N. O.—Dipterocarpeae or Dipterceae)

Borneo and Sumatra Camphor.—See Camphora officinarum.

This is a tree closely related to the Indian 'Sal", and the camphor tree of Borneo and Sumatra, from which "Baros" or "Barus" camphor is derived.

Sans. & *Hind.*—Bhimseni Kapoor, Himamaluka. *Eng.*—Borneo and Sumatra Camphor. *Mah.*—Bhimseni Kapoor; Kacha Karpoor.

Constituents.—Borneol, camphene, terpeniol, sesquiterpene, etc. The drug is useful in hysteria and dysmenorrhoea.

Action.—Diaphoretic, antiseptic, antispasmodic and stimulant.

(Chopra's "I. D. of I." pp. 485)

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900. DRYOBALANOPS CAMPHORA

See D. aromatica.

Habitat.—Borneo and Sumatra.

Source:—From the breaking of the bark of the tree when 8 years old, taken raw and is not boiled as 'patri camphor' usually called *'Pakwa Kapoor'* and China-Japan camphor. Mentioned first

in 'Rajanighantu' and its first medicinal uses were found out by the Arabians

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901 DRYOPTERIS FELIX, Mas

(N O—Filicales Family—Polypodiaceae)

Filix Mas, B P, Aspidium U S P.

Eng—Male fern rhizome *Ger*—Warmfarn, Farnwurzel, *Fr*—Racine de Fougbere Male Warmfarnwurzal

(Chopra's "I D of I pp 485)

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902 DYSOXYLUM MALABARICUM, Bedd

(N O—Meliaceae)

Sans—Agaru *Tam*—Kana mulla

Parts Used—Oil

Preparations—Decoction of the wood

Uses.—Decoction of wood is used in rheumatism Oil is used in ear & eye diseases

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903 ECBALLIUM ELATERIUM, A Rich

(N O—Cucurbitaceae)

Ind Baz—Katri indrayan

Constituents—Glucoside, elaterin ecballin, prophetin

Action—Narcotic

Uses—Used in malaria and hydrophobia

(Chopra's I D of I pp 485)

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904 ECBALLIUM LINNEANUM, Kurz

(N O—Cucurbitaceae)

Hind—Ulaya'i

Parts Used—Roots

Uses.—Roots are useful in jaundice and menorrhagia.

(Chopra's "I D of I" pp 485)

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905 ECHITES ANTIDYSENTERICA

See Holarrhena antidysenterica.

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906 ECHITES DICHOTOMA, Roxb

See Vallaris heynei

(N O—Apocynaceae)

Sans—Bhadravalli, Bhadramunja, Visalyakrit, Asanamallika, Asphota *Ben*—Haparmali. *Hind & Ben*—Ramsar, Chamarikavel *Kumaon*—Dudhi *Tel*—Arbimalletigo, Arbimallika *Tam*—Putta podara ejarala

Is a climbing plant found growing all over India from the Ganges on the Himalayan tract, eastward to Bengal and in Central and Southern India Milky juice of it is employed as an application to old sores and wounds in the U P (India) It is a mild irritant, it excites in them some degree of inflammation and thereby expedites the process of healing —(Gupta) The drug is also used in leprosy

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907 ECHINOPS ECHINATUS, DC.

(N O—Compositae)

Sans—Utakantaka Brahmadandi Ajadandi *Hind & Gualior*—Untakatara *Eng*—Camel's thistle *Guj*—Utakanto Motobot

Habitat—Himalaya Central India, Concan Deccan and Marwar

Parts Used—Plant, its root and the root bark, leaves, fruit

Action—Aromatic bitter, nervine tonic, alterative diuretic and aphrodisiac

Preparations—Decoction and infusion of the root bark (1 in 10) doses—½ to 2 ounces Expressed juice of leaves dose—30 to 60 minims Confection and Powder of the root bark

Uses—Its root is used in the hoarse coughs of children It is removed on Saturday or Sunday without touching it with knife and tied round the neck of children suffering from cough It forms a chief ingredient in various alterative and tonic decoctions Infusion is given in seminal debility impotence hysteria etc. Root bark dried in shade pounded and strained is given in doses of 1 to 1½ drs Decoction as an alterative is given in dyspepsia, scrofula, syphilis and fevers Following confection is recommended in seminal weakness —Take of *Utakantaka* 5, poppy seeds 5, Tribulus terrestris 6, Stag's horn in powder or paste — Cowhage seeds

4, mucilage of the seeds of Sisymbrium Irio 5 Henbane seeds 5 root or tuber of Curculigo orchioides 4 and sugar 10 parts Mix and make a confection Dose —¼ to ½ tola twice daily

908 ECHITES FRUTESCENS

See *Ichnocarpus frutescens*

909 ECHITES SPINOSA

See Capparis corundas

910 ECLIPTA ALBA, Hassk

(N O.—Compositae)

Sans—Kesharaja. *Hind*—Mochkand Bhangra, Babri *Ben*—Kesuria, Kesutti, Kesuri *Bom*—Maka, Bhangra, Dodhak. *Tam*—Kaikeshi, Karisha langanni Karisirang kanni *Tel*—Galagara, Gunta kalagara

Constituents.—Alkaloid ecliptine

Action.—Tonic Roots and leaves are cholagogues

Uses—Roots and leaves are largely used alone or in combination with *ajowan* seeds in derangements of the liver and gall bladder They have also been used as substitutes for Taraxacum, a reputed and popular liver tonic

(Chopra's I D of I pp 485)

911 ECLIPTA ERECTA, *Linn*

(N O—Compositae)

Sans—Bhringaraj Kesharaj, Superna *Hind*—Bungrah Mochrand *Duk Mah & Guj*—Bhangra, Markava *Ben*—Kesooria Kesuti *Tel*—Guntagalijaeru Galagarachettu *Tam*—Kaikeshi, Karishalanguni *Can*—Kadige garage, Ajagara, Garunga *Mal*—Cajenneam, Kanni *Kon*—Mako, Kajalamavi *Punj*—Maka Dodhak, Babri *Arab*—Radim-el bint

Habitat.—This herb is found abundantly throughout India in wet places and plentiful on the Himalayas E prostrata is found in Bengal and U P It is of 3 kinds—Yellow, White and Black. The yellow is Wedelia calendulacea, this herb has yellow flowers. The black *Bhungra* is a variety of the white one, when in flowers it is called white, when in fruit it is called *Kala Bhungra*

Parts Used—*Herb-roots and leaves*

plexion, laxative, good for eyes, brain tonic, kapaharam (Therapeutic Notes)

Action & Uses in Unani.—Hot 2°, Dry 2°, improves vision, aphrodisiac, resolvent purifier, colicky pains, skin diseases (Therapeutic Notes)

Uses.—Used in enlarged liver, spleen and dropsy

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913 EHRETIA BUXIFOLIA, Roxb

(N. O.—Borragineae)

Hind & Bom.—Pala. *Tam.*—Kuruvingi

Habitat.—Occurs widely in South India

Constituents.—Glucoside

Action.—Alterative

Uses.—Used in debility and syphilis

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913 A. EHRETIA OBTUSIFOLIA, Hochst

(N. O.—Borragineae)

Punj.—Chamror

Root is used in venereal diseases

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914 EICHORNIA CRASSIPES

Eng.—Water Hyacinth

Constituents.—Percentage composition of the air dried plant cellulose 42.23%, ash 16.75%, lignin 11.31% etc., (H. K. Sen, P. P. Pal & S. B. Ghosh Calcutta)

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915 ELAEAGNUS HORTENSIS M. Bieb

(N. O.—Elaeagneae)

Tibet.—Sirshing *Hind.*—Shiulik

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916 ELAEAGNUS LATIFOLIA, Linn.

Ben.—Guara *Bom.*—Amgul *Hind.*—Ghiwain

Parts Used.—Flowers

Action.—Flowers are cardiac and astringent

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917 ELAEAGNUS UMBELLATA, Thunb.

Punj.—Ghiwain.

Parts Used.—Flowers.

Action — Flowers stimulant, cardiac and astringent

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918 ELAEOCARPUS GANITRUS Roxb

(N O —Tiliaceae)

Sans —Rudraksha *Hind* —Rudrak *Ben* —Rudrakya *Bom* — Rudraksh *Tam* —Rudrakai

Action — Stimulant

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919 ELAEOCARPUS OBLONGUS, Gaertn

(N O —Tiliaceae)

Tamil —Malankara

Parts Used — Fruit

Action — Fruit is emetic

Uses — Fruit is used as emetic and in rheumatism, pneumonia, ulcers leprosy dropsy & piles

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920 ELAEOCARPUS SERRATUS Linn

(N O —Tiliaceae)

Ben —Jutpai *Tam* —Olang Karai

Parts Used —Leaves fruits

Uses — Leaves are used in rheumatism and are an antidote to poison Fruits are used in dysentery and diarrhoea

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921 ELAEOCARPUS TUBERCULATUS Roxb

(N O —Tiliaceae)

Sans —Rudraksha *Tam* —Ruthraksham

Parts Used — Bark, nuts

Preparations — Decoction of bark

Uses — Decoction of bark is used in haemetemesis biliousness Nuts are used in rheumatism, typhoid fevers & epilepsys

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922 ELAEODENDRON GLAUCUM Pers

E roxburghii, E. paniculatum

(N O —Celastraceae)

Sans —Bhutphal *Pers* —Mirandu, Bakra *U P & Ordh* — Chauri. *Hind* —Bakra Jamrasi *Mah*—Bhutapala. *Bom* —Tamruj,

Constituents.—A large amount of resin and an alkaloidal principle *eclipfine*. Resin does not yield the re-actions of podophyllin.

Action.—Cholagogue like taraxacum. Root is tonic and alterative; also emetic & purgative. Juice of the leaves is hepatic tonic, and deobstruent.

Uses.—*Root* is used as an application in the form of powder in hepatic and splenic enlargements and in various chronic skin diseases. Mixed with salt the root is given to relieve scalding of the urine in doses of 180 grains. As anodyne and absorbent it relieves headache, when applied with a little oil. *Leaf juice* of the yellow variety is used as a snuff in cephalalgia. In combination with aromatics such as *ajatan* seeds it is used in liver diseases, in catarrhal jaundice fresh leaves say 20 grs. ground with a few say 7 (seven) black pepper corns (piper nigrum) and made into a bolus of the size of a lime and administered early in the morning in sour curds or butter milk is found to cure the disease in 5 or 6 days. *Pills* made of the same ingredients in proportions of 3 parts of Eclipta to 1 of blackpepper, and given one morning and evening are said to cure syphilis. Butter milk or water mixed with 1½ drachms of expressed leaf-juice of Eclipta is said to be a remedy for serpent bites. Two drops of the expressed juice given with 8 drops of honey is a popular remedy for new born children suffering from catarrh; with castor oil it is given in worm troubles. It is dropped into the ears in earache. *Fresh plant* mixed with sesamum oil is applied externally in elephantiasis. *Juice of the leaves* of yellow flowered variety is administered in tea-spoonful doses in jaundice and fevers. A *decoction* of the leaves is used in uterine haemorrhages; it is administered in 2 to 4 ounce-doses twice a day. *Leaves* bruised into a paste form an excellent remedy for scorpion stings; it is rubbed on the painful and inflamed part around the bite and then tightly applied like a poultice to the wound itself; thereby they draw forth all the poison from the wound. It is similarly applied to chronic glandular swellings and skin diseases. A *vapour bath* or fumigation of Eclipta leaves applied to piles, cures them. Juice of the leaves mixed with gingelly or cocoanut oil and boiled together makes excellent preparation for anointing the head to render the hair black and luxuriant. Follow-

ing are three useful Ayurvedic preparations —(1) *Bhrmgaraj Tailja* —(1) Take of *Bhrmgaraj* juice 16 parts Calotropis gigentia, *Triphala,* and Ichnocarpus frutescens each 1 part Mix and add sweet oil 4 parts and boil Useful is pityriasis alopecia etc., and as a depilatory (2) Take of sweet oil 4 seers *Bhrmgaraj* juce 16 seers iron rust, the three myrobalans and the root of Ichnocarpus frutescens reduced to a paste, in all 1 seer and prepare an oil in the usual way It removes scurf from the head, turns grey hairs black and cures alopecia. (3) Take of *Bhrmgaraj* juice ½ seer, iron powder 2 tolas alum 2 tolas and sweet oil ¼ seer Mix and boil till all the water is evaporated and only oily part remains Then sift the oil and keep it well corked after adding to it ½ tola of cinnamon oil This medicated oil applied daily will restore the colour of premature grey hair *Bhrmgyadi* decoction which is prepared by taking *Bhrmgy* 5 Palams *Shunti* 5 Palams *Kantakari* 5 Palams and half a tola of combined drugs boiled with 4 ozs of water down to 2 ozs and added with a little honey after filtering and given with 5 drops of *Lashunadyeranda Thailam* 4 times a day has cured hydro-thorax brought on after a severe attack of influenza, and in addition to this the patient was prescribed *Chyavanaprash,* a teaspoonful after food with milk Following prescription is recommended for Tetanus —Take of the juice of Eclipta erecta 1 tola, juice of Leucas cephalotes ¼ tola, Ginger juice 2 tolas juice of Vitis trifolia 1 tola, leaf juice of Sesbania grandiflora 3 tolas All these to be boiled with four times the cocoanut juice and a little rice and treacle to form a *Khir* Thus is given twice a day

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912 ECLIPTA PROSTRATA, Roxb., E. alba.

(N O —Compositae)

Sans —Bhringaraj, Kesaranjan, Teka raham, Bhargaram. *Hind* —Bharangraj *Tam* —Karisalanganı Porrilaikyan, Karisalaı *Tel* —Guntagalijeran *Mal* —Kannunni, Karishanganni *Can* —Kadiggagaraga

Action.—Emetic.

Action & Uses in Ayurveda and Siddha.—Tiktarasam, ushna, katu vipakam, fever tonic, jaundice, pandu, pruritis, scabies, com-

plexion, laxative, good for eyes, brain tonic, kapaharam. (Therapeutic Notes)

Action & Uses in Unani.—Hot 2°, Dry 2°, improves vision, aphrodisiac, resolvent, purifier, colicky pains, skin diseases. (Therapeutic Notes).

Uses.—Used in enlarged liver, spleen and dropsy.

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913. EHRETIA BUXIFOLIA, Roxb.

(N. O.—Borragineae)

Hind. & Bom.—Pala. *Tam.*—Kuruvingi

Habitat.—Occurs widely in South India

Constituents.—Glucoside.

Action.—Alterative

Uses.—Used in debility and syphilis

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913 A. EHRETIA OBTUSIFOLIA, Hochst.

(N. O.—Borragineae)

Punj.—Chamror

Root is used in venereal diseases

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914. EICHORNIA CRASSIPES.

Eng.—Water Hyacinth.

Constituents.—Percentage composition of the air-dried plant cellulose 42.23%, ash 16.75%; lignin 11.31% etc, (H. K. Sen, P. P. Pal. & S. B. Ghosh Calcutta).

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915. ELAEAGNUS HORTENSIS, M. Bieb.

(N. O.—Elaeagneae)

Tibet.—Sirshing *Hind.*—Shulik

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916. ELAEAGNUS LATIFOLIA, Linn.

Ben.—Guara *Bom.*—Amgul *Hind.*—Ghiwain

Parts Used.—Flowers.

Action.—Flowers are cardiac and astringent.

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917. ELAEAGNUS UMBELLATA, Thunb.

Punj.—Ghiwain.

Parts Used.—Flowers.

Action — Flowers stimulant cardiac and astringent

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918 ELAEOCARPUS GANITRUS Roxb

(N O —Tiliaceae)

Sans —Rudraksha *Hind* —Rudrak *Ben* —Rudrakya *Bom* —Rudraksh *Tam* —Rudrakai

Action — Stimulant

---

919 ELAEOCARPUS OBLONGUS Gaertn

(N O —Tiliaceae)

Tamil —Malankara

Parts Used — Fruit

Action —Fruit is emetic

Uses — Fruit is used as emetic and in rheumatism pneumonia, ulcers leprosy dropsy & piles

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920 ELAEOCARPUS SERRATUS Linn

(N O —Tiliaceae)

Ben —Julpai *Tam* —Olang Karai

Parts Used — Leaves fruits

Uses — Leaves are used in rheumatism and are an antidote to poison Fruits are used in dysentery and diarrhoea

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921 ELAEOCARPUS TUBERCULATUS Roxb

(N O —Tiliaceae)

Sans —Rudraksha *Tam* —Rutthraksham

Parts Used — Bark nuts

Preparations — Decoction of bark

Uses — Decoction of bark is used in haemetemesis biliousness Nuts are used in rheumatism typhoid fevers & epilepsy

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922 ELAEODENDRON GLAUCUM Pers

E roxburghii , E paniculatum

(N O —Celastraceae)

Sans —Bhutphal *Punj* —Mirandu Bakra *U P & Oudh* — Chauri *Hind* —Bakra Jamrasi *Mah*—Bhutapala *Bom* —Tamruj ,

Arantandigbhukas, Bhuta pala *Tam*—Chcluppai maram, Selupa *Tel*—Nerija, Booligi (leaves) *Kon*—Burkas *Smh*—Naralu, Perumpiyari

Habitat—Throughout the hotter parts of India

Parts Used—Leaves root and bark

Constituents—Bark contains an alkaloid, 2 resins, tannin 8 p c, glucose 5 p c and ash 18 p c Ash contain calcium carbonate and calcium oxalate Alkaloid is separated by lime and chloroform It gives a purplish colour with sulphuric acid and yellow with nitric acid With acids it forms salts soluble in water One of the resins is soluble in ether and amylic alcohol and the other in rectified spirit

Action—Fresh root bark is a strong astringent

Uses—*Powdered leaves* have a powerful sternutatory action and are used as a *fumigatory* to rouse women from hysterical syncope and *as a snuff* to relieve ordinary headache Fresh *root bark* when rubbed into a *paste* with water is a favourite application to swellings *Root* is believed to be a specific against snake bite and the *bark* is a virulent poison

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923 ELEPHANTOPUS SCABER Linn

(N O—Compositae)

Sin—Gojihva *Eng*—Prickly leaves elephant s foot *Hind*—Gobhi *Ben*—Gojialata Shamdulum *Bom*—Hastipada *Mah*—Gojibha. *Tam*—Anashavadi, Anaichovadi *Tel*—Hustikasaka *Can*—Hakkarike *Fr*—Pied d elephant

Habitat—Throughout India in shady places, especially in Bengal and East Indies

Parts Used—Root and leaves

Preparations—Decoction of leaves and root (1 in 10), dose—½ to 2 fluid ounces

Action—Mucilaginous cardiac tonic, astringent alterative and febrifuge

Uses—*Decoction* of the root and leaves with cumin and buttermilk is given in dysuria and other urethral discharges or complaints, also in diarrhoea and dysentery The drug is used in snake-bite also

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stomach complaints. An oil extracted from the fruits is used both in pharmacy and perfumery. Cardamom may be safely used as a carminative is convalescence after diarrhoea. In the form of tincture or powder, cardamoms are used, both in Eastern and Western systems of medicine, as a frequent adjunct to other stimulants, bitters and purgatives A decoction of cardamoms together with their pericarp and jaggery added is a popular home remedy to relieve giddiness caused by biliousness. A compound powder containing equal parts of cardamom seeds, ginger, cloves and caraway is a good stomachic in ½ drachm doses in atonic dyspepsia. A *powder* made of equal parts of parched cardamom seeds, aniseeds and caraway seeds given in 1 teaspoonful doses is a good digestive. A powder made of the cardamom seeds 5 parts, resin of Shorea robusta 2 parts, Cyperus rotundus 4, Red sandal 2, Long pepper 3, Cloves 2, and *Nagkesara* 1 part, is useful to check vomiting; dose.—10 to 20 grains. A compound powder called *Eladi Churnam* composed of cardamoms 1 part, bark of Cinnamon 2 parts, flowers of Mesua ferrea 3 parts, black pepper 4 parts, fried borax 5 parts, long pepper 6 parts and sugar equal to their united measure, i e, 21 parts is a good nutritive tonic and demulcent useful in bronchial affections, given in doses of 5 to 20 grains three times a day.

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925. ELETTERIA MAJOR—See Amomum subulatum.

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926. ELEUSINE AEGYPTIACA, Desf.

(N. O.. Grammeae)

Kara—Anchi Manchi *Hind*—Makra *Sind*—Gandhi *Bom*—Mhar *Tam*.—Tamida; Mattanga-pillu. *Dharwar*—Navi ragi; Tagar sammi. *Karnatak*.—Hakki kalin hullu

Habitat.—This is an annual grass growing in the Bombay Presidency

Parts Used—Seeds.

Uses.—This is not a particularly good fodder and is eaten only in fair quantity by stock, and then only in the young stage. Lisboa reckons it to be a good nutritious fodder, especially when young cattle are fond of it Seeds are used for pain in kidney region.

(Chopra's 'I. D. of I. pp. 486).

(Bombay Govt Agrl. Dept. Bulletin).

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927. ELEUSINE CORACANA Gaertn or E indica (Gaertn.) See E aegyptiaca

(N. O—Gramineae)

Sans—Soma, Rajika, Krishna *Eng*—Indian millet, Koṛakan. *Hind*—Makra. *Sind*—Nangli, Nagli. *Guj*—Bavto, Navto. *Mah*—Nachni *Ben*—Murood *Tel*—Ragulu, Tamidalu. *Mal*—Ragi *Tam*—Iragi *Can*—Ragi *Kon*—Nanchano *Hind* & *Pers*—Mandua, Makra, Rotka *Punj*—Chalodra *Sinh*—Kura khan

Habitat—This cereal grain is grown almost in all parts of India.

Parts Used—Seeds

Constituents.—Albuminoids, starch, oil, fibre and ash, Phosphoric acid 0 4 p c. '*Poona Ragi on analysis shows the following composition*—Moisture 11 43 p c., Ether Extract 1 34 p c Albuminoids 6 4b p c (Nitrogen 1 03) soluble carbohydrates 73 34 p c, woody fibre 1 83 p c, Ash 2 69 p c (sand nil) *Mysore Ragi*—13 22 1 20, 5 39 (nitrogen 0 86), 75 13 2 10 & 2 98 (sand nil) respectively

(Bombay Govt Agri Dept Bulletin)

Action & Uses—This grain though very wholesome is rather difficult of digestion and unpalatable but highly proteinaceous and nourishing foodstuff, it is most suitable to hard working classes Cakes made from ripe grain are very dry eating and thus it is considered to be an economic grain *Ragi* is said to be very nutritious even more so than wheat, and is an important food of the poorer classes The population of the Mysore plateau especially the lower classes eat a great deal of this nutritious foodstuff in addition to rice, and as such that keep better health and have better physique than the rice-eaters of Southern India Flour is made into a cooling drink called *ambil* (Marathi) in the Southern Mahratta country, and in Mysore the flour is used for puddings or made into cakes which are fried in oil. In other parts of India a fermented liquor is prepared from the grain (Bombay Govt Agri Dept Bulletin) *Ragi* forms a principal diet given to prisoners in some of the Indian jails The allied species E. aegyptiaca named *Makra* occurring in Upper India is reputed as an alleviator of pains in the region of the kidney It is given in the form of decoction of the seeds and its herbaceous parts are applied externally for the cure

of ulcers *Ragi Kanji* (*Chodr Kanji*)‡ with buttermilk in the morning is a diet in diabetes. ' Under the name of *burda* (Marathi) the green heads are parched and eaten The grain is indestructible and can be preserved for more than fifty years in dry grain pits The straw powdered and mixed with chaff, is used as fodder but it is of poor nutritive value —Bombay Govt Agri Dept Bulletin

928 EMBELIA BASAAL

(N O —Myrsinaceae)

Found in Malabar the seed of which is used as a vermifuge the bark of the root in toothache and a decoction of the leaves as a gargle in sore throat and in making a soothing ointment

929 EMBELIA RIBES Burm

E indica E glandulifera & E robusta Roxb

(N O —Myrsinaceae)

Sans —Vidanga Vrishanasana Chitra tandula Janthu nashana. *Hind* —Wawrung Viranga Baberang *Ben* —Biranga, Bhai birrung *Punj* —Babrung *Gualior* —Baibirang *Pushtu* —Babrang *Guj* & *Hind* —Karkannie *Mah* —Vavadinga *Bom* —Amti Ambat Vaivarang *Tel* —Vellal Vaividungalu *Tam* —Vayu vilamgam Vaividangam *Can* —Vayubaliga *Nepal* —Himalcheri *Sinh* —Umbelia *Arab* & *Pers* —Birangi l Kabuli

Habitat — These climbers are found in the hilly parts of India from the Central and Lower Himalayas down to Ceylon and Singapore

Parts Used —Berries (fruit) leaves and root bark

Constituents —Embelic acid a volatile and fixed oil colouring matter tannin a resinoid body and an alkaloid called *Christembine* Crystalline compounds of embelic acid with soda, potash and ammonia are obtained K. S Nargund and D D Kanga Ahmedabad have prepared and analysed the following new derivations from Embelic Acid —

(a) a monoacatyl derivative	m p 57°– 58°
(b) a monosemicarbazone	m p 205°–206°
(c) a disemicarbazone	m p 255°–256°
(d) a dihydrazone	m. p 178°–180°
(e) an oxime ..	m p 178°

A colourless crystalline constituent '*Vidangm*' from the berries has m p 115° 116° on the oxidation it gives orange flakes m. p 142°C (D B Limaye & A B Limaye, Poona) It gives a dark coloured aliphatic oil and an orange coloured yellow crystalline substance Embelin formula $C_{18}H_{28}O_4$ Embelin contain two hydroxyl groups and two Ketonic groups and two methylene groups These groups are called of Keto-enol tentomerism Embelin on crystallisation yields long yellow needles m p 142° (Ramjee Kaul Amaresh Chandra Roy and Sikhibhushan Dutt Allahabad) 'Presence of two Keto groups is proved in the molecule Embelin m. p 143° ' (K. S Nargund & B W Bhide Ahmedabad and Poona)

Embelin oxidised by nitric acid of various dilutions have been definitely isolated and identified from among the oxidation product normal lauric acid oxalic acid lauronitrile and lauramide In the light of these findings the results of Kaul Roy and Dutt, who report the isolation of isolauric acid in the oxidation of *Embelin* have been doubted and those of Hefter and Feuerstein confirmed " (G R Gogate Ranade Industrial & Economic Institute Poona)

Action.—Fruits or dried berries (seeds) are carminative anthelmintic, stimulant and alterative Pulp is purgative Fresh juice is cooling diuretic and laxative

Action & Uses in Ayurveda and Siddha —Katuirasam ushna veeryam, lagu diksham in sollam adhmanam udaram, krimi vatavi bandam (Therapeutic Notes)

Action & Uses in Unani—Hot 2° Dry 2°, purgative of bal gam, and souda vermifuge in puerperal condition (Therapeutic Notes)

Preparations —Decoction (1 in 10), dose —½ to 1 ounce, Liquid Extract dose —1 to 4 drachms, Powder dose —1 to 4 drachms, *Paste*, *Confection*, *Ammonium embelate* (a salt), dose — 3 to 6 grains

Uses.— Dried berries (seeds) are useful as *powder*, preferably of E Robusta to expel intestinal worms especially tape-worms. For a child a drachm or two of the powder mixed with a few drops of pure honey or sugar, administered in an empty stomach or twice in the day is the dose to expel tape-worms. The *Ammonium embelate* in doses of 3 grains is also effective, it is given with a little honey or syrup, preceded and followed by a dose of castor oil.

Powder may be given also with an *infusion* of the seeds The worm is expelled dead The drug can be a substitute for male fern, better than male fern as it is not so griping as male fern Berries prevent flatulence and are useful in dyspepsia, a few berries or their powder is put into the milk given to children *Fruit* of E robusta is given internally for piles *A paste of the seed* is used locally in ring worm and other skin diseases *Young leaves* of the plant combined with ginger are used as a gargle in sorethroat, aphthae and indolent ulcers of the mouth Powder made from dried bark of the root is a reputed remedy for toothache A paste of the bark is a valuable application to the chest in lung diseases like pneumonia etc, in such cases rice conjee in which this bark is boiled is given internally Berries crushed and mixed with butter is an ointment applied to the forehead in headache This drug enters into the composition of several applications for ringworm and other skin diseases, for example —Take of *Baberang* rock salt, chebulic myrobalan Vernonia anthelmintica, mustard turmeric and the seeds of Pongamia glabra equal parts and make them into a thin paste with cow's urine—(Chakradatta) *Vidanga Lala* composed of embelia ribes, Croton tiglium and Carbonate of sodium is applied to the forehead or dropped into the nose for relieving headache or hemicrania. The drug is also used in scorpion sting, and snake bite

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930 EMBELIA ROBUSTA, Roxb

Hind—Babirang, *Bom*—Barbatti

Action—Antiseptic carminative and anthelmintic

(Chopra's I D of I pp 486)

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931 EMBELIA TSJERIAM COTTOM, A DC.

(N O—Myrsinaceae)

Is another species found in Malabar, the bark of which is used in aphthae and in indolent ulcers of the mouth and the gums

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932 EMBLICA OFFICINALIS

See Phyllanthus emblica.

(N O—Euphorbiaceae)

Sans.—Dhatri phala, Amraphalam, Amalakam, Sriphalam, Amalaki, Vayastha. *Eng.*—Emblic Myrobalan, Indian gooseberry *Ger.*—Gebrauchlicher, Amlabaum. *Fr*—Phyllanthe Emblic. *Hind*—

Amla, Aoula, Aura, Amlika, Anvurah *Bom*—Amla, Avalkati. *Ben*—Amlaki, Amla *Mah* & *Gwalior*—Avla, (seed) Avalkati *Tel*—Nelli, Usirikayi, Amalakamu, Usiri *Tam*—Toppi, Nellikkai *Mal* & *Can*—Nellikai *Sinh*—Nelli Nellika. *Burm*—Ziphiyu si, Shabju *Punj*—Amli, Ambul, Ambal, Amla *Guj*—Ambala, Amla *Kash*—Aonla *Arab*—Amlaj *Pers*—Amala, Amuleh, Amial *Assam*—Amluki *Nepal*—Amla *U P*—Amla, Asula *Uriya*—Amlaki *Santal*—Meral

Habitat—The Deccan the sea coast districts and Kashmir

Parts Used—Dried fruit, the nut or seed leaves root bark and flowers Ripe fruits used generally fresh, dry also used

Action—Fresh fruit is refrigerant, diuretic and laxative Green fruit is exceedingly acid Fruit is also carminative and stomachic Dried fruit is sour and astringent Flowers are cooling and aperient Bark is astringent

Action & Uses in Ayurveda and Siddha—Rasa all except lavana kashayam dominates seetha veeryam mathura vipakam, tridosha haram rasayanam increases sukram (Therapeutic Notes)

Action & Uses in Unani—Cold 2°, Dry 3°, refrigerant heart tonic tonic to brain prevents vicious humours in stomach and intestines Used in chronic diarrhoea in the convalescent stage of typhoid and other fevers (Therapeutic Notes)

Indications—Rakta pittam pramieham vata raktam, giddiness, vertigo External use—In mental disorders as paste and tailam to head Tara dravam (Therapeutic Notes)

Preparations—Decoction and Infusion of leaves and seeds, a liquor a fixed and an essential oil, confection, powder, paste and pickles An astringent extract equal to catechu is prepared from the root by decoction and evaporation

Uses—*Fresh fruit* is used in Turkeystan in inflammations of the lungs and of the eyes as a collyrium. In Persia it is used as a vermifuge, *juice* of the fruit is used, it is generally given with honey, the dose is from 1 to 3 drachms The green fruits are made into pickles and preserves to stimulate appetite A *paste* of the fruit alone or with Nelumbium speciosum, Saffron and rose water is a useful application over the pubic region in irritability of the

somnifera given with ghee and honey is a restorative invigorator, especially in winter days. Half a drachm each of the emblic seed and *gokhru* powdered and mixed with 15 grains of essence of *Gulancha* and given early morning in ghee and sugar is an equally nutrient tonic. For diarrhoea of children, a compound powder of the emblic seed, *Chitrak* root, chebulic myrobalan, *pipli* and *palelone* is given in suitable doses according to age, in warm water twice daily, morning and at bed time. *Milky juice* of the leaves is a good application to offensive sores. A *fixed oil* obtained from the berries strengthen and promote the growth of hair. *Essential oil* distilled from the leaves is largely employed in perfumery. *Tender shoots* given in butter-milk cure indigestion and diarrhoea; green fresh leaves combined with curds have also similar effect. *Flowers* combined with other articles are used in the form of an electuary. Fruit is often dried and used as a medicine in bilious complaints, and is used cooked, preserved and used in pickles, or made into confection. Confection prepared thus :—Berries are first soaked in water for 12 hours; strain and throw away the water; boil the berries in fresh water for a couple of hours so that they may become soft; then grind them into a paste and add three times their quantity of sugar and make into confection; it is given in doses of 1 to 2 drachms. It is a pleasant purgative, useful in habitual constipation; it is employed by Hakims with much benefit in palpitation of the heart and in various complaints connected with digestive organs, such as biliousness, anorexia or dyspepsia etc. Other preparations recommended in Ayurveda are :—*Dhatri Leha* :—Take of powdered emblic *myrobalan* 64 tolas, prepared iron 32 tolas, liquorice powder 16 tolas, mix them together and soak in the juice of *gulancha* for seven times, successively. This is given in doses of 20 to 40 grains in anaemia, jaundice and dyspepsia. *Dhatri Arista* or fermented liquor of emblic myrobalans :—Take fresh juice of two thousand emblic myrobalans, honey in quantity equal to one-eighth of the juice, powdered long pepper 16 tolas, sugar six seers and a quarter; mix them together, boil for a while and leave the mixture to ferment in an earthen jar. This liquor is used in jaundice, dyspepsia, indigestion, cough, etc. *Aksirul-ul-Imraz* recommends following mixture for leucorrhoea :—Take of *Tukhm Amla* 5 parts and sugar-candy 2 parts. Mix and take for 14 days. An ointment made of the dried emblic myrobalans. 4 parts, Camphor 1, Nux-

vomica seed 4, Sulphur 4, Copper sulphate 1, Red oxide of mercury 2 parts and ghee, is a useful application in obstinate itch, prurigo etc The following recipe has proved successful in curing fever and cough combined —Take of *Lohasavam* 3 ss, *Chyavanaprasa* 1 oz, *Asoka ghritam* 1 oz, and Honey 6 ozs, and make into a *Leham* Give ¼ tola morning and evening before food *Chyavaraprasa*, an Ayurvedic preparation so familiar among the people is composed of the following drugs —Barks of Aegle marmelos, Premna serratifolia Bignonia indica, Gmelina arborea Bignonia suaveolens, roots of Sida cordifolia, Hedysarum gangeticum, Uraria lagopoides Phaseolus trilobus, Glycine debilis piper longum, Tribulus languinosus, Solanum xanthocarpum Rhus succedanea, Phyllanthus niruri, Grapes, Caelogyne ovalis, Aplotaxis auriculata, Aquilaria agallocha Chebulic myrobalans Tinospora cordifolia, *Riddhi* (not being obtainable, *Bala* or Sida cordifolia is used), *Jivak* (Not being obtainable, Tinospora cordifolia is used), *Rishabhaka* (*Bhumi kushmanda* or Bamboo Manna is used) Curcuma zerumbet, tubers of Cyperus rotundus, Boerhavia diffusa, Meda, Withania somnifera, not being obtainable Cassia fistula is used, Elettaria cardamomum, Nymphae stellata, Red sandal wood convolvulus paniculatus, roots of Justicia adhatoda, the root called *Kakoli*, & Leea hirta Take one *pala* of each of these Take also 500 fruits of Phyllanthus emblica and tie them loosely in a piece of cloth Boil all these together in 64 seers of water down to 16 seers and strain the decoction Throw out the seeds of the myrobalans and taking the remnants of the fruits, fry them in 6 *palas* of ghee and 6 *palas* of sesamum oil mixed together The fried product is then to be reduced to a paste on curry stone After this boil the decoction and this paste, with 50 *palas* of sugar candy When the boiled matter assumes some degree of consistency, throw into it bamboo manna 4 *palas*, powder of Piper longum 2 *palas*, that of the bark of Cinnamomum zeylanicum 2 tolas, that of the leaves of Cinnamomum tamala 2 tolas, that of Cardamoms 2 tolas and that of the flowers of Mesua ferrea 2 tolas, and stir the contents When cooled, add 6 palas of ghee and keep the compound in a jar long in use for storing ghee Dose —½ to 2 tolas, vehicle being goat's milk This is a nutritive tonic, useful in phthisis, and improves all conditions of debility. The drug is also used in scorpion-sting

933 EMILIA SONCHIFOLIA, DC.

(N O —Compositae)

Hind —Kirankuri *Ben* —Sudhimudi *Bom* —Sadamandi

Action —Sudorific. The drug is similar to taraxacus

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934 *ENHYDRA FLUCTUANS* Lour

(N O —Compositae)

Sans —Hilamochika *Hind* —Harkuch *Ben* —Hingcha *Uriya* —Hiramicha

Habitat —Found in Eastern Bengal Assam and Sylhet

Action —Leaves are antibilious and laxative

Uses — Leaves are useful in the torpidity of the liver *Infusion* should be made the previous evening It is boiled with rice and used with mustard oil and salt Dose is 1 drachm *Leaves* are also pounded and made into a paste which is applied cold over the head as a cooling agent Leaves are also useful in diseases of the skin and the nervous system. Their expressed *juice* is as demulcent in gonorrhoea It is taken mixed with milk either of cow or goat Fresh juice of the leaves in doses of about a tola is prescribed as an adjunct to tonic metallic medicines given in neuralgia and other nervous diseases

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935 ENICOSTEMA LITTORALE, Blume

(N O —Gentianaceae)

Hind —Chota kirayat, Chota chiretta *Bom* —Kada vinayi, Manocha. *Tam* —Vallari *Tel* —Nela guli, Nela gulimidi

Habitat —Commonly available in the Punjab and Bombay bazars.

Constituents — Bitter principle

Action.—Flowering plants are stomachic, bitter tonic, laxative and carminative.

(Chopra's "I D of I pp 577 and 486)

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936. ENTADA SCANDENS, Benth

E. pusaetha or Acacia scadens.

(N O —Leguminosae)

Sans —Gilla. *Bom & Duk* —Gurdul, Pilpita. *Guj* —Suvali amli. *Bom.*—Gardal. *Nepal & Sikkim* —Pangra. *Uriya* —Geredi

Mah—Girambi *Ben*—Gila gach *Arab*—Samgh i Arabi *Hind*—Barabi Chian *Tel*—Gila tiga *Mal*—Parin Kakavalli *Bom*—Pitpara (seeds)

Habitat—Tropics, Eastern Himalayas East Bengal

Parts Used—Seeds

Constituents—Seeds contain a viscid turbid oil 7 p c and a little saponin glucoside and an alkaloid

Action—Seeds are irritant emetic and a fish poison

Uses—A paste of the seeds is applied to relieve inflammatory glandular swellings in the axilla known as *Khaka Bilari* It is applied in pains of the loins and joints and to swollen hands and feet in cases of general debility with marked relief Seeds are used as soap to wash the hair

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937 EPHEDRA PEDUNCULARIS Boiss

or E alte, E alata

(N O—Grataceae)

Indian Languages—Kuchan nikkikurkan bratta, tandala, lastuk mangarwal bandukai which grows in Sind the Punjab and Rajputana

E foliata E gerardiana—(var Saxatilis, sikkimensis & wallichii), E fragilis and E nebrodensis (var procera)

Are other varieties of lesser importance growing in various parts of India

E foliata—*Indian Languages*—Kuchar

Growing in Baluchistan Sind Kumaon Valley the Punjab plains and the Salt Range contains no alkaloid

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938 EPHEDRA VULGARIS Rich

or E gerardiana, E distachya (Linn) & E monostachya E pachyclada or E intermedra var tibetica—

(Family—Ephedraceae)

(N O—Gnetaceae)

Eng—Ephedra, Ma Huang *Bom & Pars*—Huma *Japan*—Ma-oh, Mupen *Punj*—Butshut, Chewa, Amsania *Sutlej*—Phok *Chin*—Ma Huang *Indian Languages*—Khanda, Khama, Kuna war or phok, Jansar

Habitat — Western Himalayas Afghanistan etc, scattered all over the world—Western Tibet Sikkim, Shalai Hills, North of Simla A number of species grow abundantly in the drier regions of the Himalayas The Chinese Ephedras—Ephedrapinic. (Tsaopen Ma huang) and Ephedra esuisetina (Mupen Ma huang) are imported in considerable quantities and contain much ephedrine

Parts Used — Root and dried branch

Constituents — Ephedrine, an alkaloid obtained from the stem By oxidation it splits up into benzoic acid, monomethylamine and oxalic acid Isoephidrine is obtained by heating ephedrine Ephedra of Tibet and China contains considerably more ephedrine than that of Europe

The variety E intermedia (E tibetica) gives an alkaloidal content ranging from 0 2 to 10 per cent, of which 0 025 to 0 056 is ephedrine and the remainder is pseudo-ephedrine The berries, roots woody stocks and branches were found to contain very little ephedrine The green stems are the only parts which give the highest amount of the alkaloids The collection of the drug in the autumn before the winter frost sets in, is essential to get a good yield of alkaloid Pseudo ephedrine occurs abundantly in the Indian varieties of ephedra The yield of ephedrine from various varieties in many cases does not exceed 50% of the total alkaloids and is often considerably less [1]

Ephedra vulgaris or E gerardians has an alkaloid content of 0 8 to 1 4 per cent of which about half is ephedrine and the balance is pseudo-ephedrine There are marked variations in the alkaloidal content of the green twigs and the stems of these varieties. The alkaloidal content of the green twigs of the Indian E vulgaris is about four times that present in the stems and that of E intermedia nearly six times Specimens from various places having been analysed ephedras growing in the drier regions of North West India contain a high percentage of the alkaloids, in many cases higher than the alkaloidal content of Chinese species. Among the Indian species E nebrodensis is the richest and E. intermedia the poorest so far as the ephedrine content is concerned The Chinese and Indian species contain both ephedrine and pseudo-ephedrine, the amount of any one of the two alkaloids depends upon the species. [2]

(1) & (2)—Chopra's "I. L. of I." pp. 140.

Preparations —Decoction of the root (1 in 40), dose —½ to 1 oz; Tincture or alcoholic extract. "*Alcoholic Extract or Tincture* prepared from 'Indian Ephedra'—An extract prepared from E gerardiana and E. intermedia, first introduced by Lt. Col. Chopra, has been in use for the last few years. It is prepared by exhausting the dried powdered twigs of the plant with 90 per cent alcohol, sufficient water being then added to make the strength of alcohol about 45 p. c. 50 c c. of the extract should contain ½ grain of the total alkaloids. This extract can be used either by itself or in combination with asthma mixtures and is very effective in controlling asthmatic paroxysms It is considerably cheaper than the purified alkaloids and brings the use of this drug within the means of poor people A weaker tincture is also on the market now"—Chopra's I D of I" pp 157

Action —Alterative, diuretic, stomachic and tonic Ephedrine like atropine has the property of dilating the pupil of the eye Ephedrine undoubtedly controls the paroxysms and relieves the symptoms in a quarter of an hour to half an hour, but is likely to produce unpleasant side effects In some patients acute pain in the cardiad region lasting for 10 to 20 minutes has been observed and a feeling of distress in the pericardium is not an uncommon symptom in a large number of patients using the drug owing to hypertension produced by stimulation of the vaso motor nerve endings Some patients get palpitation flushing of the skin and tingling and numbness of the extremities, tachycardia and faints fits may be produced Patients suffering from inflammatory conditions of the skin, frequently get exacerbation after its use and quiescent conditions may become acutely active Those suffering from organic disease of the heart, especially of the myocardium, get decompensation, probably owing to the depressant action on the heart muscle by excessive dosage. Besides this, the stimulating action of the alkaloid on the sympathetic is liable to produce persistent constipation, which aggravates certain types of asthma. Loss of appetite frequently occurs and digestive disturbances are not infrequent accompaniments. Chopra and his co-workers declare that this drug has not been sufficiently long in use for them to know all its untoward and toxic effects, but that they undoubtedly do exist. Caution is, therefore, recommended in its use, especially for prolonged periods in the treatment of such a symptom complex. Often the relief afforded is of

short duration and there is temptation of repeating the drug *Its routine use in controlling the paroxysms without investigating the cause is to be strongly deprecated"* (Chopra's I D of I pp 155 & 156) ' Within 15 minutes to half an hour of oral administration of half grain of the alkaloid (Ephedrine) the feeling of tightness round the chest is relieved and the patient's breathing becomes normal A similar dose taken when the premonitions of an attack are felt generally stops the paroxysm. The effect, in fact, is just as rapid as that of ephedrine Although Chopra and his assistants say that they have not tried it on a sufficiently large scale and for long enough periods, the results so far have been encouraging and the side effects produced are not so unpleasant If use of this alkaloid is extended in the treatment of asthma and other conditions in which ephedrine is being used not only will the cost of treatment be reduced but it may be possible to avoid the unpleasant side-effects of the latter drug '

Uses — Juice of the berries is useful in affections of the respiratory passage Decoction is alterative and is used for acute muscular and articular rheumatism and in syphilis It is given in cases where antipyrine salol, antifebrine and salicylate of soda have failed As a stomachic it improves digestion and gives tone to intestines The drug has been in use in China for the last 5000 years Ephedrine is a drug of great therapeutic value and from the time the sympathomimetic action of this was discovered this alkaloid has been very extensively used in the treatment of asthma The relief afforded by it, though not quite so instantaneous as adrenaline is quick and certain, besides it can be taken by the mouth and need not be given by injection It has therefore been used indiscriminately in a large number of cases with sometimes untoward results Chopra and his assistants are aware of patients who have been in the habit of taking half a grain of the alkaloid twice a day for many months In their Asthma Clinic at the Calcutta School of Tropical Medicine, their experience with the use of this alkaloid in the treatment of this symptom complex has not been altogether satisfactory "' "It is said that one variety of ephedra probably E. intermedia, is the famous 'Soma' plant from which the favourite drink of the *Rishis* (ascetics) of the Vedic period was prepared, but there is little evidence to support this statement "'

(3) pp 157, (4) pp 154/158 (5) pp 154

EPHEDRA SPECIES.

Chemistry of Ephedrine & Pseudh-ephedrine.–Ephedrine, C H ON, is a colourless crystalline substance, M. P. 41-42 C. The hydrochoride forms colourless needles, M. P. 216 C; specific rotation in water is 34.2 and in absolute alcohol 6.81. The platinichloride of the base crystallizes in colourless needles, M. P. 186 C

Pseudo-ephedrine or iso-ephedrine CH ON, occurs with ephedrine in Ephedragerardiana and E. intermedia and is formed by heating ephedrine with hydrochloric acid. It is a dextro-rotatory isomer of ephedrine with a specific rotation of 50 in absolute alcohol and crystallizes from ether M. P 118 C.

The base is a white colourless, crystalline substance occurring in the form of long needles freely soluble in alcohol. The hydro Chloride forms colourless needles M P. 179 C. It forms a remarkably soluble oxalate in contrast to the sparingly soluble ephedrine oxalate. The oxalate of ephedrine crystallizes from water in fine needles sparingly soluble in water and less so in alcohol. This relative insolubility of ephedrine oxalate provides a fairly simple means of separating the alkaloid from the associated isomer d-pseudo-ephedrine.

The ratio of ephedrine to d-pseudo-ephedrine seems to vary with the different species, the real value of the herb being determined by a high y-ephedrine content. The alkaloid ephedrine can exist in no less than six forms, y-ephedrine, d-ephedrine, dy-ephedrine, y pseudo-ephedrine, d-pseudo-ephedrine and dy-pseudo-ephedrine.

After the separation of the alkaloids, y-ephedrine and de-pseudo-ephedrine, there remains a small precipitate of ody residue which is still high in alkaloid content. From this oily residue Sydney Smith has separated two additional alkaloids Y-methyl ephedrine and nor-d pseudo-ephedrine. Y-methyl-ephedrine was prepared by distilling the ody residual alkaloids under reduced pressure and purified through the alcohol soluble oxalate Y-methyl ephedrine has no optical rotation (a) D-29 2.

The alkaloids y-ephedrine and d-pseudo-ephedrine are not particularly sensitive to potassic mercuric iodide solution. On the addition of that reagent to a 1 per cent. neutral solution of the sulphates

of the alkaloid no precipitate occurs Both alkaloids are precipitated in a 3 per cent neutral solution but the precipitate is readily soluble in dilute acids To the same reagent y methyl ephedrine and dy pseudo-ephedrine behave in marked contrast to the above They are readily precipitated from a 1 per cent neutral solution of the sulphates the precipitate remaining undissolved on the addition of dilute acid

Probably the most important property of ephedrine is its stability, its solutions are not decomposed by light air or heat and age apparently does not affect their activity Thus a solution of ephedrine hydrochloride prepared and sealed in a sterile ampoule for 6 years showed no change in appearance and produced the customary pressor response when injected into a pithed cat Kendall and Hitzmann (1907) have demonstrated the great resistance of ephedrine to oxidation as compared with epinephrine the former is not oxidised by dibro-mophenolindophenol methylene blue or indigo carmine whilst the latter is oxidised by all these reagents Pseudo-ephedrine hydrochloride is also very staple, a 1 per cent solution still retains its properties after keeping at room temperature for many weeks and it is believed may keep indefinitely without deterioration Its solutions can be boiled without decomposition Mixing with sera does not therefore with the activity of either ephedrine or pseudo-ephedrine even after incubation for many hours

Action —The alkaloid ephedrine contained in the plant has an action nearly akin to that of adrenaline (Dr Chen u Schmidt) when given by mouth (Dr Kreitmair) so that it can be suitably used in the place of adrenaline which latter acts only f injected The point of attack in the case of ephedrine is the sympathicus but it is less poisonous and has the great advantage of acting also it constricts the vessels and raises the blood pressure Dr Takazs (less so than adrenaline but more lastingly) (Dr Meyer Gotti lieb) Small doses raise the blood pressure more than large doses (Dr Rothschild) Ephedrine restores sufficiency in insufficient hearts (Dr Trendelenburg) It stimulates the respiratory centre. (Dr Kreitmair) and the uterus (Dr Reinitz), it dilates the bronchia (Dr Pollak) and the pupils and contracts the intestine by its irritant action on the smooth musculature (Dr Poulsson), blood sugar values are raised (Dr Cannavo) After prolonged administration

ephedrine causes insomnia (Drs Doyle & Daniele & Ganota) as well as dermatitis (Dr Ayres n Anderson)

Physiological Action of Ephedrine & Pseudo ephedrine from Indian Ephedra —

In 1924 Chen & Schmidt demonstrated the close physiological as well as clinical relationship of ephedrine to adrenaline The action of the ephedrine has been found to be the same as that obtained from the Chinese plant which has been studied in great detail by various workers Pseudo ephedrine stimulates both the inhibitory and the accelerator mechanisms of the heart and has a stimulating influence on the myocardium The rise of blood pressure is not so great as in the case of ephedrine and is only partly due to sympathetic stimulation as it is still produced when the sympathetics are paralysed with ergotoxin The occurrence of the rise after the vaso motor fibres are paralysed shows that the alkaloid stimulates the unstriped muscle fibres of the blood vessels and that the cardiac muscle is markedly stimulated The rise of blood pressure is considerable in such animals at the cat with such does as 2 mgm and persists for from 20 to 30 minutes Repetition of injections does not evoke an equally great response the height of the pressor effect being gradually diminished as the number of injections increase

The pulmonary pressure shows a marked rise the action resembling that of adrenaline This is one of the most constant effects of the drug The rise appears to be due to contraction of the branches of the pulmonary artery and this also relieves the turgescence of the mucous membrane There is at the same time a well marked dilatation of the bronchioles and both these factors help in relieving the paroxysms of asthma If in experimental animals an asthma like condition is produced by giving an injection of pilocarpine the marked spasm produced is relieved immediately by an intravenous injection of 2 mgm of pseudo-ephedrine showing that the drug has a powerful bronchodilator effect

The sympathomimetic action of this alkaloid is also clearly shown by the fact that immediately after an injection of 2 mgm of pseudo-ephedrine, the movements of the gut are inhibited and there is a well marked relaxation of the intestines. Perfusion of an isolated piece of the ileum of the rabbit shows a similar effect Move-

ments of the uterus of the cat in situ as well as of the isolated uterus in a uterine bath show marked inhibition and may stop altogether Injection of 2 mgm of pseudo ephedrine produces a persistent rise of blood pressure accompanied by a marked contraction in the size of the spleen resembling that obtained by adrenaline

The volume of other abdominal viscera such as the kidney shows an increase after an injection of the drug These effects are produced by a general rise of blood pressure all over the body by the vaso-constricting action of the drug which forces the blood into the splanchnic area It is also to be noted that the increase in the volume of the kidney corresponds to the increase in the systemic blood pressure, when this falls to normal, the kidney volume also becomes nor mal

The increase in the volume of the kidney suggested that the alkaloid might have a diuretic action, the urine flow was, therefore, measured by putting a cannula into the ureters, the drops of urine emerging being recorded on the drum by an electro-magnet The rate of secretion is markedly increased and it was also noted that the acceleration of the urine flow lasted as long as the blood pressure effect lasted ' (Chopra)

Difference in the Action of Ephedrine and Pseudo-ephedrine It is evident that the action of pseudo ephedrine closely resembles that of ephedrine Both the alkaloids pass through the liver unchanged and produce their usual effects whether injected into one of the mesenteric veins or into a systemic vein They are both rapidly absorbed from the gastro-intestinal tract and their inhibiting effect on the musculature of the gut is about equal Both the alkaloids produce a contraction of the blood vessels and a well marked rise of blood pressure The vasopressor effect is much stronger in case of ephedrine which acts almost entirely on the vasomotor nerve endings, while pseudo-ephedrine has been shown to have some action on the musculature of the vessels as well The rise of pressure is also less marked in the pulmonary and portal areas with pseudo-ephedrine Its dilator action on the bronchioles as well as its contracting action of the mucous membrane of the nose does not essentially differ in its potency from that of ephedrine The effect of the two alkaloids on the kidney is to produce a dilatation of the

blood vessels and an increase of the kidney volume, but the initial momentary constriction produced by ephedrine is absent in case of pseudo-ephedrine; the diuretic effect is much more marked in the case of the latter alkaloid The action of the two alkaloids on the voluntary and involuntary muscles appears to be about equal The pressor action of pseudo-ephedrine is much less powerful than that of ephedrine but its broncho-dilator action appears to be quite as marked The contraction of the branches of the pulmonary artery relieves the turgescenel of the mucous membrane and this with the well marked dilatation of the bronchidles helps in relieving the paroxysm Chopra & his assistants tried pseudo-ephedrine in the treatment of this condition with excellent results Refer for more details re further uses in the Uses section hereunder

Ephedrine & Pseudo ephedrine as Cardiac Stimulants —The stimulant action of these alkaloids on the blood pressure is well known and for this reason they have been used as cardiac stimulants Ephedrine especially in large doses, has a depressant action on the myocardium, pseudo ephedrine on the other hand has the opposite stimulant action on the heart muscle Besides its action on the Vaso-motor nerve endings pseudo ephedrine also stimulates the muscle fibres of the arterioles Lt Col Chopra has, therefore, tried an extract of ephedra which contains both ephedrine and pseudo-ephe- results This produced a well marked beneficial effect when adminis- stered to patients in whom the action of the heart was weak and drine (more of the latter) as a cardiac stimulant with encouraging compensation was failing Observations on a number of patients show ed that there was a definite rise of blood pressure amounting to 10 to 20 mm. of mercury, after ½ to 1 drachm doses, 2 or 3 times a day Marked diuresis was produced in those patients in whom the func- tion of the kidneys was disturbed from inefficient circulation

In cases of left heart failure (of epidemic dropsy) the Tincture of Ephedra proved very effective, even when digitalis and other cardic stimulants proved ineffective

The Tincture of Ephedra is also an excellent cardiac stimulant in toxic conditions of the heart produced by such infections as pneu- monia, diphtheria, etc., Lt Col Vere Hodge, I M S., tried the tincture in ½ drachm, doses, 3 to 4 times daily with excellent results in such conditions (Chopra's "I D of I ").

Species	Locality	Authority	Remarks.
E. gerardiana, Var. alla.hu	Western Tibet, Kuna war, Garhwal and Kumaon	Flora of British India by Hooker, Vol. V, pp. 610 and 863.	
Var. B-Saxatilis	Garhwal and Kumaon	Do	
Var Y-Sikkimensis	Sikkim	Do.	
E. nebradensis Tines Var procera	Lahoul and Western Tibet	Do	Usually classed with E. gerardiana.
E. pachyclada	Garhwal, From Garhwal Westward ascending to 15 000 ft.	Do	Syn. E intermedia
Var glauca	Mongolia to Kashmir	Do	
Var tibetica	Afghanistan border Western Tibet, Afghanistan	Do	
	Behar and Orissa	Botany of Behar and Orissa by Haines	Ephedras not found
	Northern Berar Forests	Descriptive Botanical list	Do
	Northern Berar Forests	Descriptive Botanical List, Northern and Berar Forest Circles, C P, by Witt.	Do
	Central Provinces	Descriptive List of Trees Shrubs and Economic Herbs of S C C P, by Haines	Do
	Chota Nagpur	A Forest Flora of Chota Nagpur, by Haines	Do
E Pachydada Var. tibetica	Gangetic Plains	Flora of the Upper Gangetic Plain Pts I, II and III by Duthie	Ephedras not found
	Chittagong and Hill Tracts	List of Plants of the Chittagong and Hill Tracts, by Heing	Do.
	Darjeeling Dist.	Trees, Shrubs and	Do.

Species	Locality	Authority	Remarks
		Large Climbers found in the Darjeeling Orstrict by Gamble	
	Bengal	Bengal Plants, by Prain	Do
	Upper Assam and Khashi Hills	Preliminary list of Plants of Upper Assam including Khashi Hills by U N. Kanjilal	Do.
	Nilgiri and Pulney Hill tops	The Flora of the Nilgiri and Pulney Hill tops by Pyson	Do.

Variation of the Alkaloid due to Species —Read and Liu (1928) have pointed out that, the distribution of ephedra in the world is fairly wide Many species of this plant are known, but the active principle is found, only in a few The American species usually do not contain any ephedrine, the European plant yields an isomeric situated at a higher level (6 885 ft) show a lower ephedrine contain both ephedrine and pseudo-ephedrine, the amount of any one of the two alkaloids depends upon the species A detailed study of the Indian ephedras has been made by the author (Lt. Col Chopra) in collaboration with Krishna and Ghosh of the Forest Research Institute, Dehra Dun and their results have been recorded in Tables II and III Table II gives the total alkaloid and the ephedrine percentage of three common species collected from different localities at about the same time of the year. It is unfortunate that figures for all the samples are not available for the months of October and November, when the ephedrine content is highest Most of the samples recorded in Table III were obtained from private collectors and for the sake of convenience the months from June to September were chosen These months, however, do not give the ideal conditions for comparison, as the influence of rainfall on the alkaloid cannot be neglected, especially in localities (Chakrata) where the rainfall in these months is high This point has been discussed more fully elsewhere

TABLE II

Species	Locality of Collection	Month of collection	Total Alkaloids per cent.	Ephedrine per cent.
Ephedra foliata	...	...	0·03	nil
E intermedia	Razmak (Waziristan) ...	Aug. 1928	0·17	0·11
	Datakhel Do ..	Sep. 1928	0·12	0·09
	Shingarh (Baluchistan) .	Sep. 1929	0·42	0·19
	Zarghat (Baluchistan) ..	Sep 1929	0·90	0·48
	Pangi (Bashahr) ..	July, 1929	1·62	0·07
	Spiti (Kangra) ..	June 1929	1·20	0·05
	Gilgit (Kashmir) ..	July 1929	0·67	...
	Niabat Astor (Kashmir) ..	July 1929	0·75	0·08
	Kargil (Kashmir) ...	July, 1929	1·17	0·05
	Chini Range (Baohahshr Div	May. 1929	2·33	0·38
E. gerardiana and E. nebrodensis	Razmak (Waziristan) .	May. 1929	1·97	1·43
E. gerardiana and E. nebradensis	Shahudum (Baluchistan) ...	Aug 1929	1·40	0·98
	Sari Do ..	Aug 1929	1·31	0·90
	Shingarh Do ..	Aug 1929	1·67	1·12
	Zarghat Do ..	Sep 1929	1·34	0·96
	Narang (Kagan) ...	Aug. 1929	1·93	1·30
	Dbattamulla (Kashmir) ..	Aug 1929	1·22	0·68
	Phari (Tibet Frontier) ..	Nov 1928	0·29	0·10
	Chakrata	Nov. 1929	0·93	0·72
	Hazara	May. 1928	0·74	0·48
	Baramula (Kashmir) ...	Nov. 1929	1·28	0·80
	Lahoul ..	Oct. 1929	2·79	1·93
	Plaskohistan (Trans-frontier)	Sep. 1928	1·14	0·84
	Kagan Valley	July. 1928	1·83	1·23
	Kagan	Oct. 1929	2·15	1·52
E. equisetina	China	...	1·58	0·98
E sinica	Sinica	...	1·28	0·63

TABLE III

Locality	Altitude in feet	Species	Month of collection, 1929	Total Alkaloids per cent	Ephedrine per cent	Percentage of Ephedrine in Total Alkaloids
Spiti (Kangra)	8,000-9,000	Ephedra intermedia	June	1·20	0·05	4·1
Gilgit (Kashmir)	4,890	"	July	0·67	..	...
Niabat Astor (Kashmir)	7,836	"	"	0·75	0·08	10·6
Pangi (Bashahr Div.)	8,500	"	"	1·62	0·07	4·3
Kargil (Kashmir)	8,733	"	"	1·17	0·05	4·2
Shingarh (Baluchistan) ...	9,000	"	Sept	0·42	0·19	45·2
Zarghat (Baluchistan) ...	8,000	"	Sept	0·99	0·48	53·3
Razmak (Waziristan)	8,500	E. nebrodensis	July	1·70	1·05	61·7
Shahidum (Baluchistan) ...	8,200	"	Aug	1·40	0·98	70·0
Sari Do. ...	9,000	"	"	1·31	0·90	68·7
Shingarh Do. ...	9,000	"	"	1·67	1·12	67·0
Zarght Do. ...	8,000	"	Sept.	1·34	0·96	71·6
Kardung (Lahoul) ...	10,000	"	July	2·56	1·63	63·6
Narang (Kagan) ...	8,000	E. gerardiana	Aug	1·93	1·30	67·3
Dhattamulla (Kashmir) ...	4,700	"	"	1·22	0·68	55·7
Chakrata ...	6,855	"	"	0·28	0·14	50·0

From these, it is clear, that the variation of the alkaloid in the three species is very marked. The difference is not so great, so far as the total alkaloid is concerned, but it is well marked in the proportion of ephedrine to the total alkaloids. In general, E. nebrodensis and E. gerardiana appear to contain about 60 to 70 per cent. of ephedrine in the total alkaloids and E. intermedia about 10 per cent. The only exception to this is the E. intermedia obtained from Baluchistan, which contains a comparatively low percentage of the

total alkaloids but high proportion of ephedrine E intermedia contains, as a rule, a proportionately high percentage of pseudo-ephedrine The proportion of ephedrine in total alkaloids, as recorded here, is slightly different from that obtained by Read and Feng for Indian ephedrine, where E intermedia is shown to contain 30 to 40 per cent of the total alkaloids This difference may be explained as due to different methods of estimating the amount of ephedrine The percentage of ephedrine given here is based on the weight of ephedrine hydrochloride actually isolated from the crude plant and not on ephedrine hydrochloride actually isolated from the crude plant and not on the probable percentage of the base indicated by the biuret reaction developed by Read and Feng For purposes of comparison, the quantities of alkaloids found in the Indian Chinese, American and African ephedras are given in Table IV

TABLE IV

Country	Species	Total Alkaloids per cent	Ephedrine per cent	Pseudo-ephedrine per cent
Indian ..	E. foliata	0·03	nil	nil
	E intermedia	2·33	0 40	1 8
	E gerardiana	2·15	1 52	
	E. nebrodensis	2·79	1 93	
Chinese	E. sinica	1 315	1 118	0·263
American	E. equisetina	1 754	1 579	0 264
	E. nevadensis		nil	nil
	E. trifurca		nil	nil
	E. californica	0·014	nil	nil
African .	E. alata			1·0

Effect of Altitude.—In the case of Chinese ephedras, it has been shown that the ephedrine contents vary with the altitude of the locality where the ephedras grown Recent investigations by Lt. Col Chopra in collaboration with Krishna and Ghosh on ephedras collected from different localities in India however, have brought out certain new facts which do not agree with the findings recorded in the case of Chinese ephedras From a reference to Table III,

it will be seen that samples of *E nebrodensis* collected from two different localities (Sari and Shingarh in Baluchistan) situated at an altitude of about 9 000 ft. above the sea level show widely different figures (0 90 to 1 12 per cent) so far as their ephedrine content is concerned Samples of *E gerardiana* from Dhattamulla (Kashmir) show an ephedrine content of 0 68 per cent whereas same variety of ephedra collected from a different locality (Chakrata) situated at a higher level (6,885 ft) show a lower ephedrine content The altitude, therefore has no apparent connection with the ephedrine content of Indian ephedras

Effect of Rainfall—Another interesting feature of the Indian ephedras is that the rainfall of the locality where the ephedras grow bears a distinct relationship with the ephedrine content of the plant The greater the annual rainfall the smaller is the alkaloidal content Not only does the annual rainfall affect the average ephedrine content, but an occasional heavy shower lowers the ephedrine content considerably Such cases have been observed in many places fo instance in Kagan in Hazara where the collection of the drug was made in September after a continuous heavy rainfall and in consequence, it showed a very low ephedrine content Similarly in Chakrata the cumulative effect of heavy rainfall in July and August is marked by a lower percentage of ephedrine in the August and September collections. In places like Kagan and Lahoul, where the snowfall takes place early in November, the maximum ephedrine content is attained in October, on the other hand in places like Chakrata, Baramulla and Chini, the maximum is reached in November In the table below the effect of rainfall on the ephedrine content of Indian ephedras is given

TABLE V

Locality	Average Annual Rainfall Inches	Average Total Alkaloids per cent.	Average Ephedrine per cent.
Kagan	3-10	2·90	1·20
Razmak	20	1 46	0 90
Kashmir ..	32	1 15	0 [illegible]
Baramula ..	45	0 90	0·52
Chakrata	75	0 [illegible]	0 [illegible]

Seasonal Variations.—It has moreover been noticed that the amount of ephedrine found in the ephedrine varies with the time of the year when the collection is made To study the seasonal variation of the alkaloidal content in ephedras, monthly collections of the three species were obtained from different localities in India, and assayed The collection was made first in the month of April, when the plant brings out new shoots, and was carried on through the months when it flowers till its maturing period in October and November after which it begins to show signs of withering

Read (1928), from his experiments on Chinese ephedras has concluded that there is a progressive increase in the content of ephedrine in E sinica and E. equisetina, so that from spring to autumn there is an increase of about 200 per cent This strongly supports the old Chinese custom of collecting the drug in the autumn From the results of assays done, by Chopra and Dutt (1930) on Kashmir ephedras and Chopra, Krishna and Ghosh (1931) on ephedras derived from various localities in India, it is evident that the variation of the alkaloids from April to November in the Indian ephedras is not so great, nor is the variation so uniform and regular with each month, as shown by Read In all the specimens analysed, the ephedrine content decreases beginning with the month of May and steadily goes down during the rainy months till it reaches the lowest point in August, i e at the end of the rainy season From this point onwards, the alkaloid increases till it reaches its maximum in the autumn months, i e, October and November and then it falls again during the cold months The fall in the alkaloidal content from May to August in Indian ephedras cannot be attributed to anything except the climatic conditions

Effect of Storage.—A point of industrial interest that has been studied is the effect of storage on the ephedrine content of the drug From the results of the analyses given in Table VI it appears that if the drug is thoroughly air dried and stored in a dry place to prevent bacterial growth it can be kept for a sufficiently long period without any diminution in its ephedrine content

TABLE VI

Description.	Date of collection	Date of Analysis.	Total alkaloid per cent.	Ephedrine per cent.
E intermedia from Chini	Nov 1928	Mar 1929 Dec 1929	2·08 1 9	0·50 0·48
E. gerardiana form Kashmir	June 1928	Aug 1928. June 1929 Dec 1929	0·86 0·76 0·83	0 55 0·47 0·50
Do	Oct 1928	Nov 1928 June 1929 Dec 1929	0 93 1·01 0 92	0 63 0·67 0·60

939 EPILOBRIUM FRUTICOSUM

See Jussiaea suffrutocosa

940 EQUISETUM DEBILE, Roxb

(N O—Equisetaceae)

Punj—Matti *Santh*—Buru katkon charec

Action—Cooling

Uses—Cooling in gonorrhoea.

(Chopra s I D of i pp 486)

941 ERAGROSTIS ABYSSINICA,

(N O—Gramineae)

Eng—Red Teff Grass

Habitat—Originally imported from Abyssinia, and cultivated in Western India, especially Cawnpore There are two varieties — 1) Teff tseddia (2) Teff hagaiz

Constituents.—The air dried grass grown at Cawnpore gave the following figures on analysis —Moisture 6 95, Ether Extract (oil etc.) 2 01, Proteids 4.06, Digestible carbohydrates 51·43, woody fibre 29 35, Ash 6 20 per cent respectively total 100 per cent. (Bombay Govt Agri Dept Bulletin)

942 ERAGROSTIS CYNOSUROIDES, Beauv

(N O —Gramineae)

Sind —Dab, *Sans* & *Ben* —Kusha, *Hind* —Durva, *Bom* —Darbh

Action.—Diuretic

Uses.—In dysentery and menorrhagia

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943 EREMOSTACHYS VICARYI, Benth

(N O —Labiatae)

Punj —Gurgunna.

Parts Used —Seeds

Action —Seeds are cooling and a fish poison

Uses —Seeds are used for poisoning fish

(Chopra s "I D of I pp 486)

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944 ERIGERON ASTEROIDES Roxb

(N O —Compositae)

Hind & *Guj* —Maredi, *Mah* —Sonsali

Is used in India as a stimulating diuretic in febrile affections It is an annual flowering during the cold season and a native of dry cultivated lands

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945 ERIGERON CANADENSIS, Linn

E viscosum.

(N O —Compositae)

Eng —Canada Fleabane Squaw Weed (*Eri* —Early, and *geron* —hoary aged old man alluding to the early aged appearance of the plant before spring) Fleabane is in allusion to the supposed property of the plant to destroy fleas

Habitat —Common in all warm countries—Western Himalayas Punjab and Kashmir

Parts Used —Volatile oil distilled from fresh flowering herb (Oil of Fleabane)

Constituents.—A volatile essential oil, bitter extractive principle and tannin. (Oleum Erigerontis is obtained by distillation Oil is a pale yellow liquid becoming darker and thicker by age of a peculiar aroma and persistent terebinthinate odour of neutral re-action readily soluble in alcohol)

Action and Uses.—The drug owes its virtues to the volatile oil. The oil acts like turpentine, but is less irritating and less efficient. It has a special action as a haemostatic on the uterus, intestines, and is of special value in uterine haemorrhage menorrhagia, intestinal haemorrhage of passive form, typhoid fever, and is also given in diarrhoea, dysentery, cystitis, calculus, in bronchial catarrh and haemoptysis without fever Dose of the oil is from 5 to 10 minims It has the effect of checking the waste of albumen Large bundles of this plant soaked in milk are suspended in the rooms to allure flies to their destruction

N B —Squaw weed is termed from the weed having a special action upon the uterus.

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946 ERIOBOTRYA JAPONICA, Lindl.

(N O —Rosaceae)

Tam —Laktta, *Eng* —Loquat

Often cultivated for its fruit, on the Nilgiris, and is useful in indigestion

(Chopra's 'I D of I' pp 487).

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947 ERIODENDRON ANFRACTUOSUM, DC.

or Bombax pentandrum Linn.

(N O —Bombacaceae)

Sans —Svetashalmali. *Eng* —Capok or Kapok tree; White silk cotton tree *Hind* —Safedsimul, Huttian. *Ben* —Sfetshimool *Bom* —Safed savara *Duk* —Safed khatyan *Mah & Kon.*—Safed Savara; Pandresavara *Guj* —Dolo shemalo. *Can.*—Biliburuga, Apoorani *Mal* —Poola, Pamila *Tam* —Ilavam; Biliburfa. *Tel* —Buruyasauna. *Malay* —Kopok.

Habitat —This tree is a native of Malaya, met with in forests in the hotter parts of India Ceylon, etc

Parts Used —Gum, unripe fruits seeds flowers, roots and leaves

Constituents.—Seeds contain about 23 p. c. of oil and yield about 17 p. c. by pressing Air-dried Capok seeds contain 25 6 p c. of fatty oil. It was found to consist principally of triglycerides of palmitic, oleic and linoleic acids Gum which the tree yields contains tannic and gallic acids. It is a product of diseased action

Capok cake contains :—Water, nitrogenous (albuminous) compounds, fat, non-nitrogenous extractive matter, woody fibre and ash. Ash from Capok cake contains 28.5 p. c. of phosphoric acid and 24.6 p. c. of potash.

Action.—Gum or dried juice has tonic, alterative, astringent, aphrodisiac and laxative properties; dried flowers are demulcent; roots have stimulant and tonic effect and in large doses act as emetic. Unripe fruits are regarded as demulcent and astringent. Kapok seed oil resembles cotton seed oil in properties and re-action.

Uses.—Gum known as *Huttian gond* or *mocharas* is useful as a styptic; given with benefit in diarrhoea, dysentery and menorrhagia; ground to *powder* it is given in milk as a good tonic in impotence, and to children as a cooling laxative. In 20 to 30 grain doses with equal quantity of sugar the gum is useful in the diarrhoea of children *Extract Eriodendron* is used with success in diabetes. *Dried flowers* are boiled with poppy seeds, goat's milk and sugar and then inspissated and of this conserve two drachms are given three times a day in haemorrhoids. *Young roots* dried in the shade and powdered form a chief ingredient in aphrodisiac medicines, and the *roots* are also used in scorpion-sting *Tap-root* of the young plant is useful in gonorrhoea and dysentery. *Leaves* are ground into a *paste* and administered in gonorrhoea Kapok seed oil is not used in India so extensively for edible purposes as cotton seed oil. Better qualities of Kapok seed oil serve in Europe for converting into butter substitutes

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948. ERIOLAENA QUINQUELOCULARIS. Wight.

(N O—Sterculiaceae)

Bom—Budjori dha-mun, poultice of roots is used in wounds.

(Chopra's "I D. of I." pp. 487).

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949. ERUCA SATIVA. Mill.

(N O—Cruciferae)

Sans.—Siddartha. *Eng.*—The Rocket. *Hind*—Safed sarson, Taramira. *Punj*—Taramiri. *Ben.*—Shwet-sursha. *Mah.*—Jambho. *Bom*—Safed sarsu. *Arab*—Jarjir. *Pers.*—Eihukan.

Is an annual or biannual herb cultivated as a field crop in the U. P., C. P, and Sind, for the oil expressed from the seed. This

is a variety of mustard. It is said by Mahomedans that if sour pomegranate is watered with its juice the fruit will become sweet Its seeds cootain an essential oil, albuminoids, soluble carbo hydrates, woody fibre, mineral matter and sand Oil and seeds are acrid and used for purposes similar to those of mustard Oil expressed from the seeds can probably be used as a substitute for rape or mustard oil To a small extent, the oil is used in cooking, and mixed with Fuller s earth and applied to the body before bathing, as a very good, cool substitute for soap

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950 ERVUM LENS Linn.

See Lens esculanta

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951 ERYCIBE PANICULATA, Roxb

(N O—Convolvulaceae)

Santhal—Kari Bark is used in cholera

(Chopra s I D of I pp 487)

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952 ERYNGIUM CAERULEUM, Bell

(N O—Umbelliferae)

Hind—Dudhali Root is a nerve tonic and aphrodisiac

(Choprafs I D of I ' pp 487)

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953 ERYTHRAEA ROXBURGHII, G Don.

(N O—Gentianeae)

Hind—Charayatah, *Ben*—Girmi, *Bom*—Luntak. This drug is a substitute for chiretta.

(Chopra's I D of I ' pp- 487).

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954 ERYTHRINA CORALLODENDRON, Linn.

See E. Indica.

(N O—Papilionaceae)

Contains a narcotic alkaloid erythrine

(Chopra's 'I D of I ' pp- 487).

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955 ERYTHRINA INDICA Lam

E stricta, E corallodendron.

(N O—Papilionaceae)

Sans—Mimbataru, Mandalia, Paribhadra; Parijataka, Palitmandar *Eng*—Indian Coral Tree, Moochy Wood Tree *Fr*—Arbre immortel *Ger*—Indischer korallenbaum *Hind*—Ferrud, Mandar, Pangra *Ben*—Palita madar, Palidhar *Bom*—Pangaru. *Mah*—Pangara, Panara, Paringa *Guj*—Panarawas, Pararoo *Tel*—Barijamu, Machhikara, Modugo, Bandachettu, Badchipa-chettu *Tam*—Kaliyana marukka, Badisc Mal—Mooloomogrikah *Can*—Harawana, Warjippe, Hongara, Pongara *Kon*—Paogiro

Habitat—This tree is common in Bengal and many parts of India especially in Southern India often grown in gardens as a support for black pepper vines E stricta is the species found in Malabar and used like E Indica

Parts Used—Bark juice and leaves

Constituents—Bark contains two resins and a bitter poisonous alkaloid *erytherine* which exists in the leaves also

Action—Bark is antibilious expectorant, and febrifuge; also anthelmintic It reduces '*vayu* and '*Kafa.*" Juice is vermifuge and cathartic The drug is found to act on the central nervous system so as to diminish or abolish its funtions Leaves are diuretic, laxative, emmenagogue and galactagogue *Erytherine* is in action antagonistic to strychnine and may be used as an antidote to strychnine poisoning

Preparations—Infusion of leaves (1 in 10), dose—2 to 8 drs, Powder and Decoction of bark (1 in 20), dose—2 to 4 drs

Uses—*Bark* is used in decoction in dysentery, in worms and useful as a collyrium in ophthalmia Inner side of the bark is smeared with ghee and held over the ghee-lamp flame, the *soot* thus deposited is used in watery eye, tinea tarse, and purulent conjunctivitis, being applied to the inner side and edges of the lower lid *Juice of the leaves* mixed with castor oil is given for the cure of dysentery *Fresh juice* of the leaves with a few drops of honey added, taken in two ounce doses is a good vermifuge, whether for round, tape or thread worms, it acts as cathartic; it is also used as an injection into the ear for the relief of ear ache and as an anodyne for toothache

Crushed leaves are applied hot to rheumatic joints to relieve pain, and as *poultice* they are applied hot and bandaged upon venereal buboes, the bandage being changed twice daily The drug is used in liver troubles also It is also used as an antidote to snake-bite A *decoction of the root bark* (2 tolas in 16 ounces of water boiled down to four ounces) together with a dose of *Vâta ka Kusum-ker Rasa* daily every morning in cases of diabetes is said to reduce the quantity of urine and sugar within a short time *Juice of the bark, and young leaves* is used to kill worms in sores Juice is given for syphilis *Young roots* of the white flowered variety are pounded and given with cold milk as an aphrodisiac. Cooked with cocoanut milk the *fresh leaves* are used internally and externally as galactagogue and emmenagogue, *leaf juice* is said to have cured long standing dysmenorrhoea, and also removed sterility in fatty women by gradually reducing fat and producing natural menstrual flow, the medicine being continued for two to three months The juice increases the secretion of milk if taken during the period of lactation The juice in doses of 3 to 4 drachms morning and evening is given to relieve painful and difficult micturition A *decoction* made of these leaves and of the leaves of Emblica officinalis one tola each in sixteen ounces of water boiled down to four ounces is a good cathartic useful in chronic dyspepsia with constipation *Leaves* chopped well and mixed with treble the quantity of rice-straw (chopped as well) and given especially to milch cattle as it as or better still boiled with a little *rice kanda* is a rich food having high nutritive qualities The younger the leaves are the better is their food value, and is an unsurpassed stuff for mixing with rice-straw

(Bombay Govt Agri Dept Bulletin)

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956 ERYTHRINA MONOSPERMA.
See Butea frondosa

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957 ERYTHRINA STRICTA, Roxb.
(N O—Papilionaceæ)

Sans—Mura *Tam*—Murikk—

Powder of the bark is used in [illegible], rheumatism, &c.

burning sensation, fever, fainting, asthma, leprosy, epilepsy. Flowers are an antidote to poison.

(Chopra's "I. D. of I." pp. 487).

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958. ERYTHROXYLON COCA, Lam.

(N. O.—Erythroxylaceae)

Eng.—Coca Plant and leaves. *Latin.*—"Folio Cocae" (dried leaves).

Habitat.—This South American shrub is now being cultivated in the tea districts of India and Ceylon, sometimes grown as an ornamental plant in the gardens in Bombay, botanical gardens in Calcutta, Madras and Kallar (Madras Presidency).

Parts Used.—Leaves and their alkaloid cocaine.

Constituents.—Leaves contain several alkaloids, the most important alkaloid being '*Cocaine*' to the extent of about 0.15 to 0.8 per cent along with other alkaloidal substances, cinnamyl cocaine, a-truxilline, B truxilline, benzoyl-ecgonine, tropa-cocaine, hygriene, cuscohygrine, etc. These substances may be collectively termed cocaines' and are all derivatives of ecgonine. The composition of the leaves is very inconstant and varies with different specimen of leaves. In fresh coca leaves there is a fragrant resin and other alkaloids, e. g., dextro-cocaine etc.

Action.—Leaves are stimulant, carminative, restorative, sialagogue, expectorant, aphrodisiac, emmenagogue, and somewhat bitter and have a slight but characteristic odour. Alkaloid cocaine is locally anaesthetic (euphoric); it produces mydriasis. It and its salts are nerve stimulant and restorative. It is an antidote to alcohol, opium and tobacco habits. It is a great digestive tonic. Cocaine is popularly believed to be a sexual stimulant, and it has a most extraordinary effect, temporary though it be, in rapidly overcoming mental as well as physical fatigue. The action of cocaine on the brain is very powerful; a single injection may cause serious troubles of the functions of the brain, e. g., mental disorders, illusions, melancholia which appear after one day and frequently last for weeks and months. The prolonged abuse brings about gradual development of graver symptoms. A cachectic state appears with extreme emaciation, gradual change of demeanour, apathy, hallucination and a

passionate desire for the drug Will power diminishes and indeci sion, a lack of sense of duty, capricious temper, obstinacy, forget fulness diffuseness in writing and speech physical and intellectual instability set in Conscientiousness is replaced by negligence, truth ful speakers become liars and criminals and lovers of society seek solitude The destructive action on the cerebral functions becomes apparent Mental weakness irritability, erroneous conclusions, sus picion, bitterness towards his environment a false interpretation of things insomnia, hallucination abnormal sensations under the skin commonly occur The unfortunate being leads a miserable life where hours are measured by the imperative necessity for a new dose of the drug He becomes a physical, mental and moral wreck

Uses — *Leaves* are chewed mixed with lime and the ash of a plant closely related to the 'goosefoots of England by South American Indians as they have great sustaining power Coca leaves which are euphoric if chewed strengthen and preserve the teeth, and during great physical strain they refresh and invigorate The leaves were generally taken mixed with lime or ash of some plant The powdered leaves were kept in flask shaped pumpkin shells and were taken off in small quantities with a needle the end of which was moistened in the mouth There were a number of other preparations also made from the leaves, which were used by natives of South Ame rica, Peru and Bolivia Cocaine, instead of curing morphinism produc ed among many patients morphino-cocainism. The alkaloid cocaine is also taken in the form of souff and rubbed on the gums by S American natives The most common method of taking cocaine in India is by putting it in *'pan'* or betel leaf The drug is either mixed with the spices and then wrapped in the betel leaf, or some of the addicts place the alkaloid on the dorsum of the tongue and then chew a *'pan'* immediately afterwards Addicts who have been indulging in the drug for a long time generally put the cocaine on the tongue and merely take a little lime and catechu afterwards, dis pensing with the betel leaf It is said that by doing this the action of the drug is enhanced and the effects produced are stronger Rarely the drug has been taken in the form of a solution at intervals follow- ing it each time with a betel leaf A rare method which is some times used, particularly by the prostitutes is that of injecting a solu tion of cocaine into the vagina by means of a douche can. This gives the individual a sense of local constriction and the general

systemic effects appear almost immediately. The sexual act is said to be prolonged if the drug is administered in this way. The disorders and effects produced by the habitual use of coca leaves, which are chewed, and the alkaloid cocaine, are not the same. The differences are similar to those of opium and morphine. As opposed to morphine, animals are said not to become accustomed to cocaine. When taken in excess by humans, the drug produces an intoxication similar to that of opium in its effects, and slaves to the coca-habit seldom attain to an old age " As digestive, the *leaves* are chewed after heavy meals. For infants suffering from colic, warm milk in which the leaves are stirred is given In throat affections such as catarrh, cold, asthma etc., the leaves are chewed or smoked as cigarettes, or used in hot decoction. *Cocaine* is injected hypodermically and painted externally to produce local anaesthesia. It is used in minor operations especially in dentistry and ophthalmic surgery. The anaesthetic effect commences in about 3 minutes and lasts for about half an hour.

(Chopra's "I. D of I." pp. 159 to 167).

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959. ERYTHROXYLON LUCIDUM, Moon.

There is an alkaloid in this drug.

(Chopra's "I. D of I " pp 487).

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960. ERYTHROXYLON MONOGYNUM.

Tam.—Devadarum contains essential oil and cocaine. The drug is a tonic.

(Chopra's "I. D. of I." pp 487).

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961. ERYTHOXYLON RETUSUM, Bauer.

There is an alkaloid in this, drug.

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962. EUCALYPTUS GLOBULUS, Labill.

E. dumosa.

(N. O.—Myrtaceae)

Eng.—The Australian Fever Tree or Blue Gum Tree; Iron Bark; Wooly Butt. *Tam.*—Karpura maram.

Habitat.—A native of Australia, now being cultivated on the highlands of India, chiefly on the Nilgiris.

Parts Used —Dried leaves, gum (Eucalyptus kino), exudation from the stem, and oil distilled from the fresh leaves

Constituents — Leaves contain volatile oil 6 p c, tannin, Ceryl ic alcohol, a crystallizable fatty acid and a resin composed of three resinous bodies Gum contains kino tannic acid, catechin and pyrocatechin Oil contains 'Oxide e g, cineole (eucalyptol), alcohols e g, geraniol, eudesmol, methyl alcohol, terpeneol, etc, aldehydes, e g, butaldehyde, valeraldehyde, crytal, citral, citronellal etc, Ketone, e g, piperitone, Phenols e g, tasmanol, australol, Esters e g, geranyl acetate, butyl butyrate, etc, Terpenes e g, phellandrene, limonene, etc, Sesquiterpene, e g, aromadendrene, Benzene hydrocarbon e g, cymene, Solid hydrocarbon e g paraffin, Free acids e g, acetic acid, formic acid Of these, cineole, (eucalyptol) is the most important ingredient from the medical point of view Australol and cryptol have also been found to be efficient antiseptics with a carbolic acid co efficient of 13 and 12 5 respectively, but these are seldom used as such The British Pharmacopoeia prescribes that medicinal samples of eucalyptus should contain not less than 55 per cent of cineole, while the U S Pharmacopoeia requires the cineole content to be 70 per cent [1]

'The oil obtained from the leaves growing in the Nilgiris plantations as studied by Puran Singh contains pinene, cineole, sesquiterpene, and free alcohols in small amounts, but unlike the Australian oil neither eudesmol nor aldehydes, phellandrene is likewise absent The contants of the oil have also been determined — Specific gravity, 0 9065 to 0 9155, optical rotation + 5° to 10°, refractive index 1 463 to 1.466, Saponification value 8 9 to 20; cineole 60 per cent The oil is practically insoluble in 70 per cent but dissolves in less than one volume of 80 per cent alcohol The British Pharmacopoeia (1914) has adotped the following standard —Specific gravity 0 910 to 0 930, optical rotation—10 to +10°, solubility in 70 per cent alcohol, 1 in 5 cineole 55 per cent by volume [2]

Two species of eucalyptus growing in Dehra Dun have been examined by Ghosh (1918) The yield of the oil from E. tereti cornis was about 0 66 per cent from the fresh leaves and was free from phellandrene The amount of cineole was found to be very low, only 10.4 per cent The oil from E. crellra on the other hand,

proved to be absolutely free from either cineole or phellandrene These oils could not be used for medicinal purposes owing to the subnormal quantity or absence of cineole [3]

"The butyric and valerianic aldehydes also are obnoxious constituents in the Australian oil "[4]

Action.—Leaves are febrifuge carminative, stimulant, expectorant, disphoretic and antiseptic Anti malarial properties are due to the volatile oil Eucalyptus oil is powerfully antiseptic and disinfectant Eucalyptus increases the flow of saliva, gastric and intestinal juices and thus increases appetite and digestion It increases the heart beats lowers the arterial tension and quickens respiration, it is eliminated by the skin kidneys bronchi thus found in perspiration urine breath milk etc In large doses it is an irritant of the alimentary canal producing eructation, indigestion, nausea, vomiting and purging In toxic doses it is a narcotic poison It paralyses the respiratory centre in the medulla ' Phellandrene, which is present in the Australian oil to a fairly large extent, is very irritant to the bronchial mucosa, especially if inhaled and has been considered to be powerfully depressant to the heart (The British Pharmacopoeia tests expressly exclude oils containing much of this principle) But as Indian oil does not contain butyric and valerianic aldehydes it is less likely to produce coughing and other unpleasant side-effects [5]

Preparations.—Ointment with iodoform, paraffin and vaseline; Oil, Tincture, Decoction and Infusion of leaves (1 in 5), Lozenge made of red gum with Fruit Basis Emulsion with powdered gum and water for urethral injection or lotion, vapour with carbonate of magnesia (40 minims to one ounce), Eucalyptus gauze Eucalyptus wool and Eucalyptus saw dust as deodorants, Dilute Essence or Fluid Extract of the leaves

Uses.—Eucalyptus is used in the treatment of catarrhal states of the broncho-pulmonary Mucous membrane, intermittent and septic fevers, croup, diphtheria whooping cough purulent catarrhal affections of the genito-urinary organs, and for surgical wounds ulcers etc Leaves when chewed perfume the breath and harden spongy and bleeding gum.

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(1), (2) (3), (4) & (5)—Chopra's "I D of I" pp 167 170

Respiratory Affections—In bronchitis where the cough is almost constant with a free watery and frothy expectoration, in subacute and chronic cases, especially when there is a tendency to spasm and in coryza or nasal catarrh where there is a profuse offensive catarrhal discharge, *inhalations* of the hot infusion of leaves remove the foetor and check the secretions the *infusion* is also given *internally* in half to one ounce doses and in aphthous ulcerations in the mouth and throat of children, in tea spoonful doses. In acute affections or recent inflammation it is not so well adapted as to chronic cases with free muco-purulent expectoration *Eucalyptol* (the oil distilled from the fresh leaves are terminal branches of the trees) and is used as dry inhalant In whooping cough a mixture containing 10 drops of the tincture of Eucalyptus, and a drachm each of glycerine and syrup in an ounce of pure water, may be given in doses of two drachms For infants of 2 to 4 years of age the dose of the tincture is 3 to 5 drops in sweetened water every three hours Inhalation of the tincture is also recommended The mixture is useful in asthmatic cases Tincture is administered with benefit in croup and ozena, and in cases of pulmonary gangrene with foetid breath, cough, dyspnoea and fever and black offensipe sputa.

Diphtheria—Disinfection of the air of the patients room by means of the steam produced by pouring boiling water on eucalyptus leaves, has proved a simple and successful method of treating this fatal disease, in the hands of Dr J M Gibbes (New Bealand) who claims to have treated a large number of cases without any stimulants or medicine except castor oil

Fevers—In the treatment intermittents especially chronic and obstinate cases in which quinine has failed Eucalyptus is found useful; it is considered of great value, in the convalescence from fevers In Australia it is a popular remedy for fevers The reason of its being free from malaria is attributed to the abundance of Eucalyptus trees in that country. In Europe it is used in the treatment of diseases prevallent in marshy districts

In *purulent catarrhal affections* of the bladder, urethra and vagina, and in chronic cystitis with haematuria, tincture in doses of 10 to 20 minims has been found useful

In the treatment of *chronic bowel complaints*, especially chronic [illegible] of Europeans red gum or Eucalyptus kino is useful, the

dose is from 5 to 10 grains as powder or in the form of syrup. Drop dose of the oil with a little water or tepid milk is a sure preventive against cholera.

Externally fresh young leaves are applied as a local stimulant to small wounds slow to cicatrise Fluid extract suitably diluted is employed as a disinfectant lotion in gangrenous or foetid suppuration, foul ulcers and offensive discharges of all kinds and as a stimulant antiseptic application in certain chronic skin diseases, also as a gargle in foetid breath spongy and bleeding gums Fluid extract has been found successful locally in erysipelas of the face, leg and scrotum—(Dr T Williams) Large quantities of eucalyptus oil are employed in scenting soaps and also in separating mineral sulphides from their ores The essential oil, dyes, perfumes and kinos are all very useful

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963 EUCHRETIA BUXIFOLIA Roxb

Hind—Pala Roots are alterative

(Chopra s I D of I pp 487)

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964 EUGENIA ACUTANGULA

See Barringtonia acutangula.

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965 EUGENIA CARYOPHYLLATA, Willd or E. caryophyllifolia Lam See Myrtus caryophyllus

(N O—Myrtaceae)

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966 EUGENIA HEMISPERICA, Wight.

(N O—Myrtaceae)

Tam—Vellanyarel

Decoction of the bark is used in biliousness and syphilis

(Chopra's "I D of I" pp 487)

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967. EUGENIA JAMBOLANA, Lam

See Syzgium jambolanum; E fruticosa.

(N O—Myrtaceae)

Sans—Nilaprala, Rajaphala, Jambu, Jambula; Meghavarna. *Eng*—Jambul, Black Plum, Blackberry. *Hind*—Jaman;

Jam, Phalinda, Jamni phalani, Pharenda, Paiman, Jamoom. *Bom*—Jambu, Jambul, Jambura, Jambudi *Ben*—Kala jam. *Guj*—Jambudo *Mah & Kon*—Jambul *Duk*—Sittalehini *Tel*—Naeraedu, Pedda neredu, Nairuri, Racha neredu, Nareyr, Nasodu *Tam*—Nagum, Navel, Nairuri, Nawar, Narvel, Naga; Naval. *Mal*—Naval *Can*—Naeralay

Habitat—Throughout the plains from the Himalayas to South India

Parts Used—Fruit, leaves dried seeds and bark.

Constituents.—Seed contains a glucoside *jambosine*, a new phenolic substance, a trace of pale-yellow essential oil, chlorophyll, fat, resin, gallic acid, albumen etc. Bark contains tannin 12% and a kino like gum The phenolic substance isolated from jambul seeds, which has also been detected in Chinese rhubarb has since been identified as *ellagic acid* Analysis—Edible matter 68 00 p c, *On edible matter*—Reducing sugars 8 09 p c. Non reducing sugars 9 26 p c., Total sugars 17 35 p c. and Acidity in terms of sulphuric acid 1 21 p c respectively

N B—For preservation jambul juice should be pasteurized at 70°C. for 30 minutes

Action—Bark leaves and seeds are astringent Berry as a whole is astringent Juice of the fruit is stomachic, astringent and diuretic and anti diabetic. Glucoside *jambolne* is said to have the power of checking the pathological conversion of starch into sugar in cases of increased production of glucose

Uses—*Bark* with or without the addition of other astringents like cardamom and cinnamon is used in *decoction* in cases of chronic diarrhoea and dysentery and as a gargle in sore-throat spongy gums, etc A *paste* made of the bark is applied over inflamed parts *Juice of the tender leaves* either alone or combined with carminatives such as cardamoms and cinnamon is given in goat's milk in the diarrhoea of children (Chakradatta) *Juice* together with that of the leaves of mango and emblic myrobalan about a drachm each is administered in goat's milk and honey in cases of dysentery with bloody discharge—(Bhavaprakash). *Powdered seeds* or *stones* of the fruit are used as a remedy in diabetes, it diminishes the quantity of sugar in urine and allays the unquenchable thirst of diabetes. For

this the *liquid extract* prepared from the juice of ripe fruits is also suitable in doses of half to two drachms Juice of black Jambul fruits and mangoes in equal parts relieves thirst very effectively in diabetes The black plum or berry is a good diet in convalescence after diarrhoea and dysentery A *syrup* prepared from the *juice of the ripe fruit* is a very pleasant drink *Powder* of dried seeds in combination with that of mango seeds is administered in doses of 10 to 30 grains with curds in cases of diarrhoea and dysentery; also in enlargement of spleen and as a diuretic in scanty or suppressed urine *Syrup* or *vinegar* prepared from the ripe fruit is also useful in spleen enlargement and an efficient astringent in chronic diarrhoea.

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968 EUGENIA JAMBOS, Linn

(N O—Myrtaceae)

Sans—Jambu *Hind*—Gulabjamun *Ben*, *Uriya* & *Kon*—Gulab jam *Bom* & *Sind*—Jamu *Duk*—Jamle *Coorg*—Malenaeralu *Can*—Pannaeralu *Tam*—Pannerali *Eng*—Rose apple *Ger*—Rosenapfel Jambuse

Habitat—A native of East Indies, cultivated in Indian gardens

Parts Used—Leaves, fruit and seeds

Constituents—An alkaloid "*Jambosine*" as well as an essential oil are found in this drug

Action—Leaves and bark are astringent

Uses—Fruit is edible having faint flavour of rose A fine rose-water can be distilled from the fruit *Seeds* are useful in diarrhoea and dysentery In Bhamo (Upper Burma) the *leaves* are boiled and used for sore eyes

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969 EUGENIA OPERCULATA, Roxb

Hind—Rai Jaman, Piaman, Jamava, Dugdugia, Thuti *Santal*—Totonopak *Chittagong*—Botee-Jam

Is met with in sub-Himalayan forests, Cachar and Chittagong Fruit is eaten for rheumatism, root boiled down to the consistence of *gur* is applied and rubbed over the painful joints Leaves are much used in dry fomentation, bark is also employed medicinally.

970 *EUGENIA RACEMOSA*—See Barringtonia racemosa.

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971 EULOPHIA CAMPESTRIS Wall
E vera, E virens Brown
(N O—Orchideae)

Is a common ground orchid of the plains as well as a favourite in green houses of cool places in South India

Eng—Witton root *Sans Hind Ben* & *Punj*—Salib misri *Ben*—Budbara Sung misrie *Hind*—Goruma *Santal*—Bongataini *Nepal*—Hatti paila *Bom* & *Guj*—Salum *Pers*—Sungmisri *Mah*—Bhuikakali, Ambarkand Mankand (*Man*—neck *Kand*—Tubers) Tubers resembling in appearance scrofulous glands in the neck *Tel*—Goruchettu Unantiurphylla

Tubers contain large quantities of white mucilage and ash 3 6 p c Tubers are astringent nutritive tonic aphrodisiac and blood purifier also anthelmintic Tubers are a fair substitute for Salep (Orchis mascula *It is used in scrofulous diseases of the neck both externally and internally* also administered for intestinal worms

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972 EULOPHIA NUDA Lindl
(N O—Orchideae)

Sans—Manya *Hind*—Goruma *Ben*—Budbar, *Bom*—Mankand

The drug is anthelmintic and used in scrofulous affections
(Chopra s I D of I pp 487)

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973 EUONYMUS AMERICANUS
See E. Atropurpureus
(N O—Celastraceae)

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974 EUONYMUS EUROPOEUS
(N O—Celastraceae)

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975 EUONYMUS HAMILTONIANUS
(N O—Celastraceae)

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976 EUONYMUS PENDULUS Wall
(N O—Celastraceae)

Hind—Chopra

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977. EUONYMUS THEOPHRASTI Wall
(N O—Celastraceae)

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978 EUONYMUS TINGENS Wall
(N O—Celastraceae)

Hind—Kunghu

(Chopra's I D of I pp 488)

(This is a purgative)

N B—About 20 species of Euonymus are uninvestigated

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979 EUONYMUS ATROPURPUREUS Jacq B P.
E Hamiltonianus.
(N O—Celastraceae)

Eng—Bitter ash, Dogwood Pegwood, Indian arrow wood, Prickwood Burning bush, Strawberry tree, Skeyer wood, Spindle wood *Fr*—Fusain *Ger*—Spindelbaum *Hind*—Barphali, Shikhi, Rangchul, Guli Papar Chopra, Kunghu, Kesari *Nepal*—Newar, Kasuri *Simla*—Chopra Me mahaul

Western Peninsula temperate Western Himalayas, Nilgiris and shady places The genus Euonymus consists of about 40 species The Euonymu that is available in the Indian maketsis mostly Euonymus atropurpureus (E hamiltonianus) exported from the United State [1] Bark of the root—wahoo bark

Constituents— Bark of E atropureus contains tannin sugar but no alkaloids, as amorphous bitter principle *Euonymin*, euony mol atropural euonysterol, momo euonysterol which are responsible for its activity The Indian variety of euonymus contains almost the same active principles ,[2] atropurpurin identical with dulcite, resins, asparagin, euonic acid, fixed oil, albumen, wax, starch and ash 14% *Euonymin* is soluble in water, alcohol and ether

Preparations—Extract, dose —1 to 5 grains, Liquid Extract (not miscible with water dose —1 dr Tincture (1 in 5), dose —

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(1) (Chopra's I D of I. pp 488)

10 to 40 minims Extract Euonymisiccum (B P)—Euonymin dose —1 to 2 grains

Action—Euonymus is nauseou emetic and purgative, hepatic stimulant diuretic antiperiodic antiparasitic and tonic Action is similar to that of podophyllin It is generally associated with aloes jalap rhubarb or colocynth It increases the flow of bile and promotes other secretions In over doses it is a gastro intestinal irritant

Uses— The tincture made from Indian euonymus bark though not so bitter is that from the foreign variety possesses almost iden tical medicinal properties [3] It is a good remedy for torpid liver, habitual constipation dropsy pulmonary affection and pediculi, with cascara iridin pepsin etc it is given in indigestion flatulence etc. Inner portion of the bark of E tingens is used like *Mamiran* to subdue inflammation of the eyes

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980 EUPATORIUM AYAPANA Vent

E perfoliatum, E aromaticus, E triplinerve

Hind Ben & Mah—Ayapana *Guj*—Allipa *Tam & Tel*—Ayappanii *Kon*—Ayapanum.

Habitat— Native of Brazil cultivated in various parts of India in damp places meadows and river banks

Parts Used—Whole herb including dried leaves flowering tops and twigs

Constituents—Herb contains an essential volatile oil and neutral crystalline principle *Ayapanin*

Uses— Herb including its dried leaves flowering tops and twigs is used in the form of *infusion* (1 in 20) in doses of half to two ounces, as a bitter tonic, expectorant diaphoretic and antiperiodic. In full doses it is aperient given in derangement of the stomach and bowels, dyspepsia cough and ague *Hot infusion* is given in the cold stage of ague and in the state of depression preceding the acute inflammatory affections It may be compared with chamomile in its effects In small doses it is stimulant and tonic It has also antiscorbutic and alterative properties Fresh *leaves bruised* are applied to foul ulcers, sores and to bites of venomous reptiles Also

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(2) & (3)—Chopra's "I D of I" pp 170/171

internally the drug is given as an antidote to snake bites Infusion when used in the cholera epidemic of Mauritius had been found valuable for restoring the warmth of the surface, the languid circulation etc *Hot infusion* is very highly spoken of in the cure of yellow fever in America Dose of the fluid extract is from 10 to 30 minims

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981 EUPHATORIUM CANNABINUM, Linn

Eng—Hemp Agrimony, *Ger*—Water hauf, *Fr*—Origan aquatique

This is a native of temperate Himalayas and Europe *Root and leaves* have diuretic and in large doses, emetic properties In Holland it is used in jaundice, scurvy, foul ulcers, and those swellings of the feet to which the turf diggers there are much exposed An *infusion* of 1 oz of the dried leaves in a pint of water may be used daily, if taken hot it is a good diaphoretic and diuretic *Leaves* and *flowers* are found to contain a white bitter alkaloid soluble in ether which forms a crystalline sulphate

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982 EUPHORBIA ANTIQUORUM, Linn

(N O—Euphorbiaceae)

Sans—Vajratundi, Vajrakantaka, Gandira, Mahataru, Snuhi Vajra Sehunda *Eng*—Triangular Spurge *Hind*—Tidhara Sehund *Ben*—Narsij, Tikatasij, Teshira monsha, Trishir monsa *Bom*—Naraseja *Mah*—Tridhari, Navadunga, *Guj*—Tandhari Thohar *Tel*—Bommajemudu, Bonthakalli *Tam*—Chandurakkalli, Shadutrakkally *Mal*—Chaturkalli *Can*—Katakkalli Mudumula or Bonthekalli. *Kon*—Nivali, Pandnival, Tirikon *Malay*—Sehadid kalli *Fr*—Euphorbades ancien *Ger*—Wolfsmilk der Alten

Habitat.—A small tree common in India

Parts Used.—Juice from the branches, the stem root and root bark

Constituents.—Dried juice contains *Euphorbin* or *Euphorbium* 35 p c., two resins, one soluble and the other insoluble in ether Caoutchouc 1 5 p c and gum.

Action.—Purgative emetic, alterative, stomachic, rubefacient and vesicant.

Uses.— Fresh *milky juice* or gum which flows from the branches is an acrid irritant applied externally to relieve warts and other cutaneous affections and also to relieve pain of gout, rheumatism toothache etc. Juice mixed with the flour of cicer arietinum and roasted is administered in pills in gonorrhoea, when mixed with canthandes it forms what is called gout plaster, but it must be used with great caution as it is a dangerous irritant application Internally it is a powerful emetic and a violent purgative even in very small quantities Mixed with burnt borax and common salt it is applied to painful joints and swellings A *plaster made from the roots* and mixed with asafoetida is applied externally to the stomachs of children suffering from worms *Bark of the root* is purgative and the *stem* in decoction is given in gout but with much care When taken internally it acts as a drastic purgative, it is employed in nervous diseases, dropsy palsy, deafness and amaurosis The *stem fried, powdered* and sprinkled over old ulcers promotes healing, the stem warmed and applied as a covering to whitlows or felons at the ends of fingers has the effect of fomentations and warm poultices rendering the nail and skin supple and favouring the formation and discharge of the matter *Gum resin boiled in oil* forms an effective application to scrofulous and other inveterate ulcers The drug is also used in enlargements of spleen, in jaundice, leprosy and in snakebite But *all the preparations of this plant should be employed with much care*

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983 EUPHORBIA DRACUNCULOIDES, Lam

(N O—Euphorbiaceae)

Ben—Chhagul puputi, *Punj*—Kangi, *Tam*—T lla kada.

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984 EUPHORBIA HELIOSCOPIA Linn

(N O—Euphorbiaceae)

Hind—Hirruseeah Mahubi *Punj*—Gandabhuti, Dudai kulfa dodak, Chatriwal

Is found throughout Punjab, grown in Nilgiri Hills.

Constituents.—Saponin phasin *Milky juice* is applied to eruptions and *seeds* are given with roasted pepper in cholera *Juice* is

used like a liniment in neuralgia and rheumatism *Root* is anthelmintic and cathartic.

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985 EUPHORBIA HIRTA.

(N O—Euphorbiaceae)

Gwalior—Nagaarjundudhi *Tam*—Ammam pachcharisi

Habitat—Gwalior State,

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986 EUPHORBIA HYPERCIFOLIA, Linn

(N O—Euphorbiaceae)

Bom—Nayeti *Punj*—Hazardana

Parts Used—Leaves

Constituents—Alkaloid glucoside

Uses—Leaves are used in dysentery, diarrhoea & leucorrhoea

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987 EUPHORBIA LATHYRIS, Linn

(N O—Euphorbiaceae)

Ben—Burg sadab *Punj*—Sudab

Parts Used—Leaves, seeds, capsules,

Constituents—Euphorbon enzymes, aesculetin

Action—Leaves are carminative

Uses—Seeds are used in dropsy Capsules are uesd to intoxicate fish

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988 EUPHORBIA NERIIFOLIA Linn E lingularia

(N O—Euphorbiaceae)

Sans—Snoohi, Vajra, Vijri, Patrasnuk, Svarasana *Hind*—Sehund, Sij Patton ki send, Thohar *Ben*—Mansasij, Hij-daonr Patasij *Mah*—Vayinivadunga,, Thora *Bom*—Neverang, Minguta, Mingut Nivadunga, Thohur, Thor *Tel*—Akujimudu *Tam, Can* & *Mal*—Haikkalli *Kon*—Kantaro, Pannanvali *Eng*—Common Milk Hedge *Arab*—Dihu Minguta *Burm*—Thasaung, Thazavn mina.

Habitat—This leafless shrub is found in Central India and cultivated in Bengal.

Parts Used—Juice and root

Constituents—Euphorbon, resin, gum, caoutchouc, malate of calcium, etc.

Action.—Juice is purgative and expectorant, locally rubefacient like that of E antiquorum Root is antispasmodic

Uses.— *Milk juice* exuded from injured fleshy cylindrical stems is used by Vaidyas in medicine as drastic cathartic and to relieve earache Cloves, long peppers chebulic myrobalans and *trivrit* root etc, are soaked in this juice for some months and then dried, and used as a drastic purgative in the enlargement of liver and spleen, syphilis, dropsy, general anasarca leprosy etc For instance —Take cloves 4 ounces and soak them into one seer of the milk for 40 or 50 days Then rub the whole into a mortar, the weight of this highly perfumed mass will be 12 ounces, now mix well in this mass, 360 grains of *Rasakarpur* called corrosive sublimate', of this whole 180 pills are prepared Two of such pills are administered to a patient at bed time, coated with a little fresh cream, so that the pills may be swallowed carefully without touching teeth From the early morning till 10 a m cathartic action will continue with watery stools The patient should be given lukewarm aqua ani seed 2 to 4 ounces after every motion, bread with butter freely should be given as a diet In 20 to 40 days a patient suffering with any of above diseases is cured as has been seen in a number of such bad cases— (Gupta) As expectorant, especially in asthma, it is given in doses of 5 drops, mixed with a little honey or syrup

Dr M C. Koman tried it and found it very beneficial in asthma, he prepared a succus consisting of equal parts of the juice of this plant and simple syrup and administered it in doses of 10 to 20 minims three times a day in cases of asthma and found it to relieve the fits completely For asthma, *madar* flowers, *agadha root* and *gokaran* root are steeped in the juice powdered, and given with honey and chebulic myrobalans, dose is 4 grains Heated with salt it is given in whooping cough, dropsy leprosy, enlarged liver and spleen, dyspepsia, jaundice, colic etc Juice mixed with ghee is given in syphilis, in visceral obstructions and in spleen and liver enlargements due to long continued intermittent fevers *Externally* the juice is applied to remove warts and similar excrescences; and heated with or without the gum of E. Resinifera it is dropped into the ear to afford relief in earache, mixed with soot (of ghee-lamp) it is used as an *anjan* in ophthalmia Juice is largely used with clarified or fresh butter as an application to unhealthy ulcers and scabies Applied to glandular swellings it prevents suppuration.

membrane of the respiratory and genito-crinary tract and produces a relaxation of the bronchioles by its central action — (Marsset) Dikshit and Kameshwar Rao found that the liquid extract of Euphorbia (P D & Co) is *irritant to the mucous membrane* of the stomach a dose of 2 c c of the extract producing vomiting in animals Intravenous injections do not produce any vomiting showing that the drug is a true local irritant In animals under urethane anaesthesia, intravenous injections of small doses of Euphorbia Extract produce *broncho-dilatation which is much more prolonged than that* produced by small doses of epinephrine [2] The active principle first accelerates then slows the respiratory movements and cardiac centres It irritates gastric mucous membrane Its action is chiefly exerted through the pneumogastric nerve paralysing the heart and respiration

Preparations—Solid extract, dose —½ to 2 grains Fluid extract, dose —30 to 60 minims, Decoction of the fresh plant (1 in 40), of the *dried plant* (1 in 80) dose —1 to 2 ounces *Tincture* (1 in 5), dose —10 to 30 minims, Paste of the leaves

Uses.—*This is a popular remedy for cough coryza hayasthma*, bronchial affections and diseases of the respiratory passages generally, also given for worms, bowel-complaints and as *paste* with sugar in gonorrhoea and other venereal diseases In spasmodic dyspnoea due to asthma, broochitis of the old people, emphysema and pulmonary *cardiac disease, angina pectoris the fluid extract or the tincture is* most suitable The alcoholic extract of the whole plant is used in medicine [3], Its action is not cumulative It is a very useful remedy in acute and chronic dysentery, colic and against worms in children [4] and in coryza where arsenic and iodide of potassium have failed *It should be given after meals* Dr M C Koman says It has been found by me very beneficial in cases of asthma. I have been using a tincture of it in my private practice in diseases of genito-urinary tract, in chronic bronchitis and asthma. The result has been very satisfactory It is a drug which should find a place in the treatment of such diseases. Tincture of the drug was given in 15 to 30 drop-doses in cases of asthma and bronchitis in the hospital with very beneficial effect [5] It is also an antidote to poisons, it kills *small animals Locally it is applied for the cure of* ringworm.

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[2], (3), (4) & (5)—Chopra's I D. of I " pp. 318

991. EUPHORBIA RESINIFERA, Berq.

Is a native of Morocco, the dried juice of which is the gum Euphorbium and known in the Indian Bazaars as *Farbiyun* or *Afarbiyun* or *Farfiyum*. When fresh it is yellow translucent and easily soluble in olive oil; when old it turns reddish yellow and the odour is acrid. It is a useful application in sciatica, palsy, colic, lumbago and "removes phlegmatic humors from the joints and limbs. Internally it acts as a purgative of bile and phlegm." However used it should always be diluted with such substances as oil of roses (fatty extract), badellium, extract of liquorice, tragacanth or gum-arabic; the dose is one carat (4 grains). When given internally to women it causes abortion but a pessary containing one grain of euphorbium causes the mouth of the uterus to contract and prevents abortion. Pessaries containing larger quantities of the drug produce abortion. Mixed with honey it is used in purulent ophthalmia. "Three dirhams is a fatal dose, causing ulceration of the stomach and intestines; antidotes for it are sour milk, juice of sour pomegranates and camphor" Haji Zein mentions its use "as a snuff when diluted with beet-juice in certain affections of the brain, as a dusting powder to remove proud flesh and as an enema in obstructed meoses." In modern medicine euphorbium is never given internally, but it is still sometimes employed as an errhine, after having been largely diluted with some inert powder, in amaurosis, deafness and other chronic brain diseases Its use as a counter-irritant is now almost entirely confined to veterinary practice. An analysis of selected fragments free from extraneous matter shows it to be composed of amorphous euphorbia resin, euphorbon, euphorbol, mucilage, malates chiefly of calcium and sodium and mineral compounds.

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992. EUPHORBIA ROYLEANA, Boiss.

Hind. & Ben.—Shakar pitan.

Action.—Anthelmintic and cathartic.

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993. EUPHORBIA THOMSENIANA, Boiss.

Kash.—Hatiz.

Action.—Purgative; used as a detergent for washing hair.

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994 EUPHORBIA THYMIFOLIA, Burm.
(N O—Euphorbiaceae)

Sans—Raktavindachada. *Ben*—Śeutkheria, Raktakeru, Dudiya. *Bom*—Nayeti *Hind*—Nigachuni, Chhoti dudhi *Punj*—Dodhak, Hazardana *Mah*—Lahannayati *Tel*—Peddavari *Tam*—Sittra paladi *Kon*—Dudini *Fr*—Euphorbe a feuilles de thym

Is found in tropical India The plant contains a crystalline alkaloidal principle allied to quercetrin In action it is aromatic, astringent demulcent, stimulant, vermifuge and laxative *Seeds* and the small *leaves* are used in the form of *powder* given in butter milk in bowel complaints of children worms and gonorrhoea, *root* is given in amenorrhoea, dose is from 5 to 20 grains It is used also in *decoction* (1 in 40) in doses of 1 to 2 ounces *Expressed juice of the powdered plant as given with wine as a remedy for bites of* venomous reptiles and applied externally to the bitten part It is also applied to ring worm and skin diseases and mixed with chloride of ammonium it is applied for the cure of dandruff

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995 EUPHORBIA TIRUCALLI, Linn
(N O—Euphorbiaceae)

Sans—Dugdhika, Trikantaka, Vajradruma. *Eng*—Milk hedge, Indian Tree-spurge *Hind*—Barki thohar, Barki sehund, Sehud. *Arab*—Dihan *Guj*—Thora damadalio, Khurasani thora. *Ben*—Lankasij *Mah*—Kada nivali *Bom*—Netario-thora; Shera. *Tel*—Kada jamudi *Tam*—Kalli, Kombu kalli, Tirugu kalli. *Mal*—Tirukalli *Can*—Mondukalli *Kon*—Baddinivali *Java*—Kayoo-orb *Fr*—Euphorbe antivenerien, Euphorbe tirucalli.

Habitat.—This plant is a native of America but has become acclimatised and grows freely in all parts of India.

Parts Used—Milky juice and bark.

Constituents.—Euphorbon gum, resin caoutchouc, malate of calcium etc.

Action.—Milky juice is in small doses, purgative, in large doses an acrid counter irritant and emetic. Externally it is rubefacient; fish poison

Uses.—Milky juice obtained by pricking the succulent stems and fleshy leaves is applied to itch and scorpion bites. It is also a warm, rubefacient remedy in rheumatism, toothache etc. Milky

juice is employed to raise blisters especially in syphilitic nodes, given with butter it cures affections of the spleen and acts as purgative in colic and bowel complaints Like the juice of E. neriifolia it is used in earache, and also in whooping cough, asthma, etc. etc. *Decoction of the tender branches* as also that of the *root* is administered in colic and gastralgia In Java the *bark* is used in applying to fractures. The drug is also used as a fish-poison.

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996. EUPHRASIA ODONTITES, Linn.

(N O—Crophularineae)

Contains a glucoside, rhinanthin (aucubin).

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997. EUPHRASIA OFFICINALIS, Linn.

(N O—Crophularineae)

Contains a glucoside, rhinanthin (aucubin).

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998. EURYALE FEROX, Salisb.

See Nymphaea stellata.

(N O.—Nymphaeaceae)

Sans—Makhanna, Padma. *Eng.*—Foxnut *Hind.* & *Ben*—Makhna. *Bom.*—Makhanna *Tam*—Mallani-padman

Is a water-lily plant found in ponds in Northern, Central and Western India The seeds are farinaceous and when fried are known as *Dhani*, which is nutritive and an article of food. It is also a powerful tonic. Seeds are astringent, aphrodisiac, expectorant, emetic and beneficial in *Vata* and *Pitta* They are regarded as useful in checking urethral discharges such as spermathrrhoea.

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999. EURYCOMA LONGIFOLIA.

(N. O.—Simaraoubaceae)

Tam.—Usi thagarai; *Malay*—Penvar-pet.

Is a small native plant of Malayan Peninsula.

Constituents.—Bittee fatty oil.

Action.—Bark and root are febrifuge.

Uses.—Root is a specific in malarial fever next only to quinine A decoction of this drug (1 in 10) in half to one ounce doses was administered to mild cases of malarial fever and was found to be useful.—(Dr M C Koman)

1000 EVODIA MELLAEFOLIA, Benth

(N O.—Rutaceae)

Alkaloid berberine

1001 EVODIA ROXBURGHIANA Benth

Sans.—Vanashempaga *Tam.*—Kanalei

Root bark boiled in oil is given to improve complexion Juice of leaves is given in fever

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1002 EVODIA RUTAECARPA Hk f & T,

Contains alkaloids *evodiamine, rutaecarpine*

1003 EVOLVULUS ALSINOIDES, Wall & Linn & E HIRSUSTUS

(N O.—Convolvulaceae)

Growing amidst grass in waste places and met with throughout India and Ceylon

Sans.—Vishnukranta, Vishnugandhi *Hind.*—Shankapushpi *Mah.*—Shankhavalli *Kon.*—Shankvel *Tel., Tam., Can.* & *Mal.*—Vishnukranti, Vishnukarandi

Constituents.—A yellow neutral fat, an alkaloid, an organic acid and saline substances

Action.—Tonic, alterative and febrifuge, also anthelmintic and antiphlogistic

Uses.—The whole herb is used medicinally in the form of decoction or infusion (1 in 40) in doses of 2 to 4 ounces. With cumin and milk it is used in fever nervous debility and loss of memory, also in syphilis scrofula etc It is a sovereign remedy in bowel complaints especially dysentery In fevers attended with diarrhoea or indigestion a decoction of the drug with Ocimum sanctum is administered

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1004. EXACUM BICOLOR. Roxb.

(N. O —Gentianaceae)

Hind —Bara-charayata.

Action —Tonic, stomachic This drug is used as a substitute for Gentian.

1005. EXACUM PEDUNCULATUM, Linn.

This drug is also used as a substitute for Gentian

1006. EXACUM TETRAGONUM, Roxb.

Hind —Avie-churetta. *Bom* —Koochuri

Tonic and stomachic This drug is also used as a substitute for Gentian.

1007 EXACUM LAWII, Clarke.

Tam —Marukozhunthu

Juice of the whole plant boiled with oil is applied in eye-diseases, powdered plant is used in kidney disorders and antidote to poisons

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1008. EXCOECARIA ACERIFOLIA, Didrichs.

(N O —Euphorbiaceae)

Hind.—Basingh Useful in rheumatism

1009. EBCOECARIA AGALLOCHA, Linn.

or E. camettia or Arbor Execans

(N. O.—Euphorbiaceae)

Sans. & Ben.—Ugaru ; Gaourai ; Gangwa ; Geria. *Hind.*—Gangiva ; Tejbala. *Bom* —Gewa *Mal.*—Kamettı ; Phungali. *Tam* —Tilla-chedi. *Tel.*—Tillachettu ; Chilla *Can.*—Hato. *Eng* —Tiger's Milk Tree. *Fr.*—Arbre aveuglant.

Found in the forests of India, plentifully in Cochin and Travancore, in salt swamps near the sea. All parts of the twig abound in an acrid milky juice ; the *caoutchouc* in 1 to 2 grain doses is used as a purgative and alterative in epilepsy ; it is locally applied to inveterate ulcers, leprous sores etc. *Tejbala,* a soft reddish substance obtained from thhe lower part of the trunk and roots is reputed

as an aphrodisiac tonic A decoction of the leaves is given twice a day in ¼ tea cupful doses in epilepsy and is an external application to ulcers The drug is also used as a remedy for snake-poison

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1010 FABA VULGARIS

Eng—Broad bean *Hind*—Bakla, *Sem*—Small padded variety is called Seo-chana in *Hindi*

Habitat—This annual one of the oldest cultivated vegetables we possess, is generally supposed to have originally come from Persia

There are two classes of broad bea is cultivated in gardens known as Long Pods & Broad Windsors in England In India the long podded sorts are the most prolific and are easily acclimatised while the Broad Windsors do not bear so well nor do they so readily acclimatise

Hind—Seo chana

Is grown by Indian market gardeners in some districts of Kumaon of U P Botanically it is the same species of bean as the introduced European form but looked at as a variety it is totally distinct from the latter When ripe its seeds are about the size of pea, slightly elongated and have an intensely hard black glossy skin

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1011 FAGONIA ARABICA Linn

F Mysorensis, F bruguiera, F cretica

(N O—Zygophyllaceae)

Are the small spiny shrubs with erect branches

Sans—Dusparsha, Dhanvayas *Hind*—Ustarkhar *Panj*—Samada *Sind*—Drammuha *Cutch*—Dharama. *Himalaya*—Spal-ghzai *Pers*—Badavard *Guj* & *Mal*—Dhamasa

Found throughout N W India Sind Punjab and Deccan

Parts Used—Leaves twigs and juice

Action—Leaves twigs & juice are found to be bitter tonic, diuretic and astringent Leaves and twigs possess cooling and antiseptic properties.

Uses—Leaves, twigs & juice are used in the form of decoction or infusion (1 in 10) as gargle in sore mouth and stomatitis, juice is boiled with sugar-candy until quite thick and a small quantity

allowed to dissolve in the mouth frequently. Juice or a poultice of the bruised leaves prevents suppuration when applied to open wounds. *Cold infusion* of the stem and leaves (1 in 16) infused for 12 hours and strained is given in doses of two to four ounces as a bitter and astringent tonic. In irritability of the skin and intense scratching, *decoction* of the plant is used as a medicated bath with benefit. In the Peshawar Valley a decoction of F. bruguieri is given as a tonic and febrifuge. and as a prophylactic against smallpox to children; it is used as an application to tumours. In fevers steam from decoction of the dried plant is inhaled.

1012. FAGONIA BRUGUIERI, DC.

Hind.—Damahan. *Bom.*—Dhamaso.

This drug is a febrifuge and tonic.

1013. FAGONIA CRETICA, Linn.

This drug is a prophylactic against small-pox.

1014. FAGRAEA FRAGRANS, Roxb.

(N. O.—Loganiaceae)

Burm.—Anan.

Bark is febrifuge There is an alkaloid and a bitter substance

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1015. FAGRAEA IMPERIALIS, Miq.

There is an alkaloid in this drug.

1016. FAGRAEA RACEMOSA. Jack.

Burm.—Thithpaloo.

Root-bark is used in fever.

1017. FAGOPYRUM ESCULENTUM, Gaertn.

(N. O.—Polygonaceae)

Eng.—Buck-wheat. *Russian.*—Grechevnaya (groats); "Krupa." *Hind.*—Kaspat. *Mah.*—Kutu.

Is grown in the Bombay Presidency.

Constituents.—Seeds contain a good deal of starch.

Uses.—The nutritive value of buck-wheat is low in comparison with wheat, but is yet sufficiently high to render it of importance as

an article of food in several parts of the world Buck wheat groats, i e the small nuts are a popular food and are prepared very simply by hulling the little nuts fruits or grain of the plant, and grind ing the contents These buck wheat groats are boiled and converted into porridge, but more commonly are made up into various types of compact cakes and served with soups, and in other ways Buck wheat cakes are well known as one of the special dishes of the U S A

(Bombay Govt Agri Dept Bulletin)

1018 FARSETIA AEGYPTIACA, Turr

(N O—Cruciferae)

Punj—Mulei, Faridbuti, Farid muli

Found in the sandy places in the salt ranges especially in Sind Punjab and upper Gangetic plain All the above species are consi dered specific for rheumatism They are pounded and taken as a cooling medicine

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1019 FARSETIA HAMILTONII Royle

Punj—Farid buti

This drug is used in rheumatism

1020 FARSEAIA JACQUEMONTII Hk F & T

Punj—Mulei

This drug is used in rheumatism

1021 FERONIA ELEPHANTUM Correa

or Anisiphalins rumphii or Crataeva vallangai

(N O—Rutaceae)

Sans—Kapittha, Kapi priya, Dadhi phala *Eng*—Elephant or Wood apple *Hind*—Kavat, Kavitha *Fr*—Feronia geant *Ger*—Elephantenapfel *Sind*—Katori kavath *Guj*—Kotha, Kavit *Duk*—Katbel, Kh.et *Ben*—Kathbel *Burm*—Mahan *Mah*—Kavitpana; Kavath *Santal*—Kavatha. *Tel*—Velaga. *Tam.*—Vilakpittam, Nelavilam, Vila, Vilaphalam, Vellil *Mal*—Vilav *Can*—Baelada phala, Bilva phala Belgwala kai *Kon*—Belpatri-phal. *Arab & Pers*—Kabita. *Sinh*—Diwul

Habitat.—Met with throughout India, cultivated for its fruit

Parts Used.—Fruit, gum, leaves, bark and pulp

Constituents.—Pulp contains a large quantity of citric acid mucilage and ash containing potash lime and iron Leaves yield an essential oil similar to that obtained from leaves of Aegle marmelos

Action.—Fruit is aromatic, acid, antiscorbutic, astringent (when unripe) and refrigerant Gum from the stem is demulcent Leaves are aromatic, carminative and astringent

Uses.—*Pulp* of the ripe fruits, tastes like coagulated milk and is eaten with sugar it is useful in salivation, sorethroat and other affections of the gums and throat, in the form of *sherbat* or *chutney* made with the addition of salt, tamarind and spices like *sunth*, black pepper etc it is useful in hiccup dyspepsia biliousness, throat affections etc. *Pulp with honey* and *pipli* is given for hiccup and difficulty of breathing A *jelly* much resembling black currant jelly but with a more astringent taste is made from the pulp Pulp is also useful externally as an application to bites of venomous insects and reptiles, the *powdered rind* may be also used *Unripe fruit* is employed alone or in combination with Aegle marmelos and other medicine in diarrhoea and dysentery Fruit when green is made into *chutnies* Transparent *gummy substance* exuding from the stem when cut or broken resembling gum arabic, may be used in bowel affections and to relieve tenesmus, reduced to powder and mixed with honey it is given in dysentery and diarrhoea Wood apple is eaten as diet in convalescence after diarrhoea *Young leaves* have a fragrant smell like anise and their *juice* mixed with milk or with curds and sugar-candy is given in biliousness and the juice is externally applied to the skin eruptions caused by biliousness *Bark* is prescribed in *powder* or *decoction* for biliousness Under the name of *Pancha Kapittha*, i e, the five products of Feronia a medicine is prepared which contains the flowers, roots leaves, bark and fruit A *medicated oil* is also made of the five parts of the plant which is used for applying to the whole body A compound powder known as *Kapitthaashtaka churna* is recommended in SARANGADHARA, which is used in doses of one drachm in chronic diarrhoea, dysentery with loss of appetite and in affections of the throat It is given in sweetened milk or mixed with honey It is prepared thus — Take of the pulp of unripe wood apples eight parts, sugar six parts,

pomegranate juice, tamarind pulp, *bela* fruit, flowers of Woodfordia floribunda, *ajmoda* and long pepper each three parts, black pepper, cumin seeds, coriander, long pepper root, root of Pavonia odorata, *sonchal* salt, *ajowan*, cardamoms, cinnamon, *tejapatra*, flowers of Mesua ferrea, ginger and plumbago root, each one part, powder the ingredients finely and mix. Other preparations are fluid extract, dose —½ to 1 drachm and syrup of the fruit, dose —¼ to ½ ounce, useful in dyspepsia, in quenching the thirst of fevers and in scorbutic conditions

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1022. FERULA ALLIACEA, Boiss.

(N O —Umbelliferae)

Sans —Hingu *Hind* & *Ben* —Hing *Tam* —Kayam, (Perun gayam)

Used in hysteria, epilepsy and scorpion sting, intestinal antiseptic & carminative

Constituents — Essential oil

1023 FERULA ASSAFOETIDA Linn
or F foetida
F alliaceae, F narthex, F scorodosma.

(N O —Umbelliferae)

Sans —Bhutnasan Hingu, Sulanasan, Sahasrveoni, Bahleeka Ramatta, Gathukam. *Duk Punj, Guj Mah & Kon* —Hing *Hind* & *Ben* —Hingra *Bom* — Multani Hing *Kash* —Yang *Tam* & *Mal* —Kayam, Perungayam, Perungkayam. *Tel* —Inguva *Smh* — Perunkayam. *Burm* —Shunka, Singu *Malay* & *Can* —Hingu *Arab* —Tyib Haltheeth *Pers* —Angustha gandha, Anguza. *Sind* — Vaghayani, Vaghami. *Fr* —Ferule Asafoetida. *Ger* —Stinkendes Steckenkraut

Habitat.—This small plant (herb) grows wild in Punjab, Kashmir, Persia and Afghanistan

Parts Used.—Aromatic gum-resin (asafoetida) obtained by incision from the roots

Constituents.—Organic sulphur compound, volatile oil 5 p c., containing essential oil of garlic—allyl, allyl persulphide and two turpenes, a resin 65 p c., a ferulic acid ester of asaresino-tannol,

free ferulic acid, gum 25 p c, and ash 4 p c., also malic, acetic, formic and valeramic acids Resin on dry distillation yields *umbelliferon* which is not found in the Indian variety When fused with potash it yields resorcin and pyrocatachuic acid

Action.—Stimulant, carminative, antispasmodic, expectorant and slightly laxative, also anthelmintic, diuretic, aphrodisiac and emmenagogue, it is a nervine and pulmonary stimulant, it acts on the organs of circulation and secretion, which it stimulates and also increases the sexual appetite If long continued even in moderate doses, it gives rise to alliaceous eructations, acrid irritation in the throat, flatulence, diarrhoea and burning in the urine The volatile oil is rapidly excreted and may be found in the urine, milk and sweat

Action & Uses in Ayurveda and Siddha.—Katu rasam, ushna veeryam, vata kapha haram pitta karam, tikshanam, pachanam ruchyam, in gulmam, udaram, anaham, krimi, moorcha, apasmaram (Therapeutic Notes)

Action & Uses in Unani.—Hot 4°, Dry 2° In diseases of the the brain digestive improves vision, paralysis, chorea, eplipsy, convulsion of children flatulence, colic, caries of teeth, emmenagogue (Therapeutic Notes)

Preparations.—Pills, Powders, Plaster, Mixture, Emulsion and Enema

Uses.— Asafoetida, the concrete juice obtained from the plant is in popular use in India for many centuries, especially as a flavouring agent, as an ingredient in condiments and in many spice mixtures It is a valuable remedy for hysteria and nervous disorders of women and children flatulence, flatulent colic and spasmodic affections of the bowels especially when connected with hysteria, in fainting, and emotional states, nervous palpitations, hypochondriasis and other affections due to hysteria, in the spasmodic, and the obstinate coughs of childhood remaining after attacks of inflammation and also in the advanced stages of whooping cough pneumonia and bronchitis of children, and in the chronic bronchitis and asthma of adults It is fried before being used Raw and unfried asafoetida causes vomiting It may be given in the form of 1 to 2 grains pill or in that of a thick and milky emulsion (in doses of half to one ounce) prepared by rubbing down in a mortar five drachms of asafoetida in a pint of hot water and straining and setting aside to cool

To relieve fits of asthma inhalation of asafoetida smoke called *Hingvadi Dhum* is employed,—Asafoetida and a common pulse known as Phaseolus roxburghi are put on smokeless fire and the smoke of the burnt medicine is inhaled by means of a pipe For hysteria and allied complaints *pills* made of asafoetida and aloes 1½ grains each and a little honey are very beneficial In flatulent distension of typhoid fever, cholera, convulsions and flatulent diseases of children and in peritonitis it is used as an enema, two drachms of asafoetida being rubbed down in a pint of water or thin gruel A tea spoonful of a *mixture* 1 in 50 of water or thin gruel, with a little opium water added is often very effectual in relieving the flatulent colic of children For flatulency a *powder* made of asafoetida, cardamom, ginger and rock salt 1 grain each is also very beneficial It may also be tried in the convulsions of pale, weakly children For colic a powder containing equal parts of asafoetida, *ajowan* chebulic myrobalans and rock salt is a remedy in doses of 10 grains *Blaster* of asafoetida is a good stimulant application to the chest of children suffering from whooping cough Asafoetida is useful as an anthelmintic for round worms in children, asafoetida *enema* is an effectual means of removing thread worms from the rectum and lower bowel. As anaesthetic, asafoetida is employed in hemicrania and dental caries An emulsion (5 grains of the gum to one drachm of water) is dropped into the nostrils to relieve the pain of hemicrania, in dental caries a mixture of opium and asafoetida is placed in the hollow tooth to relieve the ache In diarrhoea and the early stages of cholera a *pill* consisting of asafoetida, camphor and black pepper 1 grain each and opium ¼ gram is of great value Asafoetida is given to increase the lochial discharge after child birth it is prepared and administered thus —It is first fried a small quantity is then mixed with garlic and palmyra jaggery and a bolus is made and given to the patient *every morning It is a valuable remedy in the treatment of habitual* abortion Dr Turzza quotes several Italian authorities who have been successful in treating cases of habitual abortion since 1883 He follows the prescription of Dr P Negri of Venice —6 grammes of asafoetida are made into 60 pills (each about a grain and a half) Directly the pregnancy is suspected one such pill is given twice a day, the dose is then slowly and gradually increased to ten pills a day and then gradually reduced till confinement Cases having the

to five previous abortions, cases complicated with permetritis, catarrhal endometritis etc, and also cases in which abortion at sixth month was threatening are reported to have been treated with success by this drug To increase the appetite and digestive powers and to cure flatulence a compound powder called *Hingavashtaka* or *Hingushtaka Churna* is recommended, it is made up thus —Take of fried asafoetida, ginger, long pepper, black pepper, *ajowan*, cumin seeds, nigella seeds and rock salt equal parts, reduce them to powder and mix Dose —ten to twenty grams, to be taken with the first morsel of rice and clarified butter taken at breakfast —(Bhaishajyratnavali) Some writers recommend the above powder to be made into pills with lemon juice It is useful in indigestion and torpidity of liver also One teaspoonful of *Hingushtaka Churna*, taken in hot water every 4 hours along with *Suarasam* (extract) with water of *Krishna jeerakam* a teaspoontul, is beneficial in Puerperal sapraemia An oil called *Hingu Triguna Tailam*, whose important constituents are *Hingu*, *Saindava Lavanam* and *Lasuna* is used as follows with great benefit in bad cases of ear trouble —Dose—Internally ½ to 1 drachm with milk, one to four times a day or 4 drams in one dose in the morning with milk and sugar Externally a few drops to be warmed and put in the ear or applied warm to the affected part on a piece of cloth or lint In action this oil is internally, intestinal antiseptic, laxative, respiratory, stimulant and antiseptic Externally, antiseptic, and stimulant to foul ulcers Internally the oil is used in intestinal disorders, rheumatism, bronchitis, and consumption as blood purifier and germicide Externally in ear ache and ulcers in the ear or nose, it relieves pain and heals ulcers In all wounds and ulcers it is an excellent application as it favours rapid healing For nervousness 5 grains of asafoetida made into a pill with a little soap is recommended In flatulent colic with costiveness, a suppository made of asafoetida, rock salt and honey and smeared over with clarified butter is introduced into the rectum—(Chakradatta) For ring worm asafoetida is applied as a paste, it is also a good application over scorpion bites In hemiplegia, stiffneck, facial palsy, sciatica and other diseases of the nervous system, fried asafoetida is given along with a compound decoction called *Maishabaladi*—(Chakradatta)

1024. FERULA GALBANIFLUA, Boiss et Bushe.

Sans—Gaoshira, Javashira *Eng*—Galbanum. *Arab & Pers*—Barzhad, Kinneha. *Hind & Duk*—Gandhabiroza, Gandhaburoja, Barijagonda. *Ind Bazar*—Jawashir

Is a species met with in North West India, Persia, Smyrna and coasts of the Mediterranean *Gum resin galbanum* contains a volatile oil isomeric with turpentine, which contains no sulphur It also contains a resin, a gum and an insoluble substance It yields on dry distillation a blue essential oil and umbelliferon a tasteless substance in satiny crystals In action it is stimulant, expectorant and antispasmodic similar to Ammoniacum but less powerful than asafoetida In intestinal, vaginal and uterine catarrh, in paralytic affections hysteria, chronic bronchitis and ashtma it is used in the form of pill A *compound pill* consisting of galbanum, asafoetida and myrrh 2 ounces each and treacle one ounce prepared by heating all together by means of a water bath and stirring the mass until it assumes a uniform consistence is valuable, especially in the dyspepsia of hysterical women. Externally it is used in the form of *ointment*, mixed with vinegar it is a useful application for acne An ointment made of galbanum, sulphide of mercury red oxide of lead and pure tin, each 1 part and ten parts of gingelly oil is an excellent application over *painful rheumatic joints*

1025 FERULA JAESCHKEANA, Vatke. or Foetidissima.

Is a species of Kashmir It yields a gum resin which is applied to wounds and bruises Most of the commercial gum-resin Asafoetida is obtained from this species and F alliacese.

1026 FERULA NARTHEX, Boiss.

Sans—Bhutnasan. *Hind., Ben & Bom*—Hing

Grows abundantly in the valleys of Kashmir and gives a fairly good yield of asafoetida gum-resin which could form a good substitute for the imported commodity In the areas where F narthex is found growing, local people use it commonly as a substitute. Uses also are same as F galbaniflua.—Boiss (Chopra's "I D of I." pp 172)

1027. FERULA ORIENTALIS, Linn.

or F. tingitana or Dorema ammoniacum or D. glabrum.

Is a species growing in Persia and Afghanistan, on silicious soil, deserts and barren regions.

Eng.—Ammoniac. *Afghan.* & *Tam.*—Kandal. *Hind.*—Samagh Hamama. *Pers.*—Ushna Ooshak. *Bom.* & *Guj.*—Ushaka. *Tel.*—Gamanayakam.

Gum-resin exuding from the flowering and fruiting stem is called Ammoniacum B. P. It occurs in tears or masses of a pale yellowish brown colour. It contains a volatile oil, gum, resin, moisture and ash. Volatile oil differs from that of asafoetida in that it does not contain sulphur or phosphorus. Resin does not yield umbelliferon; it consists of an acid and two resins, one soluble and the other insoluble in ether, but soluble in volatile and fixed oil. In action Ammoniacum is antispasmodic, diaphoretic, diuretic emmenagogue, expectorant and stimulant. It is chiefly given as an expectorant in doses of 5 to 15 grains or half to one fluid ounce of the mixture with other expectorants in affections of the chest unassociated with inflammation. *Externally* Ammoniacum is applied to indolent ulcers.

1028. FERULA SUAVEOLENS.

Hind.—Sumbul.

Is a species found in Afghanistan. Its scented root which contains a gum-resin is used medicinally as a substitute for asafoetida.

1029. FERULA SUMBUL, Hook.

See Nardostachys jatamansi.

Contains essential oil. Uses same as F. narthex.

1030. FIBRAUREA TINCTORIA, Lour.

(N. O.—Menispermaceae)

Contains alkaloid berberine.

1031. FICUS ARBUTIFOLIA.

(N. O.—Urticaceae)

Hind. & *Ben.*—Pakur. *Fr.*—Figuier-a-petit fruits.

Found in India, juice of its branches or the milky exudation is applied to poisoned wounds, indolent ulcers and as a resolvent

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1032 FICUS ARNOTTIANA, Miq

(N O—Urticaceae)

Sans—Plaksha *Tam*—Aswathom Used in skin diseases

1033 FICUS ASPERRIMA Roxb

(N O—Urticaceae)

Sans—Shakataka *Hind*—Sheoda, Kalmnor, Kalumar *Mah* & *Bom*—Kharoti, Kharvat *Guj*—Sariro *Tam*—Pechi, Pethi *Tel*—Pindichettu, Karakatbunda, Karakabodda *Can*—Khargas *Kon*—Kharvant

Found in Central India Deccan, South India and Ceylon It contains a crystalline principle soluble in alcohol, an alkaloid, an inorganic acid, white calcareous matter and ash 18 p c In action it is alterative *It is used as infusion of leaves* (1 in 10) in doses of 2 to 6 drachms Both the *juice* of the plant and the *bark* are used in glandular enlargements of the liver and spleen *Juice* is applied to cracks and fissures of the palms hands and soles of feet *Bark* which is mildly acrid, is used as a tooth brush to remove the tartar or to cleanse the teeth

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1034 FICUS BENGALENSIS, Linn

F indica

(N O—Urticaceae)

Sans—Vata, Sriksha, Bahupada, Shikhandin, Skandaja, Nyagrodha *Eng*—Banyan Tree *Hind*—Vada, Bor *Ben*—Bar, Bargat, Bat, Bot *Punj*—Bera, Bor, Bohar, Bargad *Pushtu*—Baagat, Bar *Bom*—Vada, Barghat, Bur *Mah*—Vata vraksha *Guj*—Vad, Vadlo, Vor *Tel*—Marichettu, Mari, Marri Peddi mari *Tam*—Vada, Alam, Ala *Mal*—Paeral, Vatam *Can*—Aladamara, Ahlada *Kon*—Godimuku, Vodaruku *Burm*—Pyi nyoung *Fr*—*Figuier* due Bengal

Habitat.—This well known tree is wild in the Lower Himalayas and is now found all over India

Parts Used.—Milky juice and bark.

Constituents.—Bark and young buds contain about 10% tannin, wax and caoutchouc. Fruit contains oil, albuminoids, carbohydrates, fibre and ash 5 to 6 p. c.

Action.—Bark is tonic, astringent, cooling, dry and diuretic. Seeds or fruits are cooling and tonic. Young buds and milky juice are astringent. Quality of curing *Daha* (burns), *Thrishna* (thirst), *Moorcha* (faintness), *Raktapitta* (haemorrhage), *Kapha* and *Pitta*, has been described in Ayurveda Nighantus.

Uses.—*Milky juice* and *seeds* or *fruits* are useful as external application to pains and bruises, sores & ulcers, in rheumatism and lumbago, to the soles of the feet when cracked or inflamed, and to the teeth and gums for toothache. *Juice of fruits* with the finely powdered *karpura* is advised by Chakradatta to be applied in cases of *Sukra Roga* of the eye. Bhavaprakasa says that the juice proves good in *Arbuda*. *Internally* it is useful in dysentery and diarrhoea. An *infusion of the bark* (1 in 10) has specific properties in reducing blood sugar in diabetes, dysentery, haemorrhagic fluxes (i.e., dysentery and diarrhoea), gonorrhoea, and in seminal weakness, and is a powerful tonic. A *decoction of the bark* is used as an astriogent lotion in leucorrhoea with advantage, and "Sushruta advises a simple decoction of the bark and that of Lodhra for amenorrhoea" (*Pradhan*). *Leaves* are heated and applied as a *poultice* to abscesses and wounds to promote suppuration and discharge of pus, and "also for administering in cases of *Raktha Pitta* (Sushruta). *Leaves* after they have turned yellow are given in decoction with roasted rice as a diaphoretic; three leaves are used for the decoction. *Root-fibres* in the form of decoction with or without the addition of honey resemble sarsaparilla in action; they are useful in gonorrhoea. Infusion of the small branches is useful in haemoptysis. Charaka gives a prescription prepared with the tender ends of branches and the young shoots in *Ado Rakthapitta*. A *ghrita* medicated with young shoots of *Vata* and *Kasmari* is given in cases of haemorrhage (Vangasena). *Tender ends* of the hanging (aerial) roots are given for obstinate vomiting. *Infusion of young buds* is useful in cases of dysentery and diarrhoea. Concentrated juice in combination with fruit is an aphrodisiac and also is of much value in spermatorrhoea and gonorrhoea. Slender twigs of the tree forms a good toothbrush, and its use strengthens gums and teeth.

1035 FICUS BENJAMINA, Linn.
or F. comosa or F retusa

Hind & *Ben*—Kamrup, Zar *Nepal*—Juripakri *Chota Nagpur*—Jili *Mah*—Nandruk. *Bom*—Pimpli Pumpri *Tam*—Putrajuvi. *Tel*—Putrajanvi, Yerrajuvi, Nandreka *Santal*—Sunonjhar, Sumunjon *Kon*—Dhavidek goli, Arekgol

Is a species found at the base of the Eastern Himalayas, Khassia Hills, Assam and the Deccan Peninsula. *Bark* of the root the *root* itself and the *leaves* boiled in oil form good applications for wounds asd bruises *Leaves* are applied to ulcers *Juice of the bark* has a reputation in liver disease, dose is one tola in milk—(Dymock) In rheumatic headache the leaves and bark pounded are applied as a *poultice* A *ghrita* is prepared out of the juice and it is very useful in flatulent colic. It is prepared thus —Take equal parts of the juice of the leaves of F benjamina of the leaf juice of *Tulsi* plant and *Ghee* and boil until all the water has evaporated, do this again twenty-one times, each time adding fresh quantities of juice of the above two plants Residum is then ready for use It is applied to the belly and fomentation with hot brick is practised

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1036 FICUS CARICA Linn
(N O—Urticaceae)

Sans—Anjira. *Eng*—Fig tree *Hind., Pers, Afghan* & *Mah*—Anjir *Guj*—Anjra *Ben*—Doomoor, Anjir *Burm*—Saphansi *Tam*—Shimeatti; Anjara *Tel*—Tene-atti Modipatu. *Can*—A- i *Kon*—Anjur

Habitat—This tree, a native of Asia Minor is cultivated in many parts of North India for its fruits Fresh figs are to be found in the Northern Indian Bazaars.

Parts Used—Dried fleshy receptacles—figs

Constituents—Proteose, amino-acid. tyrosin, enzyme cravin, lipase, protease The fleshy receptacle-fig contains grape sugar 62 p c., gum, fat and salts. Dried figs contain sugar, fat, pectose, gum, albumen and salts. Milky juice contains a peptonising ferment

Analysis of Ficus Carica Varieties

A large number of samples have been analysed in the case of figs as grown in the Poona District It has been found that ripe

samples received during the months of January and early February had not developed the sugars to their maximum; while those analysed in late February, March and April show a very high percentage of sugars. The following results of analysis will bear out the above facts vividly:—

(1) Variation in 7 samples analysed in early February:—

	Per cent
Moisture	74·5 to 81·80
*Non-reducing sugars	2·89 to 5·76
*Reducing sugars	34·64 to 51·42
*Total sugars	38·31 to 51·43

*Calculated on dry matter.

(2) Variation in 22 samples analysed late in February and in early March:—

	Per cent
Moisture	69·0 to 81·0
*Non- reducing sugars	3·62 to 15·65
*Reducing sugars	33·15 to 58·63
*Total sugars	45·21 to 64·33.

*Calculated on dry matter.

(3) Variation in 30 samples analysed in April:—

	Per cent.
Moisture	74·63 to 87·18
*Non-reducing sugars	2·66 to 8·2
*Reducing sugars	29·07 to 54·16
*Total sugars	31·01 to 60·18

*Calculated on dry matter.

Analysis of unripe fruits is given for the sake of comparison:—

	Fruits unripe	Fruit fully developed but not ripe
	Per cent	Per cent
Moisture	83·37	87·8
*Non-reducing sugars	... 0·85	Nil
*Reducing sugars ...	... 7·91	48 2
*Total sugars ...	... 8·76	48·2

*Calculated on dry matter.

Analysis of fruit completely ripe on plant —

	Per cent
Moisture	47 80
*Reducing sugars	55 73
*Non reducing sugars	3 72
Total sugars.	59 45

*Calculated on dry matter.

Analysis of foreign Dry figs:—

	Persian	Persian	Afghanistan	Grecian	Smyrna	California	Poona
	Per cent	Per cent.	Per cent	Per cent	Per cent.	Per cent.	Per cent
Moisture	19 45	19 90	19 04	19-14	18 25	19-92	19-95
Sugars	46 30	45-70	46-64	46 50	57 34	57 34	45-95.

Action—Aperient, emollient, cooling, laxative, demulcent, and nutritious The effects of the peptonising ferment of the milky juice on milk and fibrin are like those of papaine It converts starch into sugar

Uses— *Figs* are wholesome, easy of digestion, and when used medicinally they remove gravel in the kidneys or bladder and also obstructions of the liver and spleen in sub-acute cases They are given to cure piles and in the treatment of gout etc Milky juice is applied to cure ulcers in the mouth etc. *Figs* are very efficacious in infantile liver Equal parts of dried figs, decorticated almonds, *pistachu*, cardamoms, *charoli bedana* and sugar-candy and a little saffron, all in powder, immersed in cow's ghee for 8 days, forms a very nutritious aphrodisiac mixture, dose —2 tolas in the morning daily Fresh ripe figs 2 to 4 mixed with a little sugar-candy powder and exposed to snow during the night and eaten early in the morning removes heat of the body, it should be continued for 15 days Pulp of the fig split open and heated is occasionally used in the form of an emollient poultice to promote suppuration in gumboils etc. Fresh figs form a nice tonic to weak people who suffer from cracks in lips, tongue, mouth etc. Drying of figs is effected in a warm climate by exposure to the sun's rays; in drying, some of the grape sugar exudes and forms a white powder

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1037. FICUS CUNIA, Ham.

Hind—Khewnau. *Ben*—Jagya-dumur *Tam*—Porah.

Used in leprosy and bladder complaints

1038 FICUS DALHOUSIAE, Miq

Sans —Somavalkhom *Tam* —Kallal

Parts Used.—Fruit, leaves and bark,- fruit is used in heart disease, leaves and bark are used in liver complaints and skin diseases (Chopra s I D of I pp 490)

1039 FICUS ELASTICA.

Fr —Figuie Elastique *Eng* —Assam Rubber tree

Is indigenous to Assam, and contains about 30 p c. of caoutchouc in its milky exudations

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1040 FICUS GIBBOSA, Blume

Sans —Udumber *Bom* —Datir *Tam* —Tella varinka.

Parts Used.—Root bark which contains an alkaloid and is stomachic and aperient

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1041 FICUS GLOMERATA, Roxb & F racemosa. (N O—Urticaceae)

Sans —Udumbara *Eng* —Cluster fig, |Gular Fig |or Country Fig tree *Hind* —Gular, Paroa, Lelka Umar Tue Dimeri *Ben* —Jajnadumar Jagya-domur *Mah* —Umbar, Audumbara. *Guj* —Umbaro *Bom* —Rumadi, Umbar gular *Punj* —Kath gular, Krumbal, Rumbal, Batbor Palak Kakammal, Dadhuri *Tel* —Attimanu, Moyui Bodda Paid Mar- Medi *Tam Mal* & *Can* —Atti. *Kon* —Rumdi rooku

Habitat.—All parts of India.

Parts Used.—Root, root bark, leaves, fruit milky juice and galls.

Constituents.—Tannin, wax and caoutchouc and ash containing silica and phosphoric acid

Action.—Bark, leaves and unripe fruit are astringent, carminative stomachic and vermicide It is said in the Ayurvedic Nighantus that the bark is cooling, sweet & astringent and fruits especially to be cooling Infusion of the bark and leaves is astringent"—Chopra s I D of I PP 579

Uses.—*Bark leaves* and *unripe fruit* are used externally and internally in dysentery *Fruit* is edible, it is given on aphthou-

complaints, menorrhagia, haemoptysis etc, with sugar and honey, and when boiled in milk it is a good remedy for visceral obstructions *Vangasena* says that the application of the mass obtained by grinding the fruits of *Palasa* with figs, honey and milk, is said to have the property of hardening the *'Yoni"* In the diarrhoea of the pregnant the fruit with honey is given Fruit and the sap extracted from the trunk of the tree are efficacious in diabetes. Two ounces of figs boiled in half a pint of water for half an hour and strained forms an excellent gargle for sore-throat *Nighantus* say that the fruits are suppressor of *Pitta* and effective in removing *Srama* and *Sopha* A *bath* made of the fruit and bark is regarded as a cure for leprosy *Powder of the seed* mixed with honey is regarded a specific in diabetes, reducing sugar in the drine thirst and polyuria of diabetes *Nighantus* say that the bark is a curative of *krimi, rakta pitta moorcha* and *daha* In excessive of appetite it is advised by *Susbruta* to take the pulverised bark with the milk of women *Bark* is used in the form of fine powder in dysentery and diabetes menorrhagia, and in combination with gingelly oil it is applied to cancerous affections. *Rajanighantu* has made a special mention of the property of the bark protecting the foetus of the pregnant and of its galactogogic action *Infusion of the bark* is given in diabetes

An infusion of the bark and the leaves is also employed as mouth wash in spongy gum and internally in dysentery, menorrhagia and haemoptysis —(Chopra s I D of I pp 579) *Externally* the bark is applied to ulcers and to remove poison from wounds caused by tiger or cat Bark also serves well in cases of tinder pest of cattles (T R Mudaliar) *Young leaves* crushed or reduced to powder or ripe figs mixed with honey or *gool* or sugar are administered in bilious affections *Decoction* prepared with a handful of leaves boiled in four pints of water is given with benefit every morning as a douche in dysmenorrhoea *Asrigdara* ( ) can be relieved by a draught of honey with the juice of the figs Juice of figs is advised by *Charaka* in case of *Raktapitta* and juice or cooled decoction of figs is advised by *Bhavaprakasa* in cases of *Trishna* (thirst). Fresh juice of the ripe fruit is given as an adjunct or vehicle to a metallic medicine for diabetes and other urinary complaints e g, the preparation *Vrihat Vangeshwara Rasa* Fluid which yields on incision in the root (i e, sap) is given alone or better mixed with cumin and sugar-candy in gonorrhoea as a tonic in doses

of ¼ tolas by Vaidyas The sap of root gives relief in diabetes, (T R. Mudaliar), and is usefully applied in cases of mumps, and root juice is applied externally to other inflammatory glandular enlargements According to GRIHYA SUTRA a man and woman in the fourth month of pregnancy should be rubbed with the fruits to fortify the foetus *Root* is used in pectoral complaints and dysentery A decoction of two tolas of the roots in weight, is recommended in menorrhagia in AKSIR UL-IMRAZ. It is also given in dysentery In cases of *Yoni Roga Charaka* advises the *Tailam* prepared with *Thila* which has been duly dried in the milky juice of the tree Green leaves are very much liked by cattle and goats—See F Bengalensis

1042 FICUS HETEROPHYLLA, Linn

Sans—Trayamana *Ben*—Bhui dumur *Tam*—Buroni

Root is used in colic leaves in dysentery, bark in cough and asthma.

(Chopra's I D. of I pp 490)

1043 FICUS HISPIDA, Linn & F daemona

(N O—Urticaceae)

Found in Bengal, Coromandal Coast and South India

Sans—Kakadumbura, Ummettodumbara *Ben*—Kakoudumbar, Kakadumur *Hind*—Katgular Konea dumbar *Guj*—Jangluan Jir, Dhed Umbro *Bom*—Rambal *Mah*—Vede umde, Kharwat *Tam*—Pe-allippayam, Kattu Atthi Pe-Atthi, Pe-Attiss, Pechi, Pethi *Tel*—Verse atti pandhlu, Adavi atthi, Kukka bodda *Can*—Adavi atti. *Kon*—Vadli kharwant

Its constituents are tannin, wax a caoutchouc like substance and a glucosidal principle having the properties of saponin

Parts Used.—Bark and fruit Bark is emetic and laxative *Nighantus* describe the fruit as cooling astringent and sour In *powder* or *decoction* (1 in 10) it is given in hepatic obstruction Dose of the powder is 40 to 60 grains and of the decoction half to one ounce Fruits and seeds in a dose of 15 to 30 grains of bark 3 to 4 times a day, acts as antiperiodic. A *poultice of the bark* is applied to buboes to disperse them or to bring them to maturity For internal administration *seeds* o the ripe fruit dried and pre

served from moisture in stoppered bottles are given in 1 drachm doses which is equal to 4 to 6 of the ripe fruits Figs of this plant promote the secretion of milk and preserve the foetus in the womb *Nighantus* say that the various parts of this tree are effective in cases of *Kusta Vrana Kapha Pitta, Piles,* Jaundice and *Pandu,* and healer of wounds In the treatment of *Sutika* ( ) *Charaka* advises that the juice can be taken with jaggery as a *Sramsana Bhavaprakasa* says that a mixture of honey and the juice of fruits, proves a good anti haemorrhagic. Powders of Hingu the root of *Kapi kachu* ( ) with the juice of these fruits used as snuff is said to be a curative of *Ardhavabhedi* by *Sangarena* Root is said to cure poisons of *Sarameya* in which it has been advised that it should be taken in the form of a powder with the fruits of *Dhatura* and rice-water, and is also applied as a poultice in buboes Many uses are similar to F Bengalensis

1044 FICUS INFECTORIA, Roxb F tjakela

(N O—Urticaceae)

Sans—Plaksha, Parkatinj, Suparsva *Hind*—Pilkhan *Bom*—Ramanjir, Pipli *Mah*—Bassan, Pakri *Ben*—Pakar *Tam*—Ichhi Javi, Pepte *Tel*—Juvi, Jevi *Can*—Juvi Kari

Action.—Nighantu describes this tree as cooling, pungent, astringent and curative of *Rakta Dosha Moorcha Srama* and *Pralapa*

Uses—Bark enters the composition of *Pancharalkala.* Decoction of the bark is used as a gargle in salivation, as a wash for ulcers and also as an injection in leucorrhoea. This also cures *Yonidosha* (diseases of the female generative organs)—(Bhavaprakasa) *Charaka* prescribes a *Varti* or suppository made with the pulverised bark to be inserted into the vagina in case of *Yoni-Sravа* As a vegetable the leaves can be eaten as they are, by those who suffer from *Raktapitta*

1045 FICUS PALMATA, Forsk.

Hind—Anjir *Punj*—Jamir *Bom*—Pepri.

Fruit is demulcent and laxative and is used in diseases of the lungs and bladder

1046. FICUS OPPOSITIFILIA, Wild.

Ben.—Kakadumar.

Is a species found in Bengal whose bark is antiperiodic and tonic, and fruits, seeds and bark are used as emetics. Milky-juice is poisonous, but is used cautiously in medicine.

1047. FICUS RELIGIOSA, Linn.

(N. O.—Urticaceae)

Sans.—Pippala, Shreevraksha; Sevya; Aswatha. *Eng.*—Sacred Fig; Peepul Tree. *Hind.*—Pipal. *Ben.*—Asud; Ashwath. *Guj.*—Jari. *Duk.*—Anipeepul *Bom.*—Pimpal; Pipla; Pipur; Pipul. *Mah. & Kon.*—Pumpala. *Punj.*—Pipal; Bhor. *Tel.*—Ravi; Ravichettu; Raiga; Rai; Kulla-ravi; Aswatham. *Tam.*—Arasha-maram; Arasan, Aswartham. *Mal.*—Areyal. *Can.*—Rangi Basri; Ashvatha-mara *Fr.*—Figuier-ou-arbre des pagodes (ou de Dieu ou Conseils); *Ger.*—Religioser Feigenbaum.

Habitat.—This sacred peepul is a large tree found wild, and cultivated all over India by the Hindus.

Parts Used.—Root-bark.

Constituents.—Bark contains tannin, caoutchouc (cochtone) and wax.

Action.—Seeds are cooling, laxative, refrigerant and alterative; leaves and young shoots are purgative; bark is cooling, astringent, sweet; has maturative powers and also a corrective of *Kapha* and *Pitta*. Fruit is laxative and digestive. Infusion of bark is astringent.

Uses.—*Seeds* are prescribed in the form of electuary and powder. *Bark* is useful in gonorrhoea and *Vata Rakta*, ulcers, various skin diseases and scabies in *infusion* or *decoction* (simple kashayam) with a little honey. (Charaka & Sushruta). Water in which the freshly burnt ashes of the bark have been steeped is said to cure obstinate cases of hiccup and stop vomiting sensation. Milk boiled with dried bark is a good aphrodisiac. (Sushruta). A decoction (or oil ?) of the barks if the five varieties of figs, (F. religiosa, F. bengalensis, F. glomerata, F. infectoria (Tjakela) and the root bark of the *Neem* form *Pancha Valkala* or five barks) called *Pancha Valkala Kashaya* is used as a gargle in salivation, as a wash for ulcers and as an astringent in injecting into the rectum

in dysentery and urethra in leucorrhoea—(Chakradatta) For *external application* in skin diseases caused by vitiated blood such as eczema, leprosy, rheumatism, etc, a medicated oil called *Pancha Valkaladi Tailam* is highly recommended Oil is prepared thus — First make a decoction (*Kalkam*) of the barks of the five varieties of figs, Curcuma longa and Hemidesmus indicus Then prepare an oil in the usual way with the addition to it of gingelly oil root bark of plantain, liquorice, cinnamon bark, cuscus grass, Aplotaxis auriculata and sandal Fruit forms a very nutritious food for cattle Fruit dried and powdered and taken in water for 14 days removes asthma and promotes fruitfulness in women —(Bartholomes) *Tender shoots* boiled in milk and administered together with a sufficient quantity of sugar added to taste make a very nutritious and cooling morning drink Leaves and young shoots are used as a purgative—(Aiyshe & White) Milky juice applied is useful in cracked feet and cracked skin—(T H Ghouse) Hakims use *powder of the dried bark by blowing it through a pipe into the* rectum in cases of anal fistula and inflammatory swellings as an absorbent—(Emerson) Pulverised bark is used also in the heat of the blood (*Rakta Daha*) and in the diseases of the '*Yoni*" (the female generative organ) Rubbed with honey the powder is applied to aphthous sores of children—(Chakradatta) It is also sprinkled over unhealthy ulcers and *wounds to promote granulations* *Leaves* are a food for silkworms Tender and fresh leaves of *Asvatha* may be used along with ghee or tailam to cover the inflamed areas and ulcers according as the wound requires *Samana* or *Sodhana* treatment (Charaka), Leaves of *young shoots* are used *in skin diseases*, *Sushruta* attributes the quality of curing pain in the ears to the oil medicated with the leaves This tree yields lac

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1048. FICUS RETUSA, Linn

Ben —Kamrup *Tam* —Yerrajuvi

Bark is used in liver diseases

1049 FICUS RIBES, Reinw

Hind —*Chhota Jangli Anjur*

Uses are similar to F *hispida*.

1050 *FICUS RUMPHII*, Blume

Hind —Pakar *Ben* —Gaiaswat *Bom* —Pair

The drug is an emetic, used in asthma and snake bite

1051 FICUS TALBOTI, King

Sans —Plaksha *Tam* —Kal itthi

Decoction of the bark is used in ulcers, venereal diseases diarrhoea and leprosy

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1052 FICUS TJAKELA—See *F infectoria*

1053 FICUS TSIELA, Roxb

Sans —Kanchanika *Hind* —Javi *Bom* —Pimpri *Tam* —Ichchi

Used in colic

1054 FIMBRISTYLIS JUNCIFORMIS, Kunth

(N O —Cyperaceae)

Used in dysentery

(Chopra's I D of I I pp 490)

1055 FIMBRISTYLIS MILIACEA, L. & Vahl

(N O —Cyperaceae)

Occurs in moist places and in paddy fields of South India where several species are found

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1056 FLACOURTIA CATAPRRACTA, Roxb

(N O —Flacourtiaceae)

Sans —Prachinamalaka Talisha *Eng* —Many spiked Flacourtia *Hind* —Talispatri Paniamlak *Ben* —Paniyala *Bom* & *Port* —Jaggar *Mah* —Taleespatra Panambale, Tambat *Tel*, *Mal* & *Can* —Talispatram *Tam* —Talispatri, Talispatram *Arab* —Zatnal *Fr* —Prunier I Inde

Habitat—Found in Bengal Nepal to Assam Chittagong and on th sea coasts of India

Parts Used—Fruit leaves bark and shoots

Action—Bark is astringent leaves and young shoots are stomachic, dried leaves are carminative expectorant stomachic tonic and astringent

Uses.— *Dried leaves* are useful in asthma, bronchitis, phthisis and catarrh of the bladder *Poudered leaves,* half to one drachm, are often given along with the juice of the leaves of Adhatoda Vasika and honey, and a confection called *Talisadya Churna* (vide drug Abies Webbiana) are given in cough, asthma and haemoptysis *Juice* of the fresh leaves and of their tender stalks is useful in fevers as antiperiodic for infants, the dose being 5 to 10 drops in water or mother's milk, it is also used in affections of the chest, phthisical cough dysentery, diarrhoea and indigestion caused during dentition In Bengal it is given as a tonic in parturition *Bark in infusion* is a remedy for horseness It is used as a gargle *Fruit* is edible, and it is recommended in bilious conditions, to relieve the nausea and to check purging and is also used in liver complaints An *oil* is extracted from the seeds on Malabar coast

1057 FLACOURTIA RAMONTCHI, L'Herit

Sans—Vikarngata, Svadukantaka *Hind*—Bilangra, Kantai, Bilangura *Ben*—Tambat, Bauch, Bincha. *Uriya*—Baincho *Gond*—Katier *C P & Bom*—Swadu, Kaikun, Pahar, Bhekal; kakad *Tam*—Kaka *Tel*—Kanregu *Kon*—Japhran *Eng*—Mauritius Plum

Is a species found from the Punjab eastward to Bihar, the Deccan and the Southern Peninsula. *Fruit* is red or brown, dark inky when ripe Fruits are sweet, appetising and digestive They are given in jaundice and enlarged spleen After child birth among the poor the *seeds* are ground to powder with turmeric and rubbed all over the body to prevent rheumatic pains from exposure to damp winds *Gum* is administered along with other ingredients in cholera

1058 FLACOURTIA SAPIDA, Wall.

Is a species found in Bengal, the fruit of which is eaten though not palatable Its thorns are used to open the pustules of the small pox on the ninth or the tenth day, and the fruit is used in liver complaints

1059 FLACOURTIA SPPIARA, Roxb

Hind—Kondal. *Punj*—Kingaro, Sherwam *Bom*—Atrung *Duk*—Joolay, Karoonday *C P*—Bauch *Tel*—Conteru, Kana

regu. *Tam*—Sottacla, Kanru *Malay*—Conron Mooli *Kon*—Babuli.

Is a species found throughout Bengal Western Peninsula and Ceylon *Infusion of the leaves and root* is an antidote to snake-bite *Bark* triturated in sesamom oil is a useful *liniment* in gout and rheumatism *Ripe fruit*, which is pea shaped, is very savoury and is eaten

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1060 FLAVERIA AUSTRALASICA, Hook

(N O—Compositae)

Is an introduced weed of Australasia, found in South India

1061 FLEMINGIA CONGESTA, Roxb

(N O—Leguminosae)

Hind & Ben—Bara salpan *Bom*—Dowdowla Used as an external application to ulcers and swellings

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1062 FLEMINGIA GRAHAMIANA, W & A

(N O—Leguminosae)

Used in skin diseases

1063 FLEMINGIA NANA, Roxb

F procumbiana, F congesta

(N O—Leguminosae)

Ben & Hind—Bara-salpan Bhalat *Nepal*—Batwasi *Bom*—Dowdola *Kon*—Damdavlo) found throughout India Roots are applied as paste to ulcers and swellings mainly of the neck—(Rev A Campbell)

1064 FLEMINGIA STROBILIFERA, R Br

(*Oudh*—Kusrunt *Santal*—Simbusak *Bom*—Bundar, Kan phuti) is a species found on the lower Himalayan regions from Simla and Kumaon to Assam, Khasia Hills and Chittagong Roots are used in epilepsy and hysteria

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1065 FLEMINGIA TUBEROSA, Dalz

(*Mah*—Birmova. *Kon*—Birmolo) is a species met with in Konkan. Tubers when boiled taste like chestnuts They are found to contain a yellow resin 1 5 p c sugar and gum 25 p c,

asparagin 4 3 p c., starch 40 p c., albuminoids 13 p c., cellulose 12 1 p c ash 3 5 p c, and a trace of tannin A decoction (1 in 10) is useful in dysentery and leucorrhoea in doses of 2 to 6 drachms

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1066. FLUEGGEA LEUCOPYRUS, Wight

(N O —Euphorbiaceae)

This is a fish poison there is an alkaloid (Chopra s I D of I pp 491)

1067 FLUEGGEA MICROCARPA, Blume

(N O —Euphorbiaceae)

Hind —Dalme *Bom* —Pandharphali This is an anthelmintic and a fish poison There is an alkaloid (Chopra s I D of I pp 491)

1068 *FOENICULUM PANMORIUM*, or Anethum panmorium.

(N O —Umbelliférae)

Sans & *Ben* —Vanamethi *Hind* —Panmuhuri is a species found in Bengal and is said to possess all the characters and properties of the European fennel fruit *Vide* the following —

1069 FOENICULUM VULGARE, Gaertn. or Anethum foeniculum.

(N O —Umbelli ferae)

Sans —Madhurika Methika. *Eng* —Indian Sweet Fennel, Fennel *Bom* & *Hind* —Badi or Bari saunf, Sonp, Sont, Badishep *Bom* —Barisopha *Mal* —Badi shep, Shepu *Sind* —Saunf *Ben* —Panmouri Methi, Mauri *Guj* —Warialli *Tel* —Sopu, Pedda jilakurra. *Tam* —Shombu Sohikire *Can* —Badi sopu, Badi sepu Sabbasige

Habitat —A native of Europe but commonly cultivated throughout India

Constituents —Analysis of Oils from F vulgare —

	French Oil	Galician Oil	Russian Oil	Indian Oil
Specific Gravity at 15°C.	0 976	0 966	0 967	0 966
Optical rotation in 100 mm tube	+ 16 0°	+ 22°	+ 23°	21°
Melting point after solidification	12 5°	4 0°	4 4°	5 5°
Percentage of fenchone ...		19 3	18 2	6 7

The yield of oil obtained is very variable, according to the fruit distilled. In general it averages from 4 to 6 per cent. The yield of the Indian oil was stated to be about 3 per cent. Recently, Sao, Sudborough and Watson studied the oil obtained from F. panmorium, and have found the yield to be 0.72 per cent. on an average. This yield is rather low in comparison to the other varieties as will be seen from the table below —

Fennel Fruits.

Variety.	Persentage of Oil
1. French Sweet	2·1
2. German (Saxon)	4·7
3. Indian	0·72
4. Russian	4·8
5. Galician	4·4
6. Japanese	2·7

Pure anethole has also been placed on the market so that the importance of the oil has to a great extent gone into the background. (Chopra's "I. D. of I." pp. 173 & 174).

Uses.— *Dried ripe fruit* and its essential oil are used as stimulant, aromatic, carminative, diuretic, emmenagogue and purgative. *Root* is regarded as purgative and it is one of the five purgative roots of the ancients in Europe. The five roots are:—Fennel, Parsley, Wild Celery, Asparagus and Butcher's Broom (Ruocus aculatus). Leaves, which are used as a vegetable, are diuretic increasing the secretion of urine and perspiration. Fennel *fruit* (seeds) is used as a spice and condiment, and eaten with betel, and as a romatic adjunct to medicines. "In Europe it is used in the manufacture of cordials and enters into the composition of fenzelwater which is employed medicinally, mostly as a vehicle for other drugs and as a flavouring agent." (Chopra's "I. D. of I." pp. 173). Fennel fruit yields about 3 to 5 p. c. of volatile oil of a pleasant aromatic odour, which consists of anethole or anise camphor and variable proportions of a liquid isomeric with oil of turpentine and small quantities of other substances like fenchone are also present in certain varieties. Anethole is obtainable from fennel in two forms: the solid and the liquid; 7.25 p. c. of ash is found in the fruit. *Juice of the fennel fruits* is used to improve eye-sight. *Fennel Water* (Aqua Foeniculi) is given in colic and flatulence of children. A *hot infusion* of the

fruit is useful in amenorrhoea and in cases where the lacteal secretion is suppressed, and to produce free sweating *Oil* is useful in flatulence and checks the griping of purgatives A *paste* of the seeds or fruits is used in a cooling drink in fevers and in the scalding of urine Dose of the seeds is ½ drachm of the oil—5 to 10 minims Following preparations are popular as Home Remedies —(1) Take of F vulgare 5 sugar 6, tamrind bark 4 and cloves 2 parts Mix and make a powder, dose —10 to 20 grains used in chronic skin diseases (2) Take of F vulgare 5 *Trikatu* 4 *Sunpha* (another variety of F. vulgare) 2 and Anise seeds 2 parts Mix and make a powder, dose —1 to 3 drachms Used in feverishness and indigestion with vomiting Roxburgh alluding to the Indian variety of fennel says the seeds possess warmish very sweet taste and aromatic smell so much like sweet fennel that I should have certainly throught them but varieties of the same species if I had not had both growing before me for several years in the Botanical Gardens at Calcutta ' This plant and anise have also been confounded together in Arabic and Persian works

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1070 FRAGARIA VESCA, or F. vilginiana.

Eng —*Strawberry, cultivated in Mahableshwar of Bombay Presidency* There are two varieties, one large leaved with large fruits, and the other with small leaves and fruits (Bombay Govt Agri Dept Bulletin)

1071 FRANCOERIA CRISPA, Cass

(N O—Compositae)

Used as a vulnerary in bruises

(Chopra s I D of I pp 491).

1072. FRANKENIA PULVERULENTA, Linn

(N O—Frankeniaceae)

This is demulcent and aromatic.

1073 FRAXINUS EXCELSIOR, Linn.

(N O—Oleaceae)

Punj—Kum. Bark is bitter and astringent, leaves are purgative. Contains a glucoside, fraxin, essential oil

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1074. FRAXINUS FLORIBUNDA, Wall.

(N. O.—Oleaceae)

Hind—Angan.

Exudation of this is a substitute for manna.

1075. FRAXINUS, ORNUS Linn.

(N O.—Oleaceae)

Hind.—Shirkhist *Tam.*—Mena.

1076. FRITILLARIA IMPERIALIS, Linn.

(N. O.—Liliaceae)

This is a heart poison. In fresh plant there is a toxic alkaloid imperialine.

1077. FUCUS DISTICHUS, Linn.

(N. O—Algae)

Used in rheumatism and goitre.

1078. FUCUS NODOSUS, Linn.

(N. O.—Algae)

Used in scrofula and goitre.

1079. FUCUS VESICULOSUS, Linn.

(N O—Algae or Phaeophyceae ; Fucaceae)

Eng—Brown algae; Bladderwrack. *Fr.*—Varech vesiculeux *Ger.*—Blasentang

Commonly occurs on the shores of the Atlantic. This and other species of F. luminaria and F. ascophyllum, when dried and burnt, yield kelp or varec, at one time the sole source of iodine. Bladder-wrack found on the shore, although used for kelp manufacture, should not be used medicinally as it may have lost some of its constituents, and it is therefore advisable that the algae be collected from the rocks at low tide and immediately dried. Uses same as F. distichus. (Chopra's "I. D of I." pp. 491).

1080. FUMARIA OFFICINALIS, Linn.

or F. parviflora.

(N. O.—Fumariaceae)

Sans.—Khsetra parpati; Yavana parpata *Eng*—Common fumitory. *Hind.* & *Gwalior.*—Pitpapara. *Pushtu*—Shahtara ; Pit-

papra, Papra. *Ben*—Shotara, pit papra Ban sulpha *Pers*—Shahtarah, Shatra. *Arab*—Bukslat ul mulik Baglatul mulk *Kash*—Shahterah *Guj*—Pittapapdo *Bom*—Pitpapra, Shatra, Pitpapda *Tam*—Turu, Tura *Tel*—Chata rashi F officinalis is not indigenous to India but is imported into the country from Persia An allied variety, F parviflora, is found in many parts of India from Indo-Gangetic plain—(Chopra's I D of I pp 579), and Nepal down to the Nilgiri mountains The plant is found to contain *Fumaric acid* (isomeric with malic acid) and *fumarine* (an alkaloid), a crystalline organic base A decoction of the plant (1 in 20) or an infusion prepared from the stem and the leaves, is given in doses of 1 to 2 ounces thrice daily, as diaphoretic, tonic, diuretic, anthelmintic, aperient, (laxative) and alterative, useful in syphilis scrofula leprosy constipation and dyspepsia due to torpor of the liver or intestines It is allied in its properties to taraxacum With black pepper it is given in ague and jaundice, also in skin diseases to purify the blood The SHAFA-UL IMRAZ recommends the following local application for leucoderma—Take of *Alum*, *Potassium Nitras*, *Armenian Bole* (*Bolus*), Fumaria officinalis reduced iron and *Wasma*, equal parts Mix *with vinegar and apply*

1081 FUMARIA PARVIFLORA, Lamk.

Hind—Pitpapada. *Ben*—Bansulpha *Bom*—Pit para *Tam*—Tura

Uses are same as F officinalis

1082 FUNIS VIMINALIS

See Ventilago Madraspatana

1083 GALEGA PURPUREA, Linn.

See Tephrosia purpurea, Pers

(N O—Papilionaceae)

Sans—Puleehashtree, Neelabralakrati, Sarapunkha *Hind*—Sarphenka, Sarphankha. *Ben*—Bannilgach, Bon nil *Punj*—Bansa. *Bom*—*Jangli* kulthi, Sarphankha. *Guj*—Jhila, Ghila. *Mah & Duk*—Untoali, Unhali, Surpanakz *Tel*—Vempali; Pamparachettu.

Tam—Kolluk kay welai, Kolinji *Mal*—Kazhinnila, Kazlumilla *Can*—Kaggi *Eng.*—Purple Tephrosia

Habitat.—Found throughout India especially in Southern India It grows on hard stony ground too difficult to be rooted

Constituents—The plant yields gum, a trace of albumen and colouring matter ash containing a trace of manganese, brown resin and chlorophyll and a principle allied to quercetin or querritrin and glucoside rutin

Action—Febrifuge cholagogue, diuretic, deobstruent, tonic and laxative

Action & Uses in Ayurveda & Siudha—Ushna veeryam, katu rasam, katu vipakam, diseases of the teeth salivation (Therapeutic Notes)

Action & Uses in Unani Hot 30, Dry 30 resolves stone in kidney, diuretic, piles stomachic emmenagogue (Therapeutic Notes)

Uses.—The drug is useful in cough asthma and tightness of the chest *powder of the root* is smoked in *Hookah* or *Chilm*. *Root* ground into *paste* with turmeric and rice water or cow's milk is applied to scrofulous glands, a powder of the root is also used as a snuff A *decoction of the root* with pepper powder added is given in bilious febrile attacks, enlargement and obstruction of the liver, spleen and kidneys For hepatic dropsy, the root ground in butter milk is given Root is also recommended for boils pimples, abscesses especially carbuncles on the back, as tonic and laxative and as purifier of blood Its *leaves* in combination with the leaves of Cannabis Indica in the proportion of 2 to 1 respectively or its root ground in curds is a remedy for bleeding piles, and with black pepper it acts as diuretic in gonorrhoea. *Root in decoction* is given in dyspepsia and chronic diarrhoea, and as a wash for the mouth. *Root powdered* and mixed with honey is applied to ulcers *Root-bark* ground and made into a *pill* with black pepper is very beneficial in obstinate colic A powder of the root taken with water for about a month will cure enlarged scrotum. An *infusion of the seeds* is employed as an anthelmintic for children For itch scabies etc., the *oil of the seeds* is a specific remedy For tumours the *ashes of the plant* mixed with the powder of chebulic myrobalan, in equal parts, is administered in doses of 1 drachm. Seeds of the white

Parts Used.—Rind and pulp of the fruit, leaves and bark.

Constituents.—Rind contains a bitter substance *"mangostin"*, resin and tannin. Mangostin is obtained by boiling the rind in water, and tannin is removed by exhausting by boiling in alcohol and evaporating; resulting product is mangostin and resin; resin is predipitated by re-dissolving it in alcohol and water, and evaporating the water. It occurs in small yellow scales, tasteless neutral, insoluble in water, but readily soluble in alcohol and ether.

Action.—Rind is a powerful astringent; so also are the bark and young leaves.

Preparations.—(all of the rind):—Extract, dose—3 to 10 grains; Tincture (1 in 10), dose —½ to 1 drachm; Syrup (1 in 5), dose :—½ to 1 drachm; Decoction (1 in 10), dose :—4 ounces; Powder, dose :—10 to 60 grains and Juice.

Uses.— *Rind* and *pulp* or entire *dried fruit* are employed as specific remedies in chronic diarrhoea and dysentery, usually in the form of a *syrup*, the drug being boiled in water, strained and the decoction evaporated to a suitable consistence and then sugar added. A *decoction of the rind* with a little cumin and coriander added is also useful in doses of 4 ounces twice a day with or without the addition of 5 to 10 minims of tincture of opium to each dose; sugar or sfrup may also be added to it just to make it palatable. Mangosteen *fruit* may also be employed *in powder* given in doses of 10 to 15 grains in port wine, or made into a *paste* with a little sugar; in either form it may be improved by the addition of aromatics, such as cardamom and cinnamon powder 5 to 10 grains to each dose. Fruit is regarded as a remedy in leucorrhoea, gonorrhoea and gleet and is stated to lessen both the irritation and the discharge of matter. A *compound powder* consisting of Mangostin, cubebs, alum and gum acacia, each 10 grains, is a good sedative for gonorrhoea. For *injection* a strong astringent decoction is employed. Juice is used locally as a gargle in tonsillitis and as a *lotion* in prolapsus ani and vaginae. Following compound powders are pery useful remedies :— (1) Take of Mangosteen (the rind of the fruit) 5, Poppy seeds 4, Sugar 6, Pomegranate bark 5 and Rose petals 4 parts; mix and make a powder; dose:—10 to 20 grains; useful in dysentery and chronic diarrhoea in children. (2) Take of Mangosteen 6, Coriander seeds 2, Chebulic myrobalans 2 & Indian sweet fennel seeds 2 parts; mix

and make a powder, dose —10 grains with sugar; useful in chronic dysentery

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1091 GARCINIA MORELLA, Desr

Sans & *Ben* —Tamal *Hind* —Gotaghanba *Eng* —Indian gamboge *Bom* —Kokum *Tam* —Korakpuli Trevalchioippal *Tel*.— Rival-chinipal *Can* —Lamal Gum resin is purgative

Found in South India

Indian gamboge is a yellow gum or gum resin that exudes from several species of large trees in Siam, Ceylon and Malabar It is exported from Cambodia or Cambogia (whence its name) in cylindrical rolls or masses The best kind of Indian gamboge dye is of a reddish yellow appearance of a dense compact nature A fas yellow dye is produced when used with pomegranate rind and an alum mordant

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1092 GARCINIA PEDUNCULATA, Roxb

Ben —Tikul

1093 GARCINIA PICTORIA, Roxb

G hanburii. B. P

(N O —Guttiferae)

Sans —Tapinja Tapichhu Tamala (juice) *Hind* & *Ben* — Tamal *Pers* —Ussareh i revanda Gotagamba *Eng* —Mysore Gamboge Tree *Tam* —Mukki, Irevel *Tel*.—Revalchini pal (oil) *Mal* —Kurukapuli Punarpuli *Can* —Jottgehuli mara *Kon*.— Vatamba *Mah* —Revachini

Habitat.—Malabar coast Mysore Bengal Assam, Siam, etc

Parts Used —Gum resin

Constituents.—Resin 80 p c gum 13 p c., moisture 5.4 p c., and dross 1 2 p c

Action.—Gum resin known as *gamboge* is a powerful hydragogue cathartic and anthelmintic. It acts on the intestinal glands not on the liver In large doses it acts as an acrid poison causes gastro-enteritis and even death

Uses.—This well known *gum resin* forms an ingredient of most remedies employed for the expulsion of the tape worm. It is *not given alone as a purgative* on account of its tendency to produce

vomiting and griping; in combination with other cathartics like aloes and aromatics like dinnamon it operates more favourably; combined with bitartrate of potash it is useful in dropsical affections due to hepatic obstructions; in solution with alkalies it acts as a diuretic, and useful in gouty arthritis; it is also used for cerebral affections such as apoplexy. Dose of the powdered gum as a full purgative is from 2 to 5 grains, as an alterative from half a grain up to six grains; of the compound gamboge *pill* and that of gamboge and scammony the dose is from 5 to 10 grains. For the expulsion of worms, the following is a good formula:—Take of gamboge 10 grains, sulphate of iron 6 grains, lump sugar 20 grains and oil of peppermint 3 drops and water 3 ounces; dose is one ounce to be taken every 4 hours until the desired effect is produced. It should never be given in irritable condition of the stomach and bowels or in cases having a tendency to abortion or uterine haemorrhage. *Externally* a *paste* of it is used as an application to sprains, bruises and swollen hands and feet Following *lep* or *ointment* is a useful application —Take of Extract of Gamboge, Cardamoms, opium, Balsamodendron Mukul, myrrh, surinjana (Daffadila or Meadow saffron), Curcuma aromatica, each equal parts; mix, add rum ten times in weight to each, make a *Lep* and apply. As an efficient purgative in diseases of the liver and cerebral congestion, following powder is useful —Take of Gamboge (in bamboo pipes) dr. 1, Chebulic myrobalans dr. 1½, dry ginger ½ dr., and Convolvulus scammonia dr. ½; mix and reduce the whole to a fine powder: dose —15 to 30 grains

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1094. GARCINIA PURPUREA, Roxb or G. Indica.
(N. O.—Guttiferae)

Eng.—Red mango; Mate Mangosteen; (Oil) Kokum butter. *Hind.*—Kokam; Kokam-ka-tel. *Guj. & Mah.*—Birandel; Ratamba; Kokambel. *Bom.*—Kokam or Amsul (fruit); Kokam-cha-tel; Ratambu sala; Bhirand; Katambi. *Tam.*—Murgal-mara. *Mal.*—Punampuli. *Can.*—Murginahuli-mara. *Kon.*—Beerunda. *Goa.*—Brindao (fruit-pulp); Amsel (bark); Ratambasal.

Habitat.—This tree grows plentifully in the Konkan, Malabar and Canara districts of Western India.

Parts Used.—Concrete oil, seeds, fruit, bark and young leaves.

Constituents.—Concrete oil boiled with caustic soda, yields hard soap which is decomposed by sulphuric acid leaving fatty acids (tristearin) as stearic, myristic and oleic The seeds contain fat 30 p c Seeds yield a pale yellow concrete oil known as *Kokum oil* or Kokum butter Fruit contains cellulose, an extractive and an insoluble residue

Action—Fruit is cholagogue cooling demulcent emollient and antiscorbutic *Bark is astringent so also are young leaves*, oil is emollient and soothing

Preparations—Concrete oil from seeds syrup of the juice (1 in 5), dose —½ to 1 drachm Decoction of bark (1 in 10), dose —4 to 6 drachms *Amsel* (acid pulp of the fruit freed from the seeds, dried in the sun and slightly salted)

Uses.— *Kokum* oil or *Kokum* butter is a specific remedy in dysentery and mucous diarrhoea, administered in doses of one tola in a quarter seer of milk three times a day until complete recovery it is also useful in pnthisis pulmonalis and some scorbutic (skin) diseases It has been recommended as a substitute for cod liver oil and is eaten by poor people as a substitute for ghee Externally this oil has a healing property and might be usefully employed as an application to ulcerations, fissures of the lips hands chapped skin, etc, in such wounds and sores as are accompanied with inflammation. It is also considered an excellent substitute for animal fat as a basis (Chopra s I D of I p 580) for preparing ointments such as nitrate of mercury ointment, suppositories etc In Europe the oil is used in the preparation of pomatum *Young leaves* tied up in a plantain leaf and stewed in hot ashes and rubbed in cold milk are given as a remedy for dysentery *Juice of the fruit* made into a *syrup* is useful as a cooling drink in dysenteric fever *Dried rind* is used as a substitute and as a garnish for tamarind in the preparation of curries and condiments, to give an acid flavour From the fresh rind of the ripe fruit a syrup is prepared for use during the hot months

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1095 GARCINIA WIGHTII

(N O—Guttiferae)

1096 GARCINIA XANTHOCHYMUS, Hook.

Hind—Dampel *Ben*—Tamal *Assam*—Tezpur *Garo*—Manhala *Mah*—Jharambi *Tel*—Jwara, Memadi Tamalamu *Tam*—Chitaka maraku

Is a species found in Eastern Bengal, Eastern Himalayas from Sikkim to Khassia Mountains, eastern and western Peninsula, Sircars and Bombay Ghats southwards Fruit is very acid, sweetish when ripe and edible Its use is similar to G Indica In bilious conditions a *sherbet* made with about one ounce of the *Amsul*, with a little rock salt, pepper, ginger, cumin and sugar is administered

1097 GARDENIA CAMPANULATA, Roxb

(N O—Rubiaceae)

Burm—Hsathanpaya This is cathartic and anthelmintic

1098 GARDENIA FLORIBUNDA, Roxb

(N O—Rubiaceae)

Sans & *Mah*—Ananta *Hind* & *Guj*—Pindithagara, Paidi thagara, *Tel*—Thagara padika

Is a beautiful plant of Konkan, (India) Flowers have a fragrant smell In the plant there are two varieties—red and white For miscarriage and puerperal convulsions, *root* of the plant rubbed into *paste* with cold water, is applied all over the head, forehead, and the breasts *Paste* is also given internally in water Diet is light rice-coojee water or the water of the *conjee* made by boiling fried paddy (*Laja*) Rice and *ghee* may be given after the patient is entirely relieved of the symptoms For headache and other painful symptoms of the lying in patient, *ananta* root and root of Cleroden dron serratum, both rubbed into a paste with hot water, is applied to painful parts For snake-bite *ananta* root and soap nut both ground into water are given internally

1099 GARDENIA FLORIDA, Linn

(N O—Rubiaceae)

Sans—Gandharaj, *Tam*—Karinga.

Action—Antiperiodic, cathartic, anthelmintic, Externally antiseptic. Root is used in dyspepsia and nervous disorders It contains a bitter substance "*gardenin*"

1100 GARDENIA GUMMIFERA, Linn.
G campanulata, G florida
(*N O*—Rubiaceae)

Sans—Hingunadika, Nadi hingu Gandharaj Pindava *Hind*, *Ben*, *Guj*, *Mah*, *Tam* & *Can*—Dikamali *Eng*—Dikamali or Cambi resin *Tel*—Karinga, Tella manga. *Tam*—Kumbai *C P*—Kondamanga.

Habitat—These trees are common in parts of India, particularly in the Central and Southern Provinces, Chittagong and Burma

Parts Used—Resinous exudation from the fruits

Constituents—Dikamali contains two resins—Gardenin, a crystalline resin of golden yellow colour, another resin Dikenali, soft and of greenish colour

Action—Antiperiodic, cathartic, anthelmintic alterative and antispasmodic Externally antiseptic and stimulant

Uses—A decoction of the resinous exudation of G gummifera is used in fevers alone or combined with Clerodendron serratum, root of G florida is used in flatulent dyspepsia and nervous disorders due to dentition Resin or a *paste* of it is applied to toothache, to foul sores callous ulcers and to keep off flies from sores *Internally* it is given to expel round worms Fruit of G campanulta is a cathartic and a successful anthelmintic *Resin* is given in corpulence and to reduce spleen

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1101 GARDENIA LUCIDA, Roxb

Hind & *Bom*—Dikmali

Uses are same as G gummifera. (Chopra's "I D of I" P 492)

1102 GARDENIA TURGIDA, Roxb.

Hind—Thanella. *Bom*—Khurpendra. *Tam*—Manjunda.)

Used for indigestion in children (Chopra's "I D of I". P 492)

1103 GARDENIA ULIGINOSA
See Randia uliginosa

See Randia uliginosa.

1104. GALIDIUM CARTILAGINEUM, Gaill.

(N. O.—Algae)

Hind.—Chinaghas.

Action.—Demulcent, mucilage is a medium for growing germs. (Chopra's "I. D. of I." p. 492).

1105. GARUGA PINNATA, Roxb.

(N. O.—Burseraceae)

Mah.—Kusar. *Bom.*—Kurak. *Kon.*—Kusimba; Kakad. *Hind.*—Ghogar. *Punj.*—Kharpat. *Ben.*—Joom. *Tel.*—Garuga. *Tam.*—Karivembu.

Habitat.—Found in all parts of India

Action.—Stomachic and astringent; *fruit* is considered expectorant.

Uses.—*Juice of the leaves* mixed with that of Adhatoda vasica and Vitex trifolia and with honey is given in asthma. *Juice of the stem* is dropped into the eye in opacity of the cornea. *Fruit* is pickled and eaten as cooling and stomachic.

1106. GAULTHERIA FRAGRANTISSIMA, Wall.

(N. O.—Ericaceae)

Eng.—Indian Wintergreen. *Ben., Hind.* & *Java*—Gandapuro.

Habitat.—This plant is found freely in the Nilgiris, Travancore and Toungoo Hills in Burma, and Ceylon; also from Nepal to Bhutan, and Assam.

Parts Used.—Volatile oil distilled from leaves.

Constituents.—Volatile oil, arbutin, ericolin, ursone, resin, tannin 6 p. c., and ash 5 p. c. Volatile oil—oleum gaultheria—contains 'iron; it is readily soluable in alcohol Oil furnishes carbolic acid identical with that obtained from coal tar. It contains methyl salicylate 99 0 per cent (source of natural salicylic acid). gaultherilene—a hydrocarbon 10 p. c., Paraffin, an aldehyde or Ketone, Ester, a secondary alcohol. "According to Puran Singh, only the herb found in Assam contains sufficient oil. The properties of the Indian Wintergreen oil have also been found to be very similar to those obtained from other countries. The constants of the oil

from the herb found in Assam, are as follows —Specific Gravity 1 185 , optically inactive , soluble in 6 parts of 70 per cent alcohol , methyl-salicylate content 99 1 per cent Ziegelmann s experiments in Germany, by macerating the material some time before distillation have given a better yield of oil per cent from leaves "[1]

Action.— *Oil* is aromatic, stimulant, carminative and antiseptic it is also optically active Oil of Gaultheria, according to the *British Pharmaceutical Codex, may give rise to an eruption at the* site of application much more frequently than the synthetic product

Uses — *Oil* is given with success in acute rheumatism, sciatica and neuralgia in doses of 10 minims gradually increased, in capsules also applied externally by itself or in liniments or ointments for same ailments 'Seldom will a prescription for aches and pains be met with where physicians do not use this drug In almost all the proprietary balms liniments or ointments, oil of Wintergreen or its chief constituent, methyl salicylate, occurs to a greater or lesser extent '[2] It may be used as a substitute for the true oil of Wintergreen in small quantity for preserving vegetable preparations and as a pleasant flavouring agent especially *for dentifrices etc. Spiritus* Gaultheria—a preparation made from the oil (1 in 20) is used for flavouring, dose —½ to 1 drachm

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1107 GELIDIUM CARTILAGINEUM, (Linn.) Gaill.

(N O —Rhodophyceae, Family —Gelidiaceae)

Eng —Agar agar , Japanese Isinglass , Red algae *Fr* —Mousse-de Cdine *Fr & Ger* —Agar agar *Japan* —Thao *Chma* —Yang tsai *Hind*—Chinai ghas

A species belonging to Algae (sea weed Family) is found in the Indian Ocean Official (B P) agar is a dried, gelatinous substance *prepared from G corneum* (*Huds*) *Lamouroux, G. cartilagineum* (Linn), and other allied red algae Japan, the main source of supply, produces about 1,500 000 kilograms annually, of which some 75 per cent is exported In other parts of the world, agar resembling the Japanese product are prepared from different red algae, e g., Ceylon agar from *Gracilaria Lichenoides* Greville, and Macassar agar from *Eucheuma Spinosum* Agardh. An agar closely resembling the Japanese product is made in Southern California, and produc

tion is now proceeding in Australia (principally from *Gracilaria coniferoides*) and in the United Kingdom The gelatine obtained from the species found in the Indian Ocean contains gelose—a gelatinous principle containing no nitrogen, sugary matter (mannite), starch and albumen It is nutrient and demulcent like gracilaria or edible moss and used like it The nutritious properties are due to gelose With water it forms a jelly, a very good article of diet It is a very good medium for cultivating germs for bacteriological investigations.

1108 GENDARUSSA VULGARIS, Nees

See—Justicia gendarussa

(N O—Acanthaceae)

Sans—Nila nirgundi, Krishna nirgunda *Hind*—Kala bashimb, Nili-nargandi *Ben*—Jagatmadan *Bom* & *Duk*—Kala adulso, Shanballi *Tel*—Nallanochili *Tam* & *Mal*—Karunochchi *Can*—Karinekkigida *Kon*—Kalo-negundu

Habitat.—Found chiefly in Kanara and Travancore

Parts Used—Bark, leaves root and tender stalks

Action.—Bark is a good emetic leaves are antiperiodic, alterative and insecticide

Constituents.—There is an alkaloid

Uses.—*Leaves* are scattered among clothes to preserve them from insects. *Infusion of leaves* is given in fevers, mixed with oil it is an application to glandular swellings, also a *bath* in which the leaves are saturated is very efficacious in fever cases and also in rheumatism *Juice* of the leaves is administered in coughs of children, it is also very efficacious in the colic of children Juice mixed with oil is a useful embrocation in glandular swellings of the neck and throat, mixed with mustard seed it makes an effective emetic *Leaves* and *tender stalks* put in a bag together with some salt warmed and applied externally, are useful in diseases of joints in chronic rheumatism and similar complaints *Root* boiled in milk is used in chronic indigestion, dysentery, rheumatism and fevers

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1109 GENIOSPORUM PROSTRATUM, Benth.

(N O—Labiatae)

Tam—Nazel Nagai, is a common weed found in South India, which is a febrifuge

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1110 GENTIANA DAHURICA, Fisch.

(N O—Gentianaceae)

Ind Bazar—Gul i ghafis

Properties are similar to G kurroo

1111 GENTIANA DECUMBENS, Linn.

A tincture of this plant is a stomachic

1112 GENTIANA KURROO, Royle.

G chirayita, Roxb

(N O—Gentianaceae)

Sans—Kiratatikta Anaryatikta, Katuki *Eng*—Himalayan or Indian Gentian Chiretta *Hind & Ben*—Karu, Kutki, Chireta *Punj*—Nilkant Kamalphul, Milakil *Kash*—Kiratta *Bom*—Phashanveda *Guj*—Kadu chirayata, Pakhan bhed *Mah*—Kira yet *Tel*—Nelavemu *Tam*—Nilavimbu *Mal*—Kiriyat *Can*—Kiriyatu *Kon*—Jirate-kaddi *Burm*—Sekhage *Malay*—Chirita *Sinh*—Bincohamba

Habitat.—This species abounds round Simla, extending to Kashmir and N W Himalayas at altitudes of 5 to 10 thousand feet Numerous other varieties of this drug e g, G decumbens, G tenella, *etc are found in almost every part of India.*

Parts Used—Root stalk (rhizome), roots and the entire dried plant

Constituents—It contains the same principles as the European root—gentian bitter, gentianic acid, pectin and an uncrystallizable sugar Other varieties contain *chiratin* and *opelic acid* to which is due the bitterness ' A sample of the dried roots was analysed at the Forest Research Institute, Dehra Dun, with the following results—Aqueous extract 20%; Ash 0 70%, Gentiopicrin nil Gentiopicrin which is considered to be the active principle of the fresh European G lutea, is absent in the dried Indian G kurroo, but if fresh Indian G kurroo roots are analysed, gentiopicrin etc, may be present ' [1]

Action—Bitter tonic, antiperiodic, antibilious astringent, stomachic and anthelmintic; in large doses aperient In these properties different varieties differ in their strength

Uses—Gentian has been known as a medicine from antiquity and many of the complex preparations handed down from the anci

ent Greek and Arabian physicians include it among their ingredients It is one of the most important bitters in the Pharmacopoeia and is very extensively used It possesses in a high degree the tonic properties which characterise all the simple bitters On account of its aromatic properties it is agreeable to take and because of the absence of tannin it has no astringent action It is, therefore, preferred to many other bitters and enters into most of the stomachic and tonic prescriptions of modern practice [2] Stems and roots are efficient substitutes for the imported gentian, *tincture* and *infusion* closely correspond to those of the European gentian, G lutea It is a favourite remedy in intermittent fevers, acidity and in bilious dyspepsia accompanied by fever, combined with acids it is specially serviceable in the dyspepsia of gouty persons and in functional inactivity of the liver. A *decoction* of the root with its equal quantity of *sunth* and *dikamali*, or an infusion of chiretta in cold water with the addition of 4 grains each of camphor and *shilajit* and ½ tola of honey are popular remedies in all cases of debility after fevers, in indigestion, loss of appetite etc It is also used in catarrhs, syphilis, leprosy and other skin diseases In the form of infusion mixed with a little powder of long pepper it is useful in fevers accompanied by coughs and difficulty of breathing, a *powder* of the root mixed with honey is given in hiccup and to stop vomiting Chiretta, as antibilious, is used as a diet, in fistula in ano, when there is no fever. Following confection is useful in malaria and reduces enlargement of spleen and liver after its prolonged use, in doses of ¼ to ½ tola twice a day —It is made of Gentian root and black pepper each 1 drachm, Aplotaxis auriculata, Cinnamomum tamala, Valeriana radix and Rhei radix each 7 *mishals*, and honey 11 *palams*. Powder all the ingredients and mix them with honey which is previously boiled and cooled. Following Ayurvedic preparations are also in popular use among Hindu physicians —(1) A decoction made of equal parts of Chiretta, *gulancha*, raisins, emblic myrobalan and zedoary root, is useful in fevers caused by *Vata pitta*. (2) A compound powder called *Sudarsana churna* prepared by taking equal parts of 54 different substances and of chiretta equal to half the weight of all the other ingredients and mixing them together It is largely prescribed in chronic febrile diseases Bhishagwara K. Achaiah of Bellary has cured "Impetigo contagiosa" (known in

(1) & (2) Chopra's "I D of I pp 177 & 178

Ayurveda as "Ajagallika") a pustular contagious disease of children, by cleaning the parts well with warm water and applying a mixture of 10 grains *Sudarsana Churna* and 10 grains *Tankana Khara*. By the time two or three applications were made the pustules healed leaving a red surface with new cuticle in it. This mixture is a good substitute to mercury used by Allopaths in this ailment." (3) *Kiratadi taila* or oil of chiretta :—this is made by mixing together 4 seers each of concentrated decoction of chiretta, mustard oil, *Kanjaka* and whey, and two tolas each of 24 other substances in the form of a paste and boiling them together to the consistence of a thick oil. This oil is used for rubbing on the body in chronic fever with emaciation and anaemia. (4) *Bhoonimbadhi Churnam*, which is made of Chiretta, Picrorrhiza Kurooa, *trikatu*, Cyperus rotundus, seeds and bark of Holarrhena antidysenterica, and Plumbago zeylanica; used in dyspepsia, chronic diarrhoea, fevers, dysentery and worms. (5) *Panchathikthaka* powder and decoction which consist of equal parts of chiretta, Cocculus cordifolia, Oldenlandia herbacea, Clerodendron serratum, tubers of Cyperus rotundus and dry ginger; dose :—one drachm of the powder in decoction twice a day. (6) *Panchathikthaka panakam* which is prepared by boiling equal parts of Chiretta, Picrorrhiza kurooa, *parpataka*, tubers of Cyperus rotundus and Cocculus cordifolia, in 16 parts of water, till reduced to its quarter volume and then adding sugar equal to the weight of the powders, to convert it into syrup; dose :—½ ounce twice or thrice a day given in conjunction with *Ananda Bhairavi* or *Jwaramurari* pills, in malarial fever with enlarged spleen.

Following are simple Home Remedies containing Chiretta and useful in various common ailments :—(1) Take of one ounce of Chiretta and one drachm each of cloves and cinnamon and infuse them in one pint of boiling water for six hours and strain; dose—two ounces before food twice daily as a tonic. (2) Take of one tola each of smashed chiretta and coriander seeds, boil them together in 16 ounces of water till reduced to 4 ounces; dose :—2 ounces twice daily with a few drops of honey, used in cases of torpid liver. (3) Take two ounces of the bruised stems of chiretta, add them to a bottle of sherry and let it stand for a week; dose :—2 ounces once or twice daily one hour before meals, taken for debility after fevers, indigestion, loss of appetite etc. (4) A compound tincture of chiretta, is made thus :—Take of 1½ ounces of bruised chiretta,

¾ ounce of bruised orange peel and ¼ ounce of cardamom seeds freed from the pericarps and bruised; macerate all these together in 1 pint of Proof Spirit for seven days in a closed vessel, with occasional agitation, then strain, press, filter and add sufficient Proof Spirit to make one pint; dose —one to two drachms in water. An excellent tonic and also a valuable adjunct to other tonics.

(1) & (p)—Chopra's 'I D of I" pp. 177 & 178

1113. GENTIANA OLIVIERI, Griseb.

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114. GENTIANA TENELLA, Fries.

Punj—Teeta

A decoction of the plant is used in fevers

About 35 species of Gentiana are uninvestigated

1115. GEOPHILA RENIFORMIS, Don.

(N O—Rubiaceae)

Sylhet—Kudi mankuni

The drug is similar to Ipecacuanha.

(Chopra's 'I. D of I" p 492).

1116. GERANIUM NEPALENSE, Sweet.

G. ocellatum & G. robertianum.

All known in Hindi & Punjabi as *"Bhanda"*, are the species of Geraniaceae found in temperate Himalayas They all possess astringent and diuretic properties. Whole plant is used in certain renal diseases.

1117. GERANIUM OCELLATUM, Camb.

Hind—Bhanda.

Astringent and diuretic.

1118. GERANIUM ROBERTIANUM, Linn.

Haemostatic.

Applied to tumours and ulcers, given in gravels, ague and jaundice. Contains a bitter substance "Geranin"

(Chopra's "I. D of I" p 492).

1119 GERANIUM WALLICHIANUM, Sweet.
(N O—Geraniaceae)

Afghan & *Pushtu*—Mamuran *Arab*—Ibrat ur raae *Hind* & *N W P*—Liljahri *Kash*—Mamuran; Kao-ashud. *Eng*—Shepherd s needle

Found in temperate Himalayas from Nepal to Murree and Kashmir

Parts Used—Rhizome Its constituents are tannin 12 to 27 p c, gallic acid, red colouring matter, starch pectin and sugar It is a powerful and efficient astringent Applied externally to eyes It is given in infusion or decoction with hydrastine in chronic diarrhoea and dysentery, passive haemorrhages, in relaxed condition of the mucous membranes as gonorrhoea, gleet, leucorrhoea diabetes, cholera etc Locally it is used as a gargle in sore-throat and ulceration of the mouth, as an injection to relaxed vagina, uvula, rectum etc

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1120 GERISH ELATUM, & G Urbanum

Are two allied species of Genus Rosaceae met with in temperate Himalayas and known as *gungla jungle* in Persian and *goglemol* in Kashmir, are noted for their medicinal virtues, which are residing in their roots Roots are astringent, tonic and antiseptic ', but undeservingly neglected in modern practice —(British Flora Medica)

1121 GERISH URBANUM

Kash—Goglemool

Astringent tonic and antiseptic.

1122 GEUM ELETUM, Wall.
(N O—Rosaceae)

Kash—*Goglimool*

Astringent used in dysentery and diarrhoea.

1123 *GEUM URBANUM*

Astringent used in dysentery and diarrhoea.

1124 GIRARDINIA HETEROPHYLLA, Dene.
(N O—Urticaceae)

Tam—Anachoriyan.

Leaves are specific in headache & swellings of joints Decoction is given in fever

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1125 GIRONNIERA RETICULATA, Thwaites.
(N O—Urticaceae)

Tam—Koditani *Ind Baz*—Narakiya wood

Used internally in itch and other cutaneous eruptions

Constituents—Crystalline substance like methyl indole or skatole.

(Chopra s I D of I pp 492)

1126 GISEKIA PHARNACEOIDES, Linn
(N O—Ficoideae)

Sans & Ben—Valuka. *Hmd & Duk*—Baluka sag *Ben*—Baluka. *Mah*—Valuchi bhaji *Tam*—Manalie-kirae *Tel*—Esaka Dantikurra. *Smh*—Attuhllpala.

Is found in Punjab Sind South Deccan and Ceylon Seeds contain tannin like principles provisionally named *Alpha* Gisekia and *Beta* Gisekia, both having probably anthelmintic properties A draught made by grinding the plant with its leaves, stalks etc in a mortar with sufficient water is administered in cases of taenia Dose is about two ounces This is given in the morning on an empty stomach. It may be repeated three times at intervals of four days The plant has aperient aromatic and anthelmintic properties

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1127 GLINUS LOTOIDES, Linn.
(N O—Ficoideae)

Punj—Poprang *Bom*—Kotbuk. Used in diarrhoea.

(Chopra s I D of I pp 492)

1128. GLOCHIDION ZEYLANICUM, A Juss
(N O—Euphorbiaceae)

Tam—Kumbal maram.

Fruits are cooling and restorative Leaves are used in itches.

tained by repeated washings and grindings is given in gonorrhoea up to 12 grains mixed with honey Dose of the tuberous root (starch) is 5 to 10 grains It is generally employed as an anthelmintic for cattle. In large doses it will be poisonous Root powdered and reduced to a paste is applied to the navel and suprapubic region with the object of promoting labour pains. For the same purpose the paste may be applied to the palms and soles also In cases of retained placenta, paste of root is applied to palms and soles while powdered nigella seeds and long pepper are given internally with wine *Internally* starch or root is useful when given in gonorrhoea, leprosy, piles, colic, and to expel intestinal worms Rubbed with *Chitraka* bark in cow's urine it is applied to painful piles.

1130 GLOSSOCARDIA BOSVALLIA, DC.
or G linearifolia
(N O—Compositae)

Sans—Charak, Renu, Pithari *Eng*—Rock anethum. *Arab*—Shahtaraz *Duk, Mah & Hind*—Phattar suva, Seri *Guj*—Davana-pada *Can*—Parpataka. *Tel*—Parapalanamu *Tam*—Parapalanam

Found in Central India and Deccan Root of the plant contains an essential oil, leaves, stems and flowers contain a bitter alkaloid. The whole plant is used medicinally in the form of a confection, as an emmenagogue, in cases of suppressed menses, in doses of 1 to 4 drachms It is useful also in fevers caused by *pitta* and vitiated *vayu*

1131 GLOSSOCARDIA LINEARIFOLIA, Cass.
See G bosvallia.

1132 GLOSSOGYNE PINNATIFIDA, DC.
(N O—Compositae)

Santh—Barengam *Beng*—Barangum Used in snake bite and scorpion sting

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1133 GLYCINE LABIALIS, Linn.
See Teramnus Labialis

Sans—Mashpami, Krishna vrinta, Kamboji, Hayapuchika Mansa masha, Simhamukhi, Swada masha, Mahasaha is a Papilionaceae species found in plains throughout India, Burma,

Ceylon etc. In the *Nighantus* it is described to be bitter, cooling, astringent and dry producing semen, strength, and blood, and during consumption and fever and disorders of *Vayu*, *pitta*, and of blood.

1134. GLYCINE MAX, Merr.

Useful as a forage and oil yielding plant

1135. GLYCINE SOJA, Sieb & Zucc, G. Hispida Maxim.

(N. O.—Papilionaceæ)

Eng.—Soybean. *Hind.*—Bhat; Bhatwan *Ben.*—Gan kulai *Punj.* & *Kumaon.*—Bhut. *Eastern Terai.*—Khajuwa

Habitat.—Met with on the tropical Himalayas from Kumaon to Sikkim, and Khassia and Naga Hills

Parts Used.—Plant, seeds and root

Constituents.—The average composition is given by Voorhees as follows; with the percentage of digestibility:—

	Composition.	Percentage of Digestibility.
Moisture	7·51 p. c.	
Ether Extract (fat, etc.)	1·0 ,,	55 p. c.
Proteids	4·0 ,,	78 ,,
Digestible carbohydrates	10·6 ,,	77 ,,
Fibre	6·7 ,,	45 ,,
Ash	2·6 ,,	
	100·0	

1136. GLYCOSMIS PENTAPHYLLA, Correa.

(N. O.—Rutaceæ)

Sans.—Vanamimbuka. *Hind.*—Ban nimbu *Ben.*—Ash shewra. *Bom.*—Kirmira. *Tam.*—Gorju Wood is used in cabinet etc.

(Chopra's "I. D. of I." p. 491).

1136 A. GLYCYRRHIZA GLABRA, Linn.
G. glandulifera.
(N. O.—Papilionaceae)

Sans.—Yashti-madhu, Madhuka. *Eng.*—Sweetwood, Liquorice. *Hind.*—Mithulakdi (root), Mulathee; Kubas-susa (extract in black sticks); Jethi-madh. *Ben.*—Yashto-madhu. *Guj.* & *Mah.*—Jashtimadh *Ben* & *Bom.*—Jashti madhu. *Tel.*—Yashti-madhukam; Athimathuram *Tam.*—Ati-maduram (root); Athimathurappal (extract). *Can.*—Jestamaddu *Arab.*—Aslussiesa (root); Asla-soos (root); Rubussusa Rubbae-soos (extract). *Pers.*—Ausareha mahaka; Bikhe mahaka. *Fr.*—Bois doux *Ger.*—Susshölz.

Habitat.— Arabia, Persian Gulf, Afghanistan, Turkestan, Asia-Minor, Siberia etc, but the root is cultivated in the Punjab, sub-Himalayan tracts from the Chenab eastwards, Sind and Peshawar Valley, Burma and Andaman Islands. Dried liquorice roots are found in all the bazaars of India

Parts Used.—Peeled root

Constituents.—Root contains Glycyrrhizin, a yellow amorphous powder, asparagin, sugar, starch, acid resin, gum, mucilage, phosphoric, sulphuric and malic acids, calcium and magnesium salts. Bark contains a small quantity of tannin

Action.— Tonic, cooling, demulcent, expectorant, diuretic, emmenagogue and gentle laxative

Action & Uses in Ayurveda & Siddha.—Madhura rasam, seetha-veeryam, vata-pitta haram, guru, chakshusyam, swaryam, kesyam, balavarna karam In ulcers, poisons, chardhi, glani. (Therapeutic Notes)

Action & Uses in Unani— Hot 2o, Dry 1o. In diseases of liver, bladder and lungs, causes nuzj in visćid, akhlathi, expectorant, nerve tonic, emmenagogue. Extract is Hot 2o, Dry 2o, corrects all purgatives, haemoptysis (Therapeutic Notes).

Uses.— Root is also used in scorpion sting. *Root* in *infusion, decoction, extract* or *lozenge* is useful as a demulcent in inflammatory affection or irritable conditions of the bronchial tubes, bowels and catarrh of the genito-urinary passages as cough, hoarseness, sore-throat, asthma, dysuria, ardor urinae, etc., also used as a tonic and as a slight laxative. It is much used as an adjunct in pharmaceutical preparations as compound decoction and tincture of aloes, compound

mixture and confection of senna etc. also used for flavouring infusions lozenges, oils and *ghritas* *Liquid extract* is especially useful in disguising the bitter or acrid taste of many nauseous drugs particularly senna (leaves) aloes, chloride of ammonium, senega, hyocyamus turpentine etc [1] and to sweeten tobacco Inspissated juice sold in the bazaars in the form of black pencils is an ingredient of various laxative powders cough syrups confections lozenges pastilles etc Root mixed with lime juice and linseed makes a homely valuable remedy for coughs and colds feverishness pain distress of breathing and to allay thirst Dr Geo S Keith has recently stated that for relieving pain discomfort and other symptoms caused by acrid matter in the stomach it is wonderful It seems to remove the irritating effects of acids in a better way than alkalies [2] Root is one of the ingredients of several cooling applications along with sandal wood madder Andropogon muricatus etc The compound powder which consist of liquorice root and fennel fruit each 1 part senna 2 parts, sublimed sulphur 6 parts and refined sugar all powdered and mixed together is useful as a gentle laxative given to delicate patients Following *compound powder* is useful in controlling the pyrexia of phthisis —Take of liquorice root Cydonia vulgaris seeds, and Andropogon muricatus each 7 *mashas* (*masha* 16 grains) camphor saffron cinnamon bark, seeds of Cassia fistula, seeds of Lettuce seeds sandal Rose petal and seed of water melon each 3 *mashas* and gum tragacanth 1½ *mashas* powder them and mix together dose—4 to 6 *mashas* (about 1 to 1½ drachms) A decoction made of the liquorice root coriander seeds Cyperus rotundus and *gulancha* in equal quantities is a useful remedy for bilious fevers A *confection* called *Majoonai Soul* is a very useful expectorant in bronchitis also useful in malaria and will reduce an enlarged spleen by long continued use It is made thus —Take of 8 tolas of liquorice root 48 tolas of preserved grapes 32 tolas of white sugar and 2 tolas each of chebulic and beleric myrobalans cloves, nutmeg round zedoary and cinnamon and half drachm each of anisi fruit, emblic myrobalan and Anethum sowa make a decoction of the liquorice root powder all the other ingredients and make confection with sugar and preserved grapes, dose is ¼ to 1 tola twice a day A mixture containing extracted juice of liquorice roots and extracted juice of Hermaphrodite amaranth taken with honey is

a sovereign cure for all sorts of leucorrhoea and other uterine complaints Lozenges made up of extract of liquorice root 3 parts and 1 part each of cubebs, gum arabic, and extract of conium, and 4½ parts of sugar, all powdered, mixed together and made into troches or pastilles are useful in bronchial affections Compound pills made up of extract liquorice 10 parts, acacia gum 8, black pepper 6, pellitory root 4, *gulacha* 6, saffron 12 and sugar 10 parts, are useful in cough and asthma and pills of 5 grains each, compound of equal parts of liquorice, camphor, asafoetida and gum acacia are useful for influenza. Chinese pharmacy ascribed the property of rejuvenating those who consume liquorice for long periods "[4]

General Analysis.—Moisture 5 25, Ether extract 16 85, Albuminoids 37 00 (containing Nitrogen 5 92), Soluble carbohydrates 31 00, woody fibre 5 05, and Ash 4 80 (containing Sand 0 25) per cent respectively—Bombay Govt Agri Dept Bulletin

Action.—Decoction of the root possesses astringent properties

Uses.—Glycine Soja as grown for seed, forms a large annual crop in Northern China Manchuria and Japan, while the plant is also cultivated to a very considerable extent in the hills of North East India and Government Farms of Bombay Presidency As a fodder-crop this has been utilised and recommended in many parts of the world As a fodder the crop is richer in proteids than most other leguminous crops, but it is more woody and fibrous than Vigna catiang (*chavli*), and hence less palatable to stock, while there is more waste in feeding—Bombay Govt Agri Dept Bulletin

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1137 GMELINA ARBOREA, Linn.

(N O—Verbenaceae)

Sans—Gambhari, Krishna Vrintaka, Shriparni, Kasmari. *Hind.*—Gambhara, Kambhar, Gumbhar, Kambari. *Ben*—Gamari, Gaenari, Gumar, Gumbar *Guj*—Shewan *Mah*—Shivanasal *Bom*—Shewun *Punj*—Kumhar; Gumhar *Tel*—Gumar tek, Pedda gomru. *Tam*—Gumuadu teku, Gumadi *Mal*—Kumbula. *Can*—Kashmiri mara, Shivanni gida. *Santal*—Kasmar *Burm*—Yamanai

Habitat.—The Lower Himalayas, the Nilgiris and the East and West Coasts of India

Parts Used—Root, bark, fruit and leaves (Root and fruit are *preferable*).

Constituents.—Root contains a yellow viscid oil, resin, an alkaloid, a trace of benzoic acid and ash free from manganese Fruit contains butyric and tartaric acids, an alkaloid, saccharine matter, resin and a trace of tannin.

Action.— Demulcent, stomachic, bitter, tonic, refrigerant and laxative Tender leaves are demulcent Fruit is sweetish bitter and cooling Extract of root is bitter and tonic

Chopra's I D of I pp 581

Uses —The drug is used in snake-bite and scorpion sting *Root* is an ingredient of the *dasamula* of the Vaidyas It is used in the form of *infusion* or *decoction* in fever, in indigestion, anasarca etc. With liquorice, sugar and honey added it is given as a galactagogue in cases of scanty secretion of milk in women *Juice of tender leaves* added to cow's milk and sweetened with sugar-candy is given with much benefit in gonorrhoea and catarrh of the bladder An *infusion* of the tender leaves is also useful Leaves ground into paste with water is applied to the forehead for *headache in fevers*. To prevent abortions in the early stage of pregnancy a *powder of the bark* of black gingelly seeds, *manjista* and *salasara* is given in milk. *Fruit* forms an ingredient of several cooling and refrigerant decoctions, e.g. (1) Take of the fruits of Gmelina arborea, Grewia asiatica liquorice root red sandal wood and root of Andropogon muricatus equal parts in all two tolas (water 32 tolas and boil till reduced to one-half. This decoction is used as a drink in bilious fever —(Chakradatta) (2) Take of the fruit of Gmelina arborea 10, Raisins 10 Indian Sarsaparilla 6, Delphinium sanikulaefolium 5, and Cocculus cordifolius 8 parts Mix and make a decoction When ready add jaggery 2 parts, dose —1 to 1½ ounces This is used in remittent fever

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1138 GMELINA ASIATICA, Linn.
or G. parviflora.
(N O—Verbenaceae)

Sans—Biddara. *Hind*—Badhara *Beng*—Lahan-shivan. *Tam*—Nilakkumizh, Nila-cumal. *Tel*—Challagumudu, Shungumudu. *Can*—Kumatha. *Kon*—Sivni *Sind*—Garta-demata.

Is a species met with in Travancore and Coromandal coast fairly common near Madras and Guindy

Constituents —There is a glucoside in the drug

Action—Root is demulcent and mucilaginous so also are the leaves and young shoots Drug is bitter and astringent

Uses—Cold water impregnated with the thick viscid mucilage of the leaves and young shoots is given in the treatment of gonorrhoea, dysuria and catarrh of the bladder It allays ardor urinae

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1139 GNAPHALIUM LUTEO ALBUM, Linn
(N O —Compositae)

Punj —Balraksha

Parts Used —Leaves

1140 GOMPHIA ANGUSTIFOLIA, Vahl
(N O —Ochnaceae)

Malay —Valermani Roots and leaves are bitter tonic, stomachic and sedative

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1141 GORDONIA OBTUSA, Wall
(N O —Ternstroemiaceae)

Leaves are stimulant similar to tea There is a crystalline alkaloid like caffeine

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1142 GOSSYPIUM ACUMINATUM
(N O —Malvaceae)

Is the kidney chain seed or Brazilian Cotton, common in the Bombay Presidency (Bom Govt Agri Dept Bulletin)

1143 GOSSYPIUM BARBADENSE , GOSSYPIUM CERNUUM, Tod

Growing in Sind Assam and U P

1144 GOSSYPIUM ARBOREUM, Linn.
(N O —Malvaceae)

Eng —Silk Cotton tree Indian tree cotton *Fr* —Cotonnier arborescent *Indian Languages* —Dev Kapas *Hind* —Nutma *Punj* —Papas

Is a tree indigenous to Bengal—See Bombax Malabaricum. Root is used in fever seeds are used in gleet, catarrh and consumption.

1145 GOSSYPIUM HERBACEUM, Linn.

See Gossypium Indicum.

(N O—Malvaceae)

Sans—Karpas *Hind & Bom*—Kapas *Ben*—Kapas Kapas tula. *Tam*—Parutti or Paruthi *Tel*—Paththi. *Fr*—Cotonnier Herbace *Ger*—Baum wollpflanze

Habitat and Varieties.—Var *Sakalia* Typical examples of G herbaceum are *Lalio* of Kathiawar *Broach Ghogari Lalio Kanii* of Gujarat and *Kumpta* or *Jouari hatti* of the Southern Mahratta Country and of Var *Sakalia Wagad* and *Sakalio* of Gujarat

Constituents—Quercetin betaine choline salicylic acid etc. Oil determinations made on the whole seeds of *G herbaceum* varieties found in the following places, were as follows —

(a) Surat	Moisture 5 10 to 9 90	Oil 16 70 to 18 80
(b) Surti Broach		Oil 21 65
(c) Goghari E 5		Oil 16 25
(d) Dharwar		Oil 18 15

Action—Seeds are demulcent laxative, expectorant and aphrodisiac. Root and bark are emmenagogue and galactagogue

Uses.— Leaves are used in scorpion sting and snake-bite

1146 GOSSYPIUM HIRSUTUM Linn

Eng—Upland Georgian Dharwar American

Is a species growing in Southern Mahratta Country Oil determinations made on the whole seeds of *G hirsutum of Galag variety* are as follows —Moisture nil, Oil 19 92 per cent

(Bombay Govt Agr Dept Bulletin)

1147 GOSSYPIUM INDICUM Lam

G herbaceum.

(N O—Malvaceae)

Sans—Anagnika Karpas Tundakesi *Eng*—Indian Cotton Plant *Hind*—Kapas *Ben*—Karpas Tula *Guj*—Vona Rui,

Duk, *Mah* & *Kon*—Kapus *Tel*—Patti *Tam*—Paruthi *Mal*—Kanuparutti *Can*—Hatti *Mah*—Rankapus (cultivated in fields) *Burm*—Wah *Fr*—Cottonier de l'Inde *Ger*—Indische Baum Wollenstaude

Habitat.—This is extensively cultivated in India in various species in fields, hillocks etc.

Parts Used.—Bark, seeds, leaves flowers and root bark

Constituents.—Bark contains starch and a *chromogen* gradually changing to bright brownish red It contains glucose a yellow resin a fixed oil, a little tannin and 6 p c, of ash Seeds contain an oil 10 to 29 p c., albuminoids, and other nitrogenous substances from 18 to 25 p c., and lignin from 15 to 25 p c The chief constituent of root bark is a yellow or colorless acid resin dihydroxy benzoic acid, & phenols Flowers contain a colouring matter, a glucoside named 'gossypetin which when fused with caustic potash, decomposes into two crystalline products —phloroglucinol and protocatechuic acid When the phenolic constituents of cotton seed oil are purified by repeated fraction from acetic acid solution, a crystalline product named *gossypol* is obtained which crystallizes in glistening golden scales soluble in alcohol benzene, chloroform, ether, acetone or acetic acid, sulphuric acid and alkalies, but not in water

Action.—Seeds are demulcent laxative expectorant and aphrodisiac (nervine tonic) Root and bark are emmenagogue and galactagogue

Action & Uses in Ayurveda & Siddha.—Madhura rasam ushna veeryam, vatha haram, lagu, increases blood and urine in diseases of ear *Seeds*—Galactagogue, aphrodisiac, snigdham, kaphakaram dhatuvridhi (Therapeutic Notes)

Action & Uses in Unani.—*Seeds*—Hot, moist, moderate, or 2°. *Leaves* & *flowers*—Hot 2°, Dry 2o moderation, aphrodisiac expectorant, for cold diseases leaves in infantile diarrhoea, externally for gout. (Therapeutic Notes)

Uses.—*Seeds* are given as a nervine tonic in headache and brain affections, deprived of their outer coat, they are powdered and given in milk in doses of two drachms They are used in the preparation of a fine white *powder lactagol*, which is given in ½ to 1 drachm doses to increase the secretion of milk. Seeds in the form of *emulsion* or tea (concentrated decoction) are given in dysentery, in

America it is successfully given as a popular remedy in cases of intermittent fever, a teacupful of it is given an hour or two before the expected return of chill *Seeds* are also said to be useful in epilepsy and as an antidote to snake poison In India cotton seeds and in the United States of America cotton bark (a fluid extract of the bark) is used to produce abortion Pounded and mixed with ginger and water they are applied as a *paste* to orchitis, as *poultice* they make a good application to burns and *scalds*, *oil* expressed from the seeds and known as the *cotton seed oil* is a good application to the head to cool the brain and to cure headaches. In Europe and America, it is prominently used as a salad or table oil, as a substitute for land, and in the manufacture of oleo-margarine It makes a good *liniment* in rheumatic affections, it is useful in clearing the skin of spots and freckles *Fresh juice of the leaves* is useful in dysentery, two to three tolas of it is given in cow's milk in piles strangury and gravel A *tea* or *infusion* of young leaves is recommended in looseness of bowels and diarrhoea, it is used for preparing a *vapour bath* for the anus in cases of tenesmus, young *leaves and roots boiled in water* are used as a hip bath in uterine colic *Leaves externally* in the form of poultice hasten the maturation of boils, and with oil they are applied as a *plaster* to gouty joints Ground with mustard and made into a *Lep*, it is applied to scorpion stings *Root in infusion* or *decoction* in doses of 2 to 4 ounces thrice daily is useful in dysmenorrhoea, and suppression of the menses produced by cold, similarly the *root bark* also is used in uterine disorders either as decoction or fluid extract Root of gossypium and root of sugarcane both ground together in *conjee* are given to increase secretion of milk. Root powder mixed with rice flour and made into cakes and eaten daily relieves scrofulous taint. In sores and swellings of the breast the root and Lagenaria vulgaris both ground together into paste are applied as *Lep* to the inflamed parts In Gynæcological practice, gossypium is far better and safer than ergot since rapidity of action is not so necessary, and since it does not produce any unpleasant secondary or after effects, following a prolonged curse of ergot subcutaneously or per os In severe cases of dysmenorrhoea, chlorosis and suppression of the menses due to cold *a strong decoction of bark* may be used in doses of two ounces every twenty to thirty minutes or the fluid extract or tincture in doses of ½ to 1 drachm. The value of *oil cake mixed with bulk*

as a food for fattening cattle has been realised in the U S A Following decoction is recommended in ILAJ UL-GURBA for amenorrhoea —Take of Cotton bark 2 *chataks* and water 1 *seer* and decoct till the whole is reduced to 4 *chataks* and then mix sugar A *syrup of the flowers* is useful in hypochondriasis on account of its stimulating and exhilarating effect A *poultice* made of them is applied to burns and scalds A *decoction* of the flowers and seeds is an antidote to datura poisoning *Young fruit* is given to check dysentery

Cotton as protective is used locally to exclude air from ulcers burns etc, and to protect part from cold as in rheumatic joints, to protect mouth and nose in injurious trades and as a filter to plug the orifices of bottles etc. In bacteriology it is used to exclude micro-organisms since cotton wool acts like a filterer of atmospheric germs preventing their access to wounds ulcers etc. It may be medicated by being sprinkled over with carbolic salicylic or boric acid Cotton is used in the preparation of *gun cotton* or *pyroxylin* which is made by dipping cotton into a mixture of equal parts of nitric and sulphuric acids and washing freely with water and drying Pyroxylin or gun cotton is in turn the source of *collodion* Collodion is a colourless liquid of the consistence of syrup with an odour of ether and highly inflammable It dries quickly on exposure to the air leaving a thin transparent film which contracts on drying and is insoluble in water or alcohol It is prepared by adding 1 part of pyroxylin to a mixture of 36 parts of ether and 12 of alcohol and decanting the clear fluid after a few days and preserving in a stoppered bottle Burnt cotton is used in applying to sores and wounds to promote healing For epistaxis and bleeding from the gums the smoke of the old cotton wool is snuffed up and then 2 tolas of leaf juice mixed up with 1 tola of sugar-candy is taken internally

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1148. GOSSYPIUM NEGLECTUM, Tod. Var Vera Rosea.

Eng.—Sind Cotton *Mah.*—Varhadi. *G malvensis* is a sub-variety of G neglectum, as also *G Kathiawarensis*

Oil determinations on the whole seeds of G neglectum of following varieties are as follows —

(a) Jalgaon (East Khandesh) — Moisture 8·00, oil 19 15 p c.
(b) Dhulia (West -do-) — „ 8 50 „ 17 35 „

1149. GOSSYPIUM OBTUSIFOLIUM, Roxb.

Guj—Rozi ; Jari

Is a species growing in Northern Gujarat (Bombay Presidency).

(Bombay Govt. Agri Dept. Bulletin).

1150. GOSSYPIUM RELIGIOSUM, Watt.

Fr.—*Cotonnier des nonnes*. *Ger.*—Chinesische Baumwollenstaude.

Is a perennial herb cultivated near the temples or in the court yards, indigenous to Bengal and southern China. Unripe capsule with opium and nutmeg inserted in its interior and incinerated, is used in dysentery with good results

1151. GOUANIA LEPTOSTACHYA, DC.

(N. O—Rhamneae)

Sikkim—Batwasi.

Leaves are used as poultice for sores There is an alkaloid in the drug.

(Bombay Govt Agri. Dept. Bulletin).

1152. GRACILARIA LICHENOIDES, Grev.

See Gelidium Cartilagineum or Luminaria digitata.

Or Fucus vesiculosus, belonging to Algae or Sea Weed Family.

Eng—Edible moss; seaweeds; Ceylon moss. *Bom*—Chinai gas. *Duk*—Darya-ki-gas or pachi *Tel.*—Samudrapu pachi. *Smb*—Agar-agar.

Occurs in the back waters of Ceylon and Indian Ocean. Dried plant is used. It contains vegetable jelly (40 to 80 p c.), albumen, iodine, true starch, ligneous matter, mucilage and salts as sulphate and chloride of soda, sulphate and phosphate of lime, wax and iron.

Gracilaria lichenoides, (Seaweed)	Organic matter	Soluble ash	Insoluble ash	Silica	Nitrogen	Insoluble ash				
						Potash	Soda	Sulphuric acid (SO_3)	Halogens as Chlorine	Iodine
L. digitata Stems	64·03	27 98	7 37	0·66	1 31	10·49	5 35	2·94	9 92	0·54
L. digitata fronds	77 28	17 30	4 59	0·82	1 30	5 23	4 24	2 97	6·11	0·38
L. Stenophylla, Stems	64 78	29·00	5·73	0·53	1 02	12 35	4 91	1 77	11 28	0·32
L. Stenophylla, Fronds	77 76	18 48	4 13	0·26	1·08	4 49	4 91	2 42	6·56	0·29
F Vesiculosus	79·71	16·08	3 30	0·92	1 18	3 07	4 51	5·71	3·44	0 04
F. Nodosus	78·39	16·90	4 14	0·57	1 13	2 52	5·78	5·46	3·50	0·09
F. Serratus	77 56	17 30	4 53	0 62	1·50	4 18	4 85	3·95	4 70	0·05

Dried plant (moss) is reduced to a fine powder Powder boiled with 100 times the quantity of water makes a jelly like solution on cooling, and it may be used flavoured with lemon peel or *tejpatra* or cinnamon and sugar and a little wine, it is given as a restorative to invalids It contains a large quantity of pectin or vegetable jelly A decoction (1 in 40) made of it is also useful given as emollient, demulcent and alterative, in doses of 1 to 2 ounces in pectoral affections, in dysentery and diarrhoea, a jelly made of it is given in leucorrhoea and profuse menstrual flow and irritation of the urinary passages It contains iodine and hence it is useful in goitre, scrofula etc It is a good substitute for isinglass

1153 GRANDIFLORUS PLENISSIMUS

Eng —Russian Sun flower This yields a large amount of fodder in the Bombay Presidency

1154 GRANGEA MADERASPATANA, Poir or G adansonia, or Artemesia maderaspatan

Eng —Madras worm wood *Hind* —Mustaru *Ben* —Namuti *Mah* & *Tam* —Mashipatri *Tel* —Mastarusavi *Mal* —Nelampata *Can* —Douna *Kon* —Modagoni

Belonging to Compositae is found in moist situations throughout India, particularly Bengal Plant is stomachic and uterine stimulant *Infusion of the leaves* with ginger and sugar added is used in dyspepsia, hysteria and obstructed menses Externally it is useful as an anodyne and antiseptic fomentation to inflamed and painful parts As an antiseptic application the powdered leaves are applied to wounds and ulcers *Juice* of the fresh leaves is instilled into the ear for earache

1155 GRAPTOPHYLLUM HORTENSE, Nees

(N O —Acanthaceae)

There is an alkaloid in this drug

1156 GRATIOLA MONNIERA, Linn

See Herpestis monniera

1157. GRAVIA SALVIFOLIA.

See Alangium decapetalum.

1158 GREWIA ASIATICA, Linn.
or G elastica, var G vestita.
(N O—Tiliaceae)

Sans—Dharmana, Parusha. *Hind, Sind* & *Guj*—Phalsa. *Hind*—Dhamani, Pharsa. *Ben*—Shakri, Phalsa. *Mah*—Phalsi, Pharwani *Punj*—Phalna, Phania. *Sant*—Jangolai *Tel*—Phutiki. *Tam*—Tadachit.

Found throughout India. The small acid sour fruit, i. e., berries, is one of the *phala traya* or fruit triad of Sanskrit writers and are served on the table during hot weather, as the fruits ripen then and their cooling properties are highly appreciated They also are astringent and are alleviative of *Vata* and *Kafa* A *sherbut* (Syrup) is prepared from it and a *spirit* (extract) is also distilled after fermentation Pickles are also prepared from the berries As the berries are sour to taste, by themselves they are not liked by many, whereas their *sherbet* is agreeable. *Bark* contains a mucilaginous *juice* and its *infusion* is used as a demulcent in rheumatism. *Leaves* and the *buds* are used as an application to pustular eruptions The Santals use *Root bark* for rheumatism.

1159 GREWIA MICROCOS, Linn.
(N O—Tiliaceae)

Tam—Kotte

Used in indigestion, typhoid fever, dysentery and syphilitic ulceration of the mouth and in small pox, eczema and itches.

Chopra's I D of I pp 493

1160 GREWIA POLYGAMA, Mast.
in Hook. & Roxb., & G Lucifolia.
(N O—Tiliaceae)

Hind—Kukur bicha. *Santal*—Setakata, Seta andir *Bom* & *Kon*—Gowali.

Is met with in North Western India and along the Himalayas as far as Nepal, also in the Konkan. A *decoction* or strong *infusion* of leaves is a remedy for the cure of dysentery in 1-ounce doses.

Fruit is also employed by the Santals in diarrhoea and dysentery *Root* pounded is also prescribed for the same diseases. Root pounded into a *paste* with water is used as an application to hasten suppuration and as a dressing for wounds The paste dries and forms a hard coating, thus effectually excluding air from the raw surface

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1161 GREWIA SCABROPHYLLA, Roxb

Mah—Khatkhati, Pandhari, Dhaman *Car*—Darsuk

Is found in tropical Himalayas, from Garhwal to Sikkim, from Gujarat to Bihar, from Jamna eastward to Assam and Chittagong to Pegu, common in Dun and Saharanpur forests *Roots* are used as a substitute for Althae by the Goanese In the Konkan it is given as a remedy for leprosy The plant appears to be mucilaginous like most of the gums

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1162 GREWIA TILIAEFOLIA, Vahl

Sans—Dharmana, Dhanurvriksha *Hind & Ben*—Pharsa, Dhamani *Bom*—Damana *Kon*—Dheman, Karkani *Sant*—Olat *Tam*—Thada *Tel*—Charachi, Tharra *Can*—Thadsal, Dhadsal, Butali.

Is found in hot dry forests throughout Western India, Burma, Ceylon, etc *Bark* which is emetic, after removal of the tuber is rubbed down with water and the thick mucilage strained from it, is given in 5 tola doses with 2 tolas of the flour of Panicum miliaceum as a remedy for dysentery and opium poisoning Externally the *bark* is employed to remove the irritation from cow itch Green leaves are much liked by cattle

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1163 GREWIA VILLOSA, Willd

Punj—Jalidar kaskusi, Tamthar *Sant*—Tarse kotap *Pushtu*—Inzarra Pushtu wanne *Ajmer*—Dhoban. *Mar*—Kharmati *Guj*—Pade khado *Cutch*—Luskanu jhad

Grows in Western and Southern India extending from Punjab and Sind to Travancore *Juice of fresh bark* is used with sugar and water for gonorrhoea and urinary complaints attended with irritability of the bladder *Root* is employed in diarrhoea Sweet acid fruit is eaten by the poor

N B—Over 20 species of Grewia grow in South India

India Ceylon Burma and Singapore Its tuber which is milky white and globular is eaten as a vegetable and used medicinally as a restorative

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1169 GYMNEMA BALSAMICUM

See Pluchea indica

Sans —Kakoli *Ben* —Kukronda

Is an aromatic astringent febrifuge stimulant and vulnerary species growing in Malabar Ceylon etc It also contains an essential oil

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1170 GYMNEMA LACTIFERUM

Sans —Ksira kakoli *Ben* —Ceylon cow plant

Is a species growing in Ceylon furnishing a white pleasant *juice* which is a substitute for cow's milk Leaves are eaten as a vegetable

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1171 GYMNEMA LATIFOLIUM, Wall

Leaves contain HCN—glucoside

1172 GYMNEMA SPARTUM

See Leptadenia spartum

1173 GYMNEMA SYLVESTRE, R Br

or Asclepias geminata.

(N O —Asclepiadaceae)

Sans —Sarpadarushtrika Meshasringi (ram's horn) *Hind* & *Ben* —Chhota Dudhilata Mera singi Gurmar *Guj* & *Mah* —Kavali *Bom* —Kavali Wakandi *Duk* —Parpatrah *Tel* —Boda parta Putla podra *Tam* —Shiru kurunja

Habitat— A climbing plant common in Central and Southern India and on the Western Ghats and in the Goa territory

Parts Used —Root leaves and the acid principle

Constituents – Sun dried leaves contain two resins—the resin insoluble in alcohol forming the larger proportion the resin soluble in alcohol was said to leave a tingling sensation in the throat there was no tannin also a new bitter neutral principle albuminous

and colouring matters, calcium oxalate, pararabin, glucose, carbohydrates, some tartaric acid, "an organic acid said to be a glucoside and to possess anti saccharine property, and called X (formula $C_{32}H_{56}O_{12}$)—(Hooper), 'gymnemic acid' 6 p c, cellulose, ash, quercitol, the gymnemic acid when purified and analysed was found not to possess any anti saccharine properties and not to be a glucoside, according to Power & Tutin (1904) Chopra, Bose & Chatterjee (1928) prepared different fractions from the leaves isolated the gymnemic acid and prepared a sodium salt of the acid for both pharmacological and clinical trials They also isolated some enzymes and tested their sugar hydrolysing action Mhaskar & Caius (1930) made a detailed chemical investigation of the air dried leaves which yielded, *after ignition, 11.45 per cent of inorganic matter consisting* of alkali, phosphoric acid ferric oxide and manganese two hydrocarbons, hentria-contane ($C_{31}H_{64}$) and pentatriacontane, chlorophyll a and b, phytol, resins tartaric acid, inositol, anthraquinone bodies and gymnemic acid They could not find any water soluble or alcohol soluble substance in the leaves which had the property of dissolving glucose *in vitro, nor any chemical body resembling in* sulm'[2] Bark contains starch and a large amount of Calcium salts, and *other crystalline concretions Gymnemic acid resembles chrysophanic* acid, forms insoluble salts with alkaloids

estimation of the initial blood sugar was made and then the drug was given by subcutaneous injection. Two hours after the blood sugar was re-examined. Besides pure gymnemic acid the following fractions were tried and the effects on the blood sugar in animals were recorded —(a) an aqueous extact of the powdered leaves (b) an alcoholic extract using 95% alcohol, (c) an alcoholic extract using 70 per cent alcohol (d) sodium salt of gymnemic acid. In none of the animals to whom these fractions were given was there any reduction in the amount of sugar present in the blood. It may be argued that the non reduction of blood sugar in these rabbits after injection of the various preparations of G. sylvestre might be due to the excess of glycogen in the liver of the rabbits which by being converted into sugar tends to prevent the fall in blood sugar. This may of course be possible in a well fed animal but to obviate this fallacy the experimental animals were carefully starved from 24 to 36 hours before the test.

According to Mhaskar & Caius (1930) however, the leaves cause hypoglycaemia in experimental animals which sets in soon after the administration either by mouth or by injection. This hypoglycaemia has been explained on the assumption that the drug acts indirectly through stimulation in insulin secretion of the pancreas as it has no direct action on the carbo-hydrate metabolism. The leaves stimulate the heart and circulatory system, increase urine secretion and activate the uterus (Mhaskar & Caius 1928).[3]

Uses — Sushruta describes G. sylvestre as a destroyer of *Madhumeha* (glycosuria) and other urinary disorders. On account of its property of abolishing the taste of sugar it has been given the name of *gur mar* meaning sugar destroying and it is believed therefore that it might neutralize the excess of sugar present in the body in diabetes mellitus. In Bombay and Central India it has been used as a remedy against this condition with success.[4] *Root* has long been reputed as a remedy for snake bite its *powder* being dusted upon the wound or made into a *paste* with water and applied and a decoction given internally. *Leaves* when chewed deaden the sense of taste of sweets and of the bitterness of bitter substances such as quinine. This effect lasts for about one or two hours it does not affect pungent saline things astringents and acids.

Mhaskar & Caius of Bombay (1930) are of opinion that the dry leaves in daily doses of 30 to 60 grains (2 to 4 gms.) for a period

of three months or more may reduce glycosuria, non lamenable to dieto-therapy [5] A *decoction* (1 in 10) is given in doses of ½ to 1 ounce in fever and cough. It has properties similar to Ipecac. *Leaves* triturated and mixed with castor oil are applied to swollen glands and to enlargement of internal viscera as the liver and spleen

N B —GUDUMAL, GURMAR, (Gymnema slyvestr)e—As regards the plant known by this name in Northern India, Dr M C. Koman says in the Report on Indigenous Drugs 1921, as follows —

A *decoction of the leaves* was given to a pat ent suffering from diabetes mellitus for nearly two weeks, the quantity of sugar *dimi nished from* 21 9 *to* 8 75 *gram* per ounce but as at the same time the patient was on an anti diabetic diet, it could not be definitely said whether the improvement was due to the drug or the diet.

1174 GYNANDROPSIS PENTAPHYLLA, Dc.

(N O —Capparideae)

Sans —Arkapushpika, Suryavarta *Eng* —Caravalla Seeds *Hind* —Hurhur Karaila. *Ben* —Arkahuli, Sada hurhuria, Hur huria. *Bom* —Kanphuti Mhoti tilavana. *Sind* —Bighara *Mah* —Hulhul, Mahli kalvana| Tilavana. *Tel* —Vamfinta, Velakura. *Tam* —Velai Naivela Taivela. *Mal* —Karvela. *Can* —Shrilala. *Kon* —Shirkal

Habitat—Th s annual plant (weed) common on cultivated ground is met with in the warmer parts of India. This plant much resembles in odour to asafoetida but comparatively delicate, and the small kidney shaped black seeds resemble those of Cleome viscosa

Parts Used —Seeds, leaves and root

Constituents.—Plant contains an acrid fixed essential oil and a brown soft resin seeds when crushed develop an acrid volatile oil similar in properties to garlic or mustard oil.

Action—Seeds are antispasmodic, sudorific anthelmintic and car minative. Bruised leaves are rubefacient and vesicant

Uses— *Bruised leaves* applied produce copious exudation and afford the relief obtained from a blister without its inconveniences. *Powdered seeds* in doses of 30 grains to one drachm, are admin

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(1), (2) & (3)—Chopra s "I D of I " pp 320 & 321 (4)—pp 319, (5)—pp. 322.

stered internally, for the expulsion of round worms, combined with sugar, twice daily for two days and followed on the third morning by a dose of castor oil They are also useful in cases of sprains etc. For this the seeds are boiled or roasted in about two table spoonfuls of ghee and the whole added to ¼ seer of water mixed with a pinch of salt, and taken in a single draught Bruised with vinegar, lime-juice or hot water, they can be made into a *plaster* or *poultice* for external application Black *seeds* as well as the *leaves* are administered in *decoction* in convulsive affections and typhus fever in doses of four ounces *Juice of the leaves* is used as an anodyne instillation for relief of pain in otalgia and catarrhal inflammations of the middle ear but it produces a burning sensation *Leaves* are applied to boils to prevent the formation of puss, also used in scorpion sting and snake-bite

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1175 GYNOCARDIA ODORATA, R Br
or G hydnocarpes and Taraktogenos kuzzi
(N O—Flacourtiaceae)

Eng, Hind Ben Mah & Bom—Chaulmugra. *Pers*—Birmjmogra. *Can*—Surantadi *Sing & Burm*—Taliennoe *Nepal*—Kadu

Habitat—Lower Himalayan ranges Sikkim, Assam, Khassia Hills extending to Rangoon and Chittagong

Parts Used—Seeds and oil from the seeds

Constituents—Dry seeds with about 9% water produces upto 0 8% HCN and fresh seeds—over 1% HCN Seeds contain a fixed oil—Chaulmogra Oil, It is obtained by hot expression from the seeds of Taraktogenos kuzzi Chaulmoogra oil is liquid at ordinary temperature and is of a pale yellow to a reddish brown colour with a somewhat acrid taste The oil sold in the bazar is usually rancid and dark brown and devoid of therapeutic properties as it is usually expressed from old seeds —(Chopra) Oil deposits on keeping crystalline fat and contains palmitic acid 60 p c., and therefore solid in cold climates Wrenshall and Dean (1924) have found another highly unsaturated acid with an iodine number of 168 3—(Chopra) It contains gynocardic acid 11 p c., the active ingredient, associated with palmitic acid cocinic acid 25 p c.,

and hypogoeic acid 4 p c. Both of the latter acids are found either combined with glycerides as fats or in the free state Of all the tests for ascertaining the purity of Chaulmoogra oil, the specific rotation of polarised light is probably the best indication The specific rotation of the oil from Hydnocarpus wightiana is 57 7° and that from the Hydnocarpus anthelmintica 52 5°—(Chopra). Sir L Rogers and Dr Muir of Calcutta have worked separately and isolated "ethylic ether' products of sodium and potassium, from the oil The result of the analysis of the seeds is as follows — Fatty matters (oil) 30 to 40 p c, "on method of extraction; by hydraulic pressure only 30 9 p c. is obtained but by ether extraction method the quantity is increased to 38 1 p c The fatty oil obtained thereby has the following properties —

	Expressed oil	*Oil extracted by ether.*
Melting point	22–23°C.	22–23°C
Specific gravity	0 951 at 25°C	0 952 at 25°C.
Acid value	23 9	9 5
Saponification value . .	213 0	208 0
Iodine value	103 2	101 4
Specific rotation ...	+52 0°	+51 3°

Power and his associates (1904) found that the oil consists chiefly of the glyceryl esters of two or more new fatty acids The new acids isolated differ from any previously known fatty acids in containing a five-membered carbon ring with side chains of diminishing length as the molecular weight decreases Further, these acids are unique in being optically active and dextro-rotatory They contain only one pair of doubly linked carbon atoms, hence they absorb but two halogen atoms These acids were named 'chaulmoogric' and 'hydnocarpic' acids by the discoverers and it is probably that the specific bactericidal and medicinal properties of these acids are associated in some way with their molecular constitution (Chopra)

The oil expressed from the seeds of G odorata was shown by Power & Barrowcliff (1905) to differ completely from chaulmoogra oil, both in its physical character and in its chemical composition. Gynocardia oil at ordinary temperatures is a pale yellow liquid having an odour resembling that of linseed oil It is completely devoid of optical activity and contains the following constituents —(1) linolic acid or isomerides of the same series, (2) palmitic acid in

considerable amount, (3) linolenic and iso-linolenic acids, (4) oleic acid, (5) crystalline cyanogenetic glucoside, gynocardin The specific unsaturated acids on which the action of chaulmoogra oil depends are not present in the Gynocardia oil Herewith is given a table showing the characteristics of chaulmoogra and allied oils, for comparative study —

	Specific Gravity 30°C / 15°C	Refractive Index n 30 D	Freezing Point °C	Relation 100 mm. 30 /D	Iodine number Hanus	Saponification number	Fatty acids specific rotatory power [α] 30 D
Gynocardia odorata	0 929	1-4743	4	0	160	198	0
Hydnocarpus alcalae	0 918	1-4763	24	48 3	94 0	202	40
Hydnocarpus anthelmintica	0-952	1-4630	16	44 2	84 5	201	50
Hydnocarpus venenata	0 947	1 4769	20	46 4	90 7	191	49
Hydnocarpus wightiana	0 947	1 4763	11	51 2	97 0	207	54
Taraktogenos kurzii	0 951	1 4771	9	43 5	104	215	43
Asterostigma macrocarpa	0 955			48 1	95-2	198	

The *seeds* contain —organic matters 4 to 5 p c., colouring matters 6 p c albuminoids fixed salts glucose, cellulose etc., in small proportions The *Bark* contains tannin

N B —The fruits as well as the seeds are very similar in appearance to those of Klogenos Kurzii, and that is probably the reason for the confusion that existed for such a long time The seeds of Taraktogenos Kurzii, may, however, be distinguished by the fact that the radicle of the seed is terminal, while in Gynocardia seed it is lateral

Action—Seeds and oil are alterative and tonic, and improve the quality of the blood Chaulmoogra oil itself has very little bactericidal property as it cannot easily penetrate the bacterial cell wall It possesses, however, a definite bacteriostatic action as is evidenced by the fact that addition of the oil (2 per cent) to culture media inhibits the growth of acidfast bacilli, such as tubercle bacilli Derivatives of the oil, on the other hand, are more active Sodium salts of the total fatty acids—chaulmoogrates—are said to possess a high degree of bactericidal and bacteriostatic activity against tubercle bacillus *in vitro* in such dilutions as 1 in 100 000 This action is said to be a specific one as it is not present in the case of such closely related fatty acids as those occurring in cod liver oil, etc

Suspensions of virulent tubercle bacilli are said to be rendered harmless to guinea pigs by incubation for 43 hours with any of the acid sodium salts or the esters of the fatty acids of chaulmoogra oil. The esters are found to have no inhibitory effect on *Staphylococcus albus* and other allied organisms'—(Chopra) Chaulmoogra oil is extremely irritating by whichever route it is administered Oral administration of 3 to 4 drops of the oil produces nausea and vomiting, but it is possible to develop a tolerance to it so that as much as 15 minims can be taken in a single dose Not only the oil, but the sodium salts of the fatty acids as well as the ester have powerful irritant actions as well The injection of these medicines into the tissues is painful and local bascessen may form The systematic effects produced by the derivatives are not very marked—(Chopra).

Uses.— *Chaulmoogra oil* as obtained especially in the bazaars of Assam, is of a more or less dark colour, thick and usually adulterated The oil is in great repute in India as a remedy for leprosy It has also been advantageously administered in scrofula, skin diseases and chronic rheumatism The best form of administration is in the form of *powder of the seeds* in doses of six grains thrice daily in pill form with the aid of soap gradually increased to three or four times that amount or until it causes nausea, when the dose should be diminished or the use of the remedy suspended for a time The dose of the oil is from five to six drops *gradually* increased to 30 minims, given after meals in emulsion with gum acacia and syrup or in milk or combined with 30 drops of cod liver oil or preferably in capsules During its use all salt meats, acids, spices and sweetmeats are to be avoided, on the other hand butter, ghee and oily articles of diet aid its action and are therefore recommended It has been successfully given in phthisis, and also applied *externally* to the chest, also as an injection in chronic skin diseases, chronic rheumatism, gout and secondary syphilis *Gynocardic acid* which is its active constituent is given in doses of ¼ to ½ grain made into pills with its six times of the extract of hope or of gentian or conserve of roses Both the oil, and the acid are applied as *ointments* combined with vaseline Gynocardic acid ointment which is a local stimulant, is made by mixing 15 to 25 grains of the acid to an ounce of vaseline, it is used as an application for herpes tinea, leprosy and other skin diseases as psoriasis and eczema of the face and dead, and acts as a specific *Chaulmugra ointment* known as Unguentum

Gynocardiae is made by mixing 1 part of the oil with 4 of vaseline or lanoline or by beating the seeds deprived of husks into a paste with a sufficiency of simple ointment. It is a useful application in many skin diseases especially in herpes and tinea. Beneficial effects of the drug may be produced by injection also of a mixture of equal parts of Chaulmugra and neem oils or a soap incorporating gynocardic acid would possess much of its soothing and remedial effects in many forms of skin diseases. *Magnesium gynocardate* has been tried with some success in leprosy and is often agreed better than the oil. The action of the oil in leprosy, though believed to be, at the best, palliative, is nevertheless more marked than that of gurjun oil, as the prolonged and regular use of the oil might arrest the progress of the disease.

Administration of Chaulmoogra Seeds and Oil by the Oral Route —

' Oral administration of both the seeds and the oil produces nausea and vomiting and cannot be continued for a long time. It was, therefore, largely discarded in favour of the intramuscular and intravenous administration of the drug. Recently, however, oral administration has again been advocated by some physicians, particularly for those cases of leprosy which cannot attend the treatment centres regularly. Attempts have been made therefore, to overcome the irritant action of the oil on the stomach by giving it in Keratin-coated capsules or as suggested by Denny (1929) by the addition of benzocaine. Travers (1926) in the Federated Malay States, has revived the old Chinese treatment which consists in giving 2 parts of the powdered whole nut of Hydrocarpus anthelmintica with 1 part of Cannabis Indica. Watson & Badger (1928) employed a preparation of the esters which can be given without inconvenience by the mouth. While it cannot be denied in the light of the investigations carried out by de Aguar Pupo (1926), Rodriguez (1925) and Lindow, (1927), that the oral administration of chaulmoogra is definitely beneficial, it must be realised that it is very difficult to administer it is very difficult to administer it in sufficiently large doses by this route and that a prolonged course of the treatment which

deaden the pain and 4 gm of resorcin as an antiseptic Heiser (1914) treated a small series of cases with this mixture and reported 11 1 per cent of apparent cures But this treatment was abandoned as patients feel great pain at the site of injection

In 1919 Dean prepared the ethyl esters of the total fatty acids of chaulmoogra Suchamoy Ghosh (independently of Dean) prepared the ethyl ester and suggested its use to Rogers The injection of the ester of the pure acid however proved somewhat irritating to the tissues of the body and Rogers discontinued its use for some time McDonald (1920) was however more successful and treated a number of cases with the ethyl esters of the entire fatty acids of the whole oil with 2 per cent iodine by weight chemically combined The results which followed this method were very satisfactory and were unattended by pain and abscess formations In India, Muir has largely used the ethyl esters He has employed the following formula which has now become famous as the E C C O mixture —Mixed ethyl esters 30 c c pure creosote 30 c. c. camphor 30 gms and olive oil 75 c. c He prepares the esters in the following manner —

(1) *Hot process* —425 gm of crude cold drawn hyanocarpus oil 552 c c. of 96 per cent ethyl alcohol and 31 87 c. c. of sulphuric acid (sp gr 1 845) are placed in a 2½ litre flask fitted with a reflux condenser the alcohol and oil are mixed before the acid is added The contents are allowed to boil on a water bath for 2.4 hours without intermission The reaction product is then transferred to a separating funnel and washed with water and then with 0 2 per cent Sodium carbonate solution, crystals of sodium chloride are then added gradually when the emulsion breaks up and esters rise to the surface

(2) *Cold process* —This takes longer than the hot process but has the advantage that no special apparatus is required and the labour is less The oil alcohol and the acid are mixed in the same proportions as in the hot process in a 4 lbs bottle with a tightly fitting glass stopper and left until the process of esterification is complete The bottle is shaken once or twice a day to mix up the upper with the lower layers and is kept in some warm place It takes 2 to 3 weeks for the process to be completed This method

can be used in any ordinary leper institution The weight of esters formed is almost equal to the weight of oil used —(Chopra)

The treatment with ethyl esters has now become very popular and has constituted the chief medicament in use in many leper institutions It has been used to a considerable extent in China by Fowler (1922), Wilson (1924), Read & Feng (1925) and others Some workers have preferred to add 25 p c of camphor to the mixture A number of preparations of the ethyl esters are available in the market —(Chopra)

Sodium Salts of the Fatty Acids of Chaulmoogra andropnocarpus Oils —

Rogers (1916) prepared the sodium salts of the fatty acids of Chaulmoogra oil These sodium salts were found to be freely soluble in water and their toxicity was also low so that they could be injected intravenously without any danger to the patients Later, it was observed that salts of higher melting fatty acids are more irritant and painful and Rogers attempting to do away with this drawback, advocated the use of the less irritating lower melting fatty acids of the oil Alepol is a salt prepared from such an acid This salt has also been held in high esteem by many leprosy experts —(Chopra)

Dikshit (1932) has studied the pharmacological action of this drug. Its toxicity is fairly low (Details re these experiments are described in the Indigenous Drugs of India by R N Chopra)

N B —From a study of the different methods of treatment, it is evident that chaulmoogra oil is really effective in the treatment of leprosy As the oil obtained on the market is very frequently mixed with gynocardia oil and linseed oil hydnocarpus oil alone which is pure should be used for best and fast results Whenever there is any doubt as to the nature of the oil, it is always better to test its quality

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1176. GYMNOSPORIA MONTANA, Benth.

(Celastrineae)

Sans —Vikankar; *Hind* —Vangar, *Punj* —Kharai Bark is applied to destroy pediculi

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1177 GYMNOSPORIA SPINOSA, Hk. f

1178 GYMNOSTACHYUM FEBRIFUGUM, Benth
(N O—Leguminosae)

Tam—Nela muchchala. Root is a febrifuge

1179 HAEMATOXYLON CAMPECHIANUM, Linn.
(N O—Leguminosae)

Ben—Bokkan, *Tam*—Partanga. Astringent and tonic Used in chronic diarrhoea, dyspepsia and leucorrhoea.

1180 HAGENIA ABYSSYNICA, Lam.
(N O—Rosaceae)

Bom—Kassu Anthelmintic and abortifacient
Constituents—Kosin Kosotoxin.

1181 HALOXYLON MULTIFLORUM, Bunge
(N O—Chenopodiaceae)

Punj—Lana.

1182 HAPLANTHUS TENTACULATUS, Nees
(N O—Acanthaceae)

Hind—Kala Kirayat *Bom*—Jhankara.

1183 HAPLANTHUS VENTRICILLARIS, Nees.
(N O—Acanthaceae)

Used in fever
(Chopra's *I. D. of I.* pp 494)

1184 HAPLOTAXIS AURICULA.
See saussurea lappa.

1185. HAPLOTAXIS COSTUS.
See costes speciosus.

1186.1 HARDWICKIA PINNATA, Roxb.
(N O—Caesalpiniaceae)

Mal—Matayen Sampranı Genne Kolla, Shurali. *Tam*—Kolavu Acha *Tel*—Yepi. *Can*—Yenne

Is a tree found on the Ghats of Kanara, Travancore and Karnatic. *Balsam* or oleo-resin has the smell and taste of Copaiba, it has been used for gonorrhoea with some success Chemically the essential oil which is contained to the extent of 25 to 40 p c, was found to have the same composition as that of Copaiba, two kinds of resin were found, of these one was acid, but crystals of Copaic acid could not be obtained by Broughton

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1187 HEDERA HELIX, Linn.

(N O—Araliaceae)

Hind—Lablab *Punj*—Banda *Kash*—Karmora

Constituents.—0 225 mg arsenic oxide in 1 kg leaves Berries are purgative

(Chopra s I D of I pp 494)

1188 HEDYCHIUM SPICATUM, Ham

(N O—Scitaminaceae)

Sans—Kapura Kachali, Shedwa *Hind*—Sittuti *Punj Mlab*, *Guj* & *Hind*—Kapurkachur Kapurkachri *Punj*—Khor, Kachur kachu Ban Kela, Shedurı (Bazar root) Kapur Kachri. *Duk*—Velati kachur *Tam*—Shimai kich chilik kishangu

Habitat.—Found in Sub-tropical Himalayas, growing abundantly in the Punjab and Nepal.

Constituents.—Starch, cellulose, mucilage, albumen, saccharine matter, acid resin, fixed oil (essential oil), methyl paracumarin acetate, and an odorous body

Action.—Tuber has a camphoraceous smell of long zedoary, root-stock found in the bazaar is reddish brown in colour with a pungent bitter taste

Uses.—*Root stalks* are employed as stomachic, carminative, bitter tonic and stimulant, useful in dyspepsia in the form of *powder* or *decoction* (1 in 20 in doses of 1 to 2 ounces It is used in the preparation of cosmetic powders to promote the growth of hair Aromatic root stalks are also used as a perfume Sliced root is an ingredient in 3 kinds of powder known as *Abir* which is used in India during the "*Holi*" Festival—white *Abir* (called *Ghisi* in Hindi and *Pali* in Gujarati) and Black *Abir* or *Bukka* of the Deccan. The drug also used in snake bite

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1189. HEDYOTIS AURICULARIA, Linn., &

H. hispida, Retz.

(N.O.—Rubiaceae)

Ben.—Muttia-lata *Nepal.*—Goolee *Mah.*—Dapoli, Gaimarli *Mal.*—Kudal-churiki *Can. & Telu.*—Nela-nekkare *Kon.*—Bhooya-nankeri *Sinh.*—*Get*-kola *Malay.*—Mariguti, Kenika or Kerukoh batu *Fr.*—Hedyotisauriculaire *Ger.*—Wahres Ohrakraut

Habitat.—This plant grows wild in Western Ghats, throughout the length of the Indian Peninsula from the Konkan to Cape Comorin, Ceylon, Nepal, Sikkim, the Khasia Hills, Chittagong and Eastern Bengal.

Parts Used.—Leaves.

Constituents.—A general examination of the plant by Dey (1930) shows that it contains considerable quantities of tannins, some reducing sugars and glucosides, a small quantity of fixed oil, a fruity-smelling ester and a basic principle precipitated by common alkaloidal reagents. This basic principle is found to occur in all parts of the plant, the roots containing the largest amount. An assay of the alkaloids shows that the leaves and stems contain 0·1 per cent and the roots 0·3 per cent approximately. The air-dried powdered roots which are selected for detailed examination, yield to petroleum ether 1·1 per cent, to ether 2·6 per cent, to alcohol 8·9 per cent, and water 7·7 per cent, of the extracts respectively. The alcoholic extract has been found to contain the whole of the alkaloids. One of the alkaloids has been purified and its hydrochloride has been prepared. The hydrochloride dissolves in water and alcohol with a bright bluish green fluorescence.

Action.—The alkaloids are said to be very toxic. The drug is an emollient.

Uses.—In Sikkim the leaves are boiled with rice and used as a food, and are used as a household remedy in South Kanara for all sorts of bowel complaints including diarrhoea and dy-

sentery Leaves are employed as an emollient application to nbscesses, and as a salve for wounds, also used in deafness Bhandarkar (1929-30) has carried out clinical trials with the drug both in the form of bolus of fresh green leaves and as a decoction of the whole plant He claims very satisfactory results in dysentery with or without Entamoeba histolytica in the stools According to him even cases which proved refractory to emetine injections, Stovarsol, bismuth, kurchi, bael, etc, responded to the regular administration of the liquid extract of H auricularia ('Hedaurin') As the drug is not toxic, it can be given to small children without harm Striking results were also obtained in cases of acute and chronic colitis and in early cholera The drug was tried during an outbreak of cholera in the Madras Presidency and it is said to have acted almost as a specific

(Chopra's "I D of I")

1190 HEDYOTIS UMBELLATA, Lamk,

H hispida, H Indica

(*Sans*.—Rajana, *Hind*.—Chirval, *Ben*.—Surbuli, *Tam*.—Saya, *Tel*.—Cheriveru, *Mal*.—Choy-ver, *Can*.—Chay-beru) are species indigenous to Rameswaram, much cultivated on the sea coasts for the sake of its *root* (*Chay-root* Constituents.—Alizarin Action.—*Leaves* are expectorant, root is febrifuge Uses.—*Leaves* in dry powder made into cakes with flour are used in asthma and phthisis *Decoction of the root and leaves* (1 in 20) is used as a wash for poisonous bites of venomous snakes and animals, and internally in cough, asthma and consumption in doses of ½ to 1 ounce Decoction for internal use is generally combined with aromatics like Adiantum lunatum or Hydrocotyle Asiatica For burning at the pit of the stomach the leaf-juice is given with milk and sugar, and externally it is a good application for the burning of the palms and soles of feet in fevers

1191 HEDYSARUM ALHAGI, Linn.

or Alhagi Maurorum.

(N O —Leguminosae)

Sans—Duralabha *Eng*—Camel s thorn Khorasan-Thorn *Ben*—Juwasa, Dulal labha *Hind*—Yavasa Jawasa *Mah*—Belukamuli *Bom*—Jabusa, Dhamasa *Tel*—Pilaregati *Tam*—Tulgonri *Can*—Ballidurubi *Arab*—Sankula jamala, Haja Akkula *Pers*—Khar e-Shutra *Arab*, *Pers*, *Hind* & Bom—Turanjabin (the manna or the sugary exudation)

Habitat—Indigenous to the forest regions of Africa and Western Asia met with from Egypt to Persia and N India as far south as the Deccan and Konkan

Parts Used—Thorny flower stalks and branches of the plant and the manna (the sweety exudation from the leaves and branches which occurs in small brownish granular tears mixed with impurities)

Constituents—Manna contains a crystalline principle which is readily converted into glucose on boiling with an acid It also contains cane sugar.

Action—Laxative diuretic and expectorant Manna is cholagogue, demulcent and aphrodisiac Fresh juice is diuretic

Uses—The plant is used in the form of decoction it is useful as a laxative, specially for children Following electuary is recommended for the cough of children—Take of the extract of Alhagi maurorum (extract obtained by evaporating a decoction of the plant or the sugary manna), raisins, chebulic myrobalans and long pepper in equal parts, powder and mix with honey and clarified butter to make a pill mass. It is given in the form of pills in doses of 5 to 10 grains Fresh juice is given generally in combination with aromatics in suppression of urine In suppression of urine and constipation, the following compound decoction is recommended in Sharangdhar Take of Alhagi maurorum, Chebulic myrobolans, pulp of Cassia fistula, fruits of Tribulus terrestris and root of Coleus aromaticus, prepare a decoction in the usual way and administer

ter it with honey, dose—½ to 1 ounce Manna is given with milk as a restorative *Externally* the plant is used in the form of poultice as an application for piles, a *fumigation* of it is also useful in such cases Expressed juice of the plant is dropped into the eyes to remove opacities juice is also *snuffed up* as a remedy for megrim 'In the Concan the plant is smoked along with black Datura, Tobacco and *Ajwan* seeds as a remedy for asthma"—(Dymock) An *oil* prepared with the leaves is used in rheumatism

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1192.—HEDYSARUM GANGETICUM, Linn.

(N O.—Leguminosae)

See—Desmodium gangeticum

Sans.—Shalaparni, Daye *Hind.*—Sarivan *Ben.*—Salpani *Mah., Kon. & Guj.*—Salvan *Tel.*—Gitamaram, Kolakuponna Bom.—Shalparni Salvan

Habitat.—Lower Himalayan region and throughout the plains of India

Parts Used.—Whole plant—root and bark

Constituents.—Root contains extractives, a yellow resin, od, an alkaloid and ash 6 p.c

Action.—Bitter tonic, febrifuge, digestive and anticatarrhal. Sanskrit writers describe it as alterative and tonic

Uses.—A decoction (1 in 10) of the root is used in fevers, dose—2 to 6 drachms A compound decoction made of *Salaparni*, seeds of Abutilon Indicum, or root of Sida cordifolia raisins Cocculus cordifolia, Hemidesmus Indicus taken in equal parts, is useful in remittent fever in doses of ½ to 1 ounce It is an ingredient of *Dasamula kvatha* which is considered to be antipyretic, alterative and bitter tonic, in doses of 1 to 2 ounces twice a day The *dasamula* or ten roots are—Hedysarum gangeticum, Uraria lagopoides, Solanum jacquini, Solanum Indicum Tribulus terrestris, Aegle marmelos, Colosanthes Indica, Gmelina arborea, Stereospermum Suaveolens and Premna spinosas The first five in the above list, are

collectively called *hrasvapancha mula* or the five minor plants, and the last five are called *vrihat pancha mula* or the five major plants A decoction of the *hrasva panchamula* is used in catarrhal fever, cough and other diseases supposed to be caused by deranged *Kapha*. *Vrihat pancha mula* is used in fever and other diseases supposed to be caused by deranged *vata*. The ten drugs together are used in remittent fever, puerperal fever, inflammatory affections within the chest, affections of the brain and many other diseases supposed to be caused by derangement of *vata, pitta* and *kapha* Another combination called *Ashtadasanga pachana* consists of the ten drugs above mentioned, with the addition of the eight following namely, chiretta, *devadaru*, ginger, tubers of Cyperus rotundus, root of Picrorrhiza kurroa, *indrajava* seeds, coriander, and fruits of Pothos officinalis A decoction of these eighteen drugs is used in fevers of a severe type with drowsiness, delirium, picking of bed clothes, insensibility and difficult breathing A preparation of aconite and arsenic is generally given along with it —(Chakradatta)

Dasamula taila —This is an oil prepared with a decoction of the ten drugs above mentioned, and is much used as a cooling application in headache and other diseases To prepare it take of the ten drugs, in all twelve seers and a half, water sixty four seers Boil down to 16 seers and strain To the strained decoction add four seers of lemon juice, 4 seers of prepared sesamum oil and a seer of the usual aromatics and colouring agents in the form of a paste and boil them together —(Chakradatta)

The drug is useful in vomiting, asthma, snake-bite and scropion-sting

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1193 HEDYSARUM PURPUREUM,

Roxb or Desmodium

Polycarpum is another member of the same Family met with in the Himalayas and elsewhere in the plains and known

as *Baephol* among Santals is used by them in fainting and convulsions.—(Rev. A. Campbell).

1194. HEDYSARUM TRIFLORUM Linn.

or Desmondium heterophyllum

See Desmodium triflorum.

1195. HEDYSARUM TUBEROSA, Linn

or Hedysarum tuberosum, Roxb.

See Pueraria tuberosa.

1196. HELIANTHUS ANNUUS, Linn.

(N. O:—Compositae)

Sans.—Arkakantha; Adityabhakta; Suria-mukhi. *Hind.*—Hurduja; Suraj-mukhi. *Ben.*—Surajmukhi. *Eng.*—Sunflower. *Guj.*—Surajmukh. *Mah.*—Surya-phul. *Bom.*—Surajmaki. *Tel. & Tam.*—Aditya-bhakti-chettu; Suryakanti. *Can.*—Suryakanti. *Kon.*—Suryakamal. *Pers.*—Guli-aftab. This plant is common in Indian gardens, in swampy and malarious districts as its presence purifies the air. Seeds yielded 4.00 p.c. moisture and 46.00 p.c. oil on kernels, and the oil (Sunflower Oil) is used for culinary and table purposes like olive or almond oil, and is also used in scorpion-sting. Its oil-cake is a valuable food for cattle and poultry.

1197. HELIANTHUS TUBEROSUS—See Cynara scolymus.

(N. O:—Compositae)

Sans.—Hastipijoo; Vajrangi. *Eng.*—Jerusalem Artichoke. *Fr.*—Artichaut. *Urdu.*—Hathichak.

Habitat —This hardy tuberous-rooted perennial, a native of North America and Jerusalem, is cultivated on Hills in India

Parts Used —Roots

Action —Boiled roots are highly aphrodisiac and promoter of semen

Ustd —*Roots* are used as a popular delicious vegetable, prepared for the table in various ways, but generally they are simply boiled and served up with milk-sauce, or used for flavouring and thickening soups *Tubers* when allowed to remain in the ground and dug up for use as required, preserve their delicacy of flavour and keep better when undisturbed

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1198 HELICTERES ISORA, Linn.

(N. O —Sterculiaceae)

Sans —Mrigashringa, Avatarini. *Eng* —East Indian Screw Tree *Hind* —Marophali, Marori *Ben* —Atmora, Gubadarra *Pers* —Kist-bar-kusht *Duk* —Varkati, Dhamini *Sind* —Vurkatee *Mah.*—Maedasingi, Kevani, Muradasinge *Guj* —Mriga-shiga *Gwalior* —Marodamphali *Tel. & Mal.*—Valumbari *Tam* —Valumbirikai, Valambiri *Can.*—Bhootakaralu *Kon.*—Kivantanimi.

Habitat —A shrub common in Central and Western India, as far west as Jammu, the Central Peninsula and Ceylon

Parts Used —Capsules (pods), fruits, root-bark, juice and seeds

Constituents —When the pods were analysed, besides a quantity of demulcent substance and tannins, nothing of any note could be detected

Action —Decoction of root-bark and juice are both individually demulcent and mild astringent —(Moideen Sheriff), stomachic.

Uses —*Fruits* are employed in intestinal disturbances such as colic, flatulence, diarrhoea etc *Pods* are used, especially in the Bombay Presidency, in the treatment of chronic dysen-

tery. They are roasted and mixed with a number of other ingredients. *Root-bark* in decoction, or its *juice* is given in diabetes to lessen the quantity of sugar. It is also used in diarrhoea and dysentery, given to relieve the griping pain in the bowels, and flatulence among the children Dose of the *powder bark* is from 5 to 30 grains *Seeds* powdered and mixed with pure castor oil forms an excellent application in otorrhoea, ulcers in the ear etc A decoction of the leaves is used for clysters in Jamaica. The drug is also used in snake-bite.

(Chopra's 'I D of I" p 495).

1199. HELIOPHYLUM INDICUM, Linn.

See Helianthus tuberosus

1200. HELIOTROPIUM FICHWALDI, Steud or H. europaeum, Linn.

(N. O.:—Boraginaceae)

(*Punj & Hind.*—Nilkattei, Bithua, Atwin. *Kash.*—Chirgas) is met with in the plains of Kashmir, Punjab, Sind & Mewar There is a toxic alkaloid The plant is emetic and employed in snake-bite, internally, and applied locally in combination with tobacco oil, also used for cleansing ulcers and in scorpion-sting

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1201. H. EUROPAEUM

Is an emetic and is used in snake-bite

1202. H. UNDULATUM, Vahl.

(Punj.—Pipat-buti).

Is another species of almost the same action and used similarly as the above.

1203. HELIOTROPIUM INDICUM, Linn.

H. cordifolium

(N O —Boraginaceae)

San —Srihastini, Suryavarta, Hastisunda *Eng*—Heliotrope *Hind*—Hatta-juri *Mah.*—Burundi *Guj.*—Hathisundhana *Hind. & Ben*—Hatisura *Tel*—Nagadanti *Tam*—Nakkipoo, Tel-kodukki *Mal.*—Telkata, Teliyenni *Can*—Chalukondee *Kon*—Ajeru *Fr.*—Heliotrope-des-Indes

Habitat—A small fragrant plant, indigenous to Cochin-China, but found in ditches in many parts of India

Parts Used—Herb

Constituents—Stems and leaves contain tannin, a non-crystalline organic acid and an alkaloid soluble in ether.

Action—Local anodyne.

Uses—*Juice of the leaves* is used as an application to wounds, sores, boils, gum-boils and to repel pimples on the face, boiled with castor oil it is applied to bites of scorpions, insects and reptiles It is also employed locally in the kind of ophthalmia in which the tarsus is inflamed or excoriated.

1204 HELITROPIUM OPHIOGLOSSUM, Stocks.

Similar to other species of Heliotropium

1205 HELIOTROPIUM OVALIFOLIUM, Forsk.

Occurs widely in South India

1206—HELIOTROPIUM STRIGOSUM, Willd. & H. brevifolium

(*Eng*—Indian Forget me-not, Red Jasmine, *Hind.*—Chitiful, *Punj*—Gorakhpamo, *Kon. & Mah*—Sanjuvanchive', Sitache-kes) are two species of the same Genus found throughout India, they are laxative and diuretic; their juice is used

with aromatics it is given in dyspepsia etc, in doses of 10 to 20 grains, dose of the *tincture* is one drachm, and of the *fluid extract*—5 to 20 minims, of the *solid extract*—1 to 4 grains cautiously, of the powdered root as a purgative, the dose is 1 drachm *Kalikatuki* is used chiefly as a bitter and antiperiodic for children, as its name *Balkadu* indicates It is not believed to have any drastic purgative properties by Hindu Vaidyas, if at all, very mild properties of this nature

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1208 HELLEBORUS VIRIDIS

Sans—Krishna-bhedi *Hind*—Kalikatuki *Bom*—Kulki, *Tam*—Katukarohini Constituents—Glucoside helleborin (Chopra's "I D of I" p 495)

1209 HELMINTHOSTACHYS ZEYLANICA, Hook

This is an intoxicant, anodyne Used in sciatica

1210 HEMIDESMUS INDICUS, R Br.,

Asclepias pseudosarsa, var latifolia

(N O —Asclepiadaceae)

Sans—Sugandhi, Gopimulam, Anantamul, Sariva or Saribha *Eng*—Indian Sarsaparilla Country Sarsaparilla *Hind*—Magrabu, Salsa, Kalisar, Hindi salsa *Ben & Punj*—Anantamul. *Mah*—Upersari, Dudhasali *Pers*—Ushbahindi, Yasmine barri, Aushbahe-hindi *Fr*—Periploca des Indes, Recine de Salsepareille *Ger*—Hemidesmus wurzel Sarsaparillwurzel *Tel*—Sugandhipala, Pala sugandhi *Tam & Mal.*—Nannari, Kizhanna, Naru ninti *Can*—Namadaberu, Sughanda palada-gida *Kon*—Dudvali *Sinh*—Irimusu *Arab*—Zaiyana, Ausaba lunnara *Port*—Upercao

Habitat—This climbing twiner plant is found throughout India, common in Bengal, Bombay Presidency and extending to Travancore and Ceylon

Parts Used —Root, root-bark and juice

Constituents —Coumarin (the aroma and taste of the drug are due to this constituent), a volatile oil, a crystallizable principle—hemidesmine, and a crystalline stearoptin called smilasperic acid "Recent researches by Allopaths have proved conclusively that the active principles of Sarsaparilla consist of an enzyme, an essential oil and a saponin (None of these is said to have any action in syphilis and other conditions for which it is used) "—Chopra's "I D of I" p 182

Action —Valuable alterative, tonic, demulcent, diaphoretic and diuretic It also possesses the sudorific and alterative properties of Jamaica sarsaparilla

Action & Uses in Ayurveda and Siddha —Mathura-rasam, tiktarasam, seetha-veeryam, mathura-vipaka, snigdham, kapham, vathararktam, kushtam, jwaram, prameham, pittam daham, arochakam, sexual debility, later stages of syphilis (Therapeutic Notes)

Action & Uses in Unani —Hot 2°, Dry 1°, Soudavi diseases, syphilis, leprosy, resolvent liquifying, diaphoretic, diuretic, diseases of brain, liver, stomach, kidney, uterus, due to cold and moisture, externally in ulcers (Therapeutic Notes)

Preparations —Infusion, Decoction, Syrup, Liquid Extract Powder and Paste

Uses —Fragrant *root-barks* of this plant known as "Indian Sarsaparilla" are prescribed in dyspepsia, loss of appetite, i e, nutritional disorders, fever, skin diseases and ulcerations, especially those of syphilitic origin, constitutional syphilis, chronic rheumatism and leucorrhoea Hot *infusion* of the root-bark with milk and sugar is a good alterative and tonic, especially for children in chronic cough and diarrhoea *Root* powdered and mixed with cow's milk is given with much benefit in cases of scanty and high coloured urine and in those of gravel and strangury, it is also given in infusion or decoction with or without cumin seeds in two to three ounce doses with milk and sugar added thrice daily Like Jamaica sarsaparilla it is useful in affections of the mucous membrane generally. Indian sarsaparilla is considered more useful than the Ameri-

can Sarsa root as an alterative, tonic, and blood purifier. "As such it has long been employed in Southern India".—(Chopra) It is a valuable remedy, according to Kavirajas, for the second and third stages of syphilis and its numerous manifestations, e g, eruptions, syphilitic rheumatism etc., kidney and urinary disorders of various kinds and constitutional debility In the form of syrup it trebles or quadruples the quantity of urine, increases the appetite, it is, therefore, useful in dyspepsia and nutritional disorders, dose is ½ to 1 drachm. Root tied up in plantain leaves, roasted in hot ashes and then beaten into a mass with cumin and sugar and mixed with cow's ghee, and given twice daily morning and evening is a household remedy in genito-urinary diseases For ulcers and swellings paste of the root is applied to cleanse and cure Milky juice is dropped into inflamed eyes, it causes copious lachrymation and afterwards a sense of coolness in the part For vomiting, nausea etc, root is well boiled in water, strained off and the dregs ground with a little asafoetida and made into a thin paste and then mixed with ghee This is given in the morning to stop vomiting etc For internal administration, root is generally used in combination with a number of other medicines. Following are a few examples.—(1) Take of *Anantamul*, root of Pavonia odorata tubers of Cyperus rotundus, ginger and root of Picrorrhiza kurroa, equal parts, in all two tolas, and reduce them to a paste with water This dose, administered with warm water in the morning, clears the bowels and relieves fever—(Bhaishajyaratnavali), (2) A *decoction* of the roots of colocynth *anantamul*, *sarsa* and Hedyotis biflora prepared in the usual way is administered, with the addition of powdered long pepper and bdellium, in chronic skin diseases, syphilis, elephantiasis, loss of sensation and hemiplegia—(Sharangadhar) (3) A *compound powder*—Take of Hemidesmus root 5, Andropogon muricatus 4, *Nagara motha* 5, *Kutaki* 6, and dry ginger 4 parts Mix and make a powder, dose is half a drachm, useful in chronic diseases of the skin, syphilis etc (4) A distilled compound preparation for blood purification.—Take 4 *chataks of each of Ushba*, China root, *Hemidesmus root*, myrobalans, large cardamom, Sphaeranthus Indicus, 1 *chatak* flower of Neem tree and 1 *chatak* Indian Pennywort. Grind

them well and keep them immersed in 12 seers of water for 24 hours—12 hours in the sun and 12 hours in the moonlight, and then distil it Add a few grains of camphor to the distilled water and keep it preserved in corked bottles for two weeks, when it will be ready for use, dose —2 tolas in the morning and evening It is said to promote health and vigour and invariably cure all kinds of diseases caused by vitiated blood Clinical trials show that the medicinal value of 'Indian Sarsaparilla" is in no way inferior to foreign sarsaparilla

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HERIMODACTYLUS—See —Colchicumluteum

HERMODACTYLUS GOL

(N O —Colchicaceae or Melanthaceae)

(*Eng* —Daffadilla Finger of Hermes *Sans* —Pashchimadeshiya, Shatangatakam Mishtabakatu *Urdu & Arab* —Suringana Shirina *Pers* —Shambalida (Bitter variety) *Eng* —Meadow Saffron *Arab & Kash* —Surinjan-i-talk) It is indigenous to Kashmir and Persia, its tubers are obtainable in Indian bazaars *Tuber* is of a white, yellow or black colour The white is not bitter, the yellow is slightly bitter Both are used in medicine *The black is poisonous* In the sweet variety the corm is starchy, dirty yellow externally and white within In the bitter variety the colour is dirty brown and inside it is pale-white and starchy Starch is in silvery and shining granules It is of an acrid odor Chemical composition of the non-bitter or tasteless variety as obtained by Lecanu is—Starch (forming the bulk of drug) fatty matter, yellow colouring matter, gum, supermalates of lime and potash and chloride of potassium Comparative analysis of the bitter and the sweet variety showed that the bitter variety contained a resin whereas the sweet kind consisted of fat Both drugs contained an alkaloid and both contained an organic acid related to malic acid —A much larger quantity of Fehling reducing principle was present in the sweet than in the bitter drug With regard to its action Unani physicians consider it to be

deobstruent, alterative, sedative, diuretic and aperient With aloes it is given in chronic gout, torpid liver, dropsy and enlarged spleen As an aphrodisiac it is given with *trikatu* or ginger and pepper in seminal weakness A paste made of the bitter variety with saffron and white of eggs is applied to rheumatic and other swellings Locally it is applied to excite the genitals *Powdered root* is sprinkled on wounds to promote cicatrization Internally the sweet variety is given to check intermittent fever, to relieve bronchial catarrh and congestion of the air-tubes and to cure dysentery It is also useful in hysteria, chorea, whooping cough and epilepsy Dose of the powder is 15 grains Bitter variety is regarded to have properties similar to Colchicum B P, and therefore a good substitute for it Bitter hermodactyle comes from Kashmir and the sweet kind from Persia Following two preparations are in use among Unani physicians —*(1)* Take of the sweet variety of Hermodactylus Gol 4, Cassia lanceolate 3, Ipomoea turpethum 5, Pharbitis nil 5, Chebulic myrobalans 3, Almonds 2, Rose buds 3, Convolvulus scammonia 2, Saffron 3, Apium graveolens 2, Daronicum scorpioides 2, Black cumin seeds 3, white Plumbago zeylanica 2, and Lawsonia alba 1 part Mix and make a confection, dose —10 to 15 grs used in gout and rheumatism It relieves constipation and congestion of the liver (2) Take of Hermodactylus Gol 4, Jeravand-e-madraja 3, Lapis sabulasus (*Osteo colla—a stalactites of carbonate of lime*, (Mamai) 1, Withania somnifera 4, Musk 1, Saffron 2 and Cinnamomum cassia 4 parts Mix, add the oil of Mustard seeds and boil This is used as a stimulant application to the face in facial paralysis and to painful rheumatic joints

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1211 HERNANDIA PELTATA, Meisn

(N O.—Laurineae)

Mysore—Uparanthi Bark and leaves are cathartic and leaves are cathartic and depilatory Contains an essential oil (Chopra's "I D of I" p 495)

1212 HERPESTIS MONNIERA, H B K

(N. O.—Scrophularineae)

Sans—Brahmi, Jala-Brahmi, Svetakamini, Manduki *Eng*—Thyme-leaved Gratiola *Hind*—Brambhi, Safed-kammi *Ben*—Brihmi-sak Dhopkammi, Adhabirani *Can & Kon*—Brahmi *Mah*—Nir-brami, Bamba *Tel*—Sambrani-chettu *Tam*, *Mal & Can*—Neerbrahmi

N B—This has been frequently mistaken for Hydrocotyle asiatica (N O—Umbelliferae) known in the Indian Languages as thol-kuri both these plants are known by the name of 'brahmi' in many places

Habitat—This small creeping plant is found in marshy grounds throughout India

Parts Used—Whole plant—root, stalks and leaves

Constituents—A trace of oily matter soluble in alcohol two resins (one easily soluble in ether), an organic acid, a tannin and an alkaloid 'brahmine' 'Only about 0 01 per cent of the alkaloid was isolated by treatment with boiling water, but when treated with a mixture of glycerol and water, a larger quantity 0 02 per cent of the alkaloid was isolated However, the quantity of the alkaloid appears to be very small in the leaves'[1]

Action—Cardiac and nervine tonic leaves and stalks are diuretic and aperient Alkaloid is found to be highly toxic "Frogs are killed within 10 minutes with a dose of 0 5 mgm per 100 gm body weight Rats and guinea pigs are killed within 24 hours with a dose of 25 mgm per kilogram body weight A dose of 0 5 mgh per kilogram body weight of cat produced a fall of blood pressure In smaller doses however, there is a slight rise of blood pressure due to vaso-constriction and stimulation of the cardiac muscles The respiration is stimulated in small doses Plain muscles like that of the small intestines, uterus, etc, are stimulated in dilutions of 1 in 200 000 to 1 in 500,000 In therapeutic doses, the alkaloid resembles strychnine in action Brahmi is less toxic than strychnine and will not produce the reflex irritation which is

often noticed if nux-vomica or strychnine is administered for a long time Further, it is a direct cardiac tonic whereas strychnine only indirectly stimulates the heart "[2]

Uses —Half a tola of the fresh juice of the leaves boiled with *ghee* and formed into a *ghrita* or mixed with two scruples of root of *Aplotaxis auriculata* and honey is given in insanity, epilepsy and bilious disorders *Leaves* fried in clarified butter are taken to relieve hoarseness 'Bose used powdered dried leaves with very satisfactory results in cases of asthenia, nervous breakdown and other low adynamic conditions, and he says that the drug has many advantages over strychnine "[3] *Leaves* and *stalks* are particularly useful in the stoppage of urine which is accompanied by obstinate costiveness A *poultice* made of the boiled plant is placed on the chest in acute bronchitis and other coughs of children *Juice* of the leaves is given in the diarrhoea of children, as *lep* it is applied to swellings Juice mixed with petroleum is a good application in rheumatism The drug is also used in asthma and snake-bite Following preparations are recommended by ancient Sanskrit writers —A powder composed of equal parts of *brahmi*, Acorus calamus, chebulic myrobalan, root of Justicia adhatoda and long pepper is given with honey in the hoarseness of phthisis —(Bhavaprakasa) *Brahmi Ghrita* or Medicated Ghee was tested by Dr M C Koman in cases of hysteria and epilepsy, which were considerably benefitted by its use Dose —half to one tola given twice a day with milk. It is also useful in insanity, neurasthenia, aphonia, hoarseness etc The drug is also used in the form of syrup, dose —1 to 2 drachms twice daily after meals *Brahmi ghrita* is prepared thus —Take of old clarified butter four seers, fresh juice of *brahmi* four seers, Acorus calamus, *pachak* root and the root of Canscora decussata equal parts, in all 32 tolas, in the form of a *paste* and boil them together till the watery portion is evaporated An *oil* is also prepared with this drug which is used in habitual headaches, to relieve brain-fag, etc

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(1), (2) & (3)—Chopra's "I. D of I" pp. 325/326

1213. HETEROPHRAGMA ROXBURGHII, DC.

(N.O:—Bignoniaceae).

Bom.—Warras; *Tam.*—Baro-kala-garu. Used as drink in viper-bite.

1214. HEYLANDIA LATEBROSA, D.C.

Indian Languages.—Godhadi. Is a prostrate spreading plant found in the Bombay Presidency; this plant is best relished by buffaloes before flowering, but can be eaten by them in flower also; can be made into silage.

1215. HEYNEA SUMATRANA, Mig.

(N.O:—Meliaceae).

There is a toxic bitter substance.

1216. HEYNEA TRIJUGA, Roxb.

(N. O:—Meliaceae).

Ben.—Kapia kushi. *Bom.*—Limbara. Bark and leaves are bitter and tonic.

1217. HIBISCUS ABELMOSCHUS, Linn.

H. moschatus or Bamia moschatus;

See—Abelmoschus moschatus.

(N. O:—Malvaceae).

Sans.—Gandapura; Latakasturikam; Zatakasturika. *Eng.*—Musk-mallow. *Fr.*—Ketmia ambretta. *Hind. & Ben.*—Mushk-dana; Kasturi-dana. *Bom.*—Mishkdana; Mushk-bhendi-ke-jij. *Arab.*—Hubb-ul-mushk; Kabbumishka. *Pers.* Makstan; Mushk-dana. *Ben.* Mushak-dana. *Tel.*—Kasturi-

1218 HIBISCUS CANNABINUS, Linn.

N O —Malvaceae)

See—Corchorus capsularis, Linn

(N O —Tiliaceae) and H cannabiscus

Sans—Sana, Machika, Phalamla, Nali *Eng*—Brown Indian hemp Jute Deccan hemp, Bimlipatam jute, Ambari hemp *Fr*—Khetmie-a-feulles de chauvre *Ger*—Hanfartige ketmie *Hind*—Ambari, Patsan *Ben*—Mestapat *Mah Kon Guj & Duk*—Ambadi Ambari *Tam*—Oulimanji, Phalungu, Pulichi, Kachurukkai, Pulichai-keera (sour-green) *Tel*—Ghongukuru, Gogu Santal—Dare Kudrum Uriya—Kanuria Sind—Sajjado Sujiado *Guj*—Bhindi Ambol *Can*—Pini drikegida Pundi)

This species should not be confounded with true jute Coronorus or Corchorus capsularis The two best known varieties of which are C capsularia and C olioritus Deccan Jute is similar to jute but very superior This is generally cultivated in most of the tropical countries, found wild in the east of the northern Ghats Seeds yield an edible oil, the *Hebelzalim* of Persia, which is used as an external application to pains and bruises internally it is aphrodisiac and fattening 'Seeds are sometimes given to cattle, and in times of scarcity are mixed in bread They are chiefly used as oil-seeds, and before the oil is extracted are always mixed with niger-seed or linseed" (Bombay Govt Agri Dept Bulletin) One tola of the juice of the *flowers* with sugar and black pepper is a popular remedy for biliousness and constipation *Leaves* are purgative *young sour leaves* and *flowers* are used as a pot-herb vegetable in curries

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1219 HIBISCUS CANABISCUS

Is a small herbaceous shrub cultivated largely for its fibre and as a vegetable There are several varieties distinguished by the colour of the stem and leaf, which is either green or wholly or partly red The shape of the leaves also varies being either entire or palmately divided The red stemmed, green veined variety with divided leaves produces the best fibre—(Manual of Jail Industries, 1931, Madras)

1220 HIBISCUS ESCULENTUS, Linn

Var Cncellatus or H longifolia—See Abelmoschus esculentus *Tam*—Vendai *Tal*—Benda, *Ben*—Bhendi, Dhanrhas

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1221 HIBISCUS FURCATUS, Roxb

(*Can*—Huligowri, *Kon*—Hodlo Ranbhendo *Tam*—Konda gongura, *Sinh*—Napirritta) is a large climber growing over trees and bushes in the hotter parts of India from Bengal to Ceylon *Roots* infused in water make a cooling drink for the hot weather—(Talbot)

1222 HIBISCUS LAMPAS, Cav

(N O —Malvaceae)

See Thespesia lampas, Dalz & Gibs (*N O —Malvaceae*) —*Ben & Assam*—Bankapas, *Mah*—Ranbhendi *Tel*—Adavipratti, Kondapatty, *Tam*—Rondapatti) is found in tropical Himalayas from Kumaon eastwards, Bengal and the Western Peninsula Root and fruit are employed as a remedy in gonorrhoea and syphilis—(Campbell)

1223 HIBISCUS MICRANTHUS, Linn

(*Porbunder & Cutch*—Adban Buporio, Damanujhad *Mah*—Kurudvel *Guj*—Chanak bhindo *Tam*—Perumaddi, Kurivippundu) is found in the hotter parts of India from U.P eastward and southward to Ceylon In Ceylon it is valued as a febrifuge

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1224 HIBISCUS POPULNEA, Linn

See Thespesia populnea, Soland (*N O* Malvaceae)—*Sans*—Gardha bhanda, Parisa, Suparshvaka. *Hind & Gwalior*—Parsipu, Pipal, Porush Bhendi, Paras pipal *Eng*—Portia tree, Tulep tree, Heartwood *Fr*—Thespesia afeuilles de peuplier *Punj*—Paras-pipal. *Ben*—Palas-pipul, Porash, Paresh-pipal. *Mah. & Bom*—Bhendi, Palas-

piplo, Parsipu, Ran-bhendi, Parsacha-jhada *Duk.*—Porish *Tel*—Ganguranichettu, Gangarenu, Gangaravi, Munigangaravi *Tam.*—Chandamaram, Parushamaram, Purashamaram, Purvarasam, Puarasu, Pursung, Poris *Mal*—Puvvarashah *Guj*—Parusa-Pipalo *Can*—Kandarola-mara *Kon*—Vadlikharaikapus) is found in tropical shores from Bengal to Ceylon, and is cultivated to some extent in Madras *Ripe seeds* contain phosphoric acid, heart-wood contains a garnet red resin insoluble in water, soluble in benzol and ether. Seeds contain a dark red oil known as "huile amere" *Plant* is alterative and stimulant According to Vaidyas it is "constipative, demulcent, phlegmatic and generative of semen" *Fruit* is acidulous and root is sweet It possesses the properties of *Asvatha* *Heart-wood* which contains a resin insoluble in water is a remedy in bilious attacks and colic and in a kind of pleurodynia from which the Malayas often suffer Fruit abounds in a viscid yellow juice which is used as an external application to bruises, sprains, insect bites especially of the centipedes, in psoriasis, scabies—especially 'Mlabar itch, to sores and fistula and to inflamed joints *Juice of the leaves* mixed with some bland oil is a favourite remedy in inflammatory swellings As *poultice* they are applied to inflamed painful joints A *decoction of the bark* (1 in 10) is given internally in 2 to 4 ounce doses twice daily *Externally* it is used for washing skin diseases, also as depurative in dysentery, haemorrhoids etc An oil prepared by boiling the ground *bark* in cocoanut oil is also used for applying to skin diseases The contents of the fruit (which is a capsule) are applied to ringworm together with or without the ground leaves A *compound oil* of the bark and capsules is given in cases of urethritis with much benefit *Root* is used as a tonic *Flowers* also are employed in the cure of itch

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1225 HIBISCUS ROSA SINENSIS, Linn

(N. O.—Malvaceae).

Sans—Japa, Rudhrapushpa *Eng*—China or Chinese Rose or Shoe-flower plant; Common Garden Hibiscus. *Fr*—

Rose de Chine, Ketmie de Cochin Chine *Ger*—Rosen artige Ketmie *Hind*—Jasund, Jassoon, Gudhal *Ben*—Jaba *Guj*—Jasunt *Mah*—Jasavanda *Tel*—Javapushpamu, Mandara, Dasani, Daanachettu *Tam*—Shamberattai, Sappattup-pu, Sappaththi, Semparathan *Mal*—Champarutti *Can.*—Dasanige *Pers*—Angharee-hind *Kon*—Dasun

Habitat—Very common in flower-gardens of India

Parts Used—Roots, flowers and seeds

Action—Flowers are refrigerant, emollient, demulcent and aphrodisiac, also emmenagogue Dark-red petals are demulcent Leaves are emollient, anodyne and aperient or laxative

Uses—*Flowers* of this plant fried in ghee are give in menorrhagia, dark-red *petals* are administered in the form of a *mucilaginous infusion* in ardor-urinae, strangury, cystitis and other irritable conditions of the genito-urinary tract, it is also a refrigerant drink in fevers and a demulcent in cough Combined with milk, sugar and cumin the *petals* or the fresh *root juice* of the white flowered variety is given in gonorrhoea In menorrhagia *powder of the root* combined with equal quantity of the powdered lotus root and the bark of Eriodendron anfractuosum is given in doses of 1 to 1½ drachms, with benefit *Root* is valuable in cough *Seeds pounded* into a pulp and mixed with water are given with much benefit in gonorrhoea *Expressed juice of the leaves* is also given An oil made by mixing the juice of the fresh petals and olive oil in equal proportions and boiling till the water has evaporated is useful as a stimulating application for increasing the growth and colour of the hair In China a black dye is prepared from the *petals*, for the hair and the eye-brows *Buds* are employed in the cure of seminal weakness. The drug is used as a substitute for Althaea

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1226 HIBISCUS RUBER (Howard & Howard)

Is a variety cultivated in the Bombay Presidency

1227. HIBISCUS SABDARIFFA, Linn

(N O:—Malvaceae).

Eng—Rozelle Hemp, Red Sorrel *Fr*—Ketmie Acide; Oscille rouge de Guince *Ger*—Rothe Sabderiffe *Hind*—Patwa *Guj.* & *Mah*—Lalambadi *Ben*—Mesta, Patwa *Tel*—Seemagogu, Erragonkaya *Tam*—Seivappukaychuri, Shivappu-kashuruk-virai, Kashurk-kali *Mal*—Puli-cheera *Can*—Pundisoppu, Pundibija, Seemai-pulichai-keera (sour greens) *Santal*—Arak-kudrami

Habitat—This plant, which is similar to the country "pulichai keera", i e, Hibiscus canabiscus, is largely cultivated for its pleasant acidulous calyxes, in hotter parts of India

Parts Used—Freshy red calyx, seeds, fruit and leaves

Constituents—Potash, tartaric and malic acids, watery extract, cellulose and ash Fleshy red calyx contains tartaric acid, uncrystallizable sugar, mucilage, tannin, colouring matters and salts

Action—Emollient, demulcent, cholagogue and cooling, it has also a certain amount of acidity which stimulates and at the same time neutralises the bilious secretion and thus prevents oppression of the stomach Fruit is anti-scorbutic

Uses—Fleshy *red calyx* is used as a fruit and when dried it is used as an acid article of diet and a cool and refreshing drink like that of tamarind An acid *jelly* is also made from it The *calyx of the flower* of the plant forms a good article for pickles, jellies and preserves, it is sour, but has a very delicate flavour Of the *seeds*, a *decoction* in doses of 1 to 2 drachms three or four times a day, is useful in cases of dysuria and strangury and in some mild forms of dyspepsia and debility From the fruit as well as the succulent calyx, a drink useful in biliousness is prepared by boiling it with water and adding a little salt, pepper, asafoetida and molasses In France, an astringent *syrup* is made with it For convalescence and in mild cases of fever it forms an acid refreshing drink *Leaves* being sour and regarded as emollient are often cooked like vegetables and used in curries Fruits also are used in curries

1228 HIBISCUS TILLACEUS, Linn

(*Eng*—Corkwood *Fr*—Bois de flot. *Hind*—Pola *Ber*—Bola, Chelwa *Uriya*—Bama Baria *Mah & Bom*—Bel pata Bellipata Varanga *Tam*—Potari *Mal*—Paruttı *Sinh*—Belipatta) is found on the Eastern and Western coasts and in Bengal and North West Himalayas This *plant* is employed medicinally on account of its mucilaginous properties Root is employed in the preparation of an embrocation for rheumatism and lumbago it is also used as a febrifuge

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1229 HIBISCUS VULGARIS

Is a variety grown in the Bombay *Presidency*

1230 HINGTSHA REPENS

See Enhydra fluctuans

1231 HIPPOCRATEA INDICA Willd

(N O—Celastrineae)

Constituents—There is an alkaloid in this drug

1232 HIPPOPHAE RHAMNOIDES Linn

(N O—Elaegneeae)

Hind—Dhurchuk *Punj*—Neichik

Parts used—Fruit

Uses—Fruit is valuable for lung complaints

1233 HIPPOPHAE SALICIFOLIA Don

(N O—Elaegnaceae)

Punj—Dhurchik

Uses—Used in lung diseases

1234. HIPTAGE MADABLOTA, Gaertn

(N. O.—Malpighiaceae).

Sans—Madhabi *Hind & Ben*—Madhavilata *Bom*—Haladwail *Tam*—Vadlayarala

Constituents—Glucoside hiptagin

Uses—Leaves are useful in chronic rheumatism, skin-diseases and asthma

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1235 HITCHENIA CAULINA, Baker

(N O —Scitamineae)

Hind & Ben—Tikhur *Bom*—Tavakhir *Eng*—Indian arrowroot

1236 HOLARRHENA ANTIDYSENTERICA, Wall

H pubescens, Chenomorha antidysenterica

(*Refer Wrightia tinctoria also for more information*)

(N O —*Apocynaceae*)

Sans—Kutaja, Kalinga, Vatsika, Girimallika, Sakra-sakan *Eng*—Kurchi, Conessi or Tellicherry Bark *Fr*—Ecoree-de codagapala, *Hind*—Karchi, Kura *Punj*—Kewar, Kura *Ben*—Kurchi, Kureya *Guj*—Indrajavanu *Mah. & Kon*—Kuda (*dhavo*) *Bom*—Pandhra-kura *Tel*—Kaka-kodise, Indravrakshamu *Tam*—Kashappu-vetpalarishi, Vep-palai *Can*—Korasigina-gida *Arab*—Lisan-el asafir-el-murr *Pers*—Zaban-i-gungishk-i-talk, Indar-javitalkh *Port*—Curo, Cura (*The Seeds*)—*Sans*—Indrayava (Indra's Seeds) *Hind & Ben*—Indrajab, Tita-indrajao *Bom*—Kurva-indrajao *Tam*—Kuluppalai-virai *Pers*—Indar-jave-talkh (Three Apocynaceous plants are frequently called *kura*, *koda* or *kuda* in Indian Languages H antidysenterica, Wrightia tomentosa and Wrightia tinctoria, which is fraudulently substituted for the genuine Kurchi bark)

Habitat —This small tree is common in the forests of India, indigenous to the tropical Himalayas, Assam, U P down to Travancore There are two varieties—white and black

Parts Used —Bark, seeds and leaves

Constituents —Bark and seeds contain a non-oxygenated alkaloid—Wrightine or Conessine or Kurchisine and Holarrhenine Wrightine or Conessine is an amorphous powder soluble in water and alcohol and in dilute acids Holarrhenine crystallises from ethyl acetate in silky needles is insoluble in alcohol or chloroform Kurchicine is a white crystalline substance, it is bitter to taste 'Haines (1858) first isolated an alkaloid which he named 'conessine' from the commercial name of the bark—'conessi bark' Ram Chandra Dutt (1881) isolated the total alkaloids which he named 'Kurchicine' after the Indian name of the plant Wornecke (1886) and Kanga, Aiyar and Simonsen (1925) isolated pure 'conessine' from the seeds Conessine is an alkaloid from the seeds, m p 125° ($C_{24}H_{40}N_2$ empirical formula) It contains two tertiary Nme groups Some derivatives of Conessine are —Apoconessine ($C_{24}H_{38}N$) m p 68 50°, (hydrochloride, hydrobromide, hydrogen sulphate, m p 107 8°, picrate m p 100°-111°, methodide, m p 283°-285°) Dimethosulphate of conessine (m p 240°-242°) yields a hygroscopic base, $C_{26}H_{44}N_2$ (dipicrate, m p 258°-259° (decomp), and dimethiodide (D D Kanga, P.R Ayyar & J L. Simonsen)

The content of alkaloids in the bark is found to be about 1 2% (Sudhamoy Ghosh and Nagendra Nath Ghosh), and 0 025% in the seeds and 0.22% in the bark (Caius and Mhaskar) Ghosh and Ghosh (1928) have shown that, besides conessine, there are two other alkaloids present which have been designated as *Kurchicine* and *Kurchine* respectively The alkaloid termed *Kurchine* is characterised by having a low melting point 75°C and it is the most abundant alkaloid present in the bark Ghosh and Bose (1932) of the School of Tropical Medicine, Calcutta isolated the alkaloids *Kurchicine* and *Kurchine* in a pure state They have made a detailed study of the chemical composition of

the free bases and of many of their important salts, *Kurchine*, the base which occurs in the largest amount, is shown to have the formula $C_{23}H_{38}N_2$ and Kurchicine is shown to have the formula $C_{30}H_{36}ON_2$ They are thus different from conessine and *holarrhenine* found in African Holarrhena Haworth (1932) has isolated *Kurchicine* from the seeds and his work confirms the above formula "[1]

Action —Bark is bitter, stomachic, astringent, powerful antidysenteric, febrifuge and anthelmintic Seeds which resemble oats, are very bitter, astringent, febrifuge, antidysenteric, anthelmintic, carminative and also antiperiodic in combination with other antiperiodics like Cocculus cordifolius Arabic and Persian writers consider the seeds to be carminative, astringent, lithontriptic, tonic and aphrodisiac "The total alkaloids from the bark can be given in large doses and without producing depressant, emetic, irritative or cumulative effects They are much less toxic than emetine They produce a certain amount of local reaction, pain and swelling which pass off in 24 to 48 hours "[2]

N B —All the following notes are from Chopra's Book "I'D' of I " pp 334 to 337.

Kurchi Bismuth Iodide and its Preparation —This is an orange-red powder containing about 27 per cent total alkaloids and 22 85 per cent of bismuth It is sparingly soluble in dilute hydochloric acid, water and alcohol (1 gm base 3 5 gm K B I approx)

The total alkaloids are dissolved in dilute hydrochloric acid and then treated with Dragendorff-Kraut's reagent with constant stirring until there is complete precipitation The orange-red precipitate is allowed to settle and then filtered and washed thoroughly with distilled water The precipitate is collected and dried at ordinary temperature

Dragendorff-Kraut's Reagent —80 gm basic bismuth nitrate is dissolved in 200 gm nitric acid (sp gr 1 18) and then poured into a concentrated aqueous solution of 272 gm potassium iodide and diluted to a litre (N.B —for K. B I we found it better to use the solution diluted to 500 c.c.)

Pharmacological action of the Alkaloids—Kiedel (1878) found that conessine depressed the centres in the brain for conscious sensation and for the initiation of *voluntary movements* Burn (1915) stated that conessine and holarrhenine are cardiac poisons as perfusion of the isolated heart with them causes the heart to come to a standstill Giemsa and Halberkahn, on the other hand, did not find similar effects It would appear from these that the pharmacological action of the holarrhena alkaloids required further careful study and this was undertaken by the author The results of this work are briefly summarised below

Conessine —Action on Protozoa —Brown (1924) appears to have been the first worker to study the amoebicidal properties of conessine He tested the action of the alkaloid on cultures of a pond amoebae and found that it had distinctly lethal effects on this organism When it was incorporated with the culture medium in strengths of 1 in 1,000 000 it inhibited their growth Experiments with mice showed conessine to be 50 per cent less toxic than emetine but its subcutaneous administration in medicinal doses produced local necrosis On the other hand he found that it can be safely given by mouth in large doses Although the alkaloid exerted some toxic action *in vitro* on the bacilli of the dysentery group it did not appear to produce any effect in bacillary dysentery in man in ordinary therapeutic doses Henry and Brown (1923) while testing the tannins obtained from the *H antidysenterica* bark and also those from ipecacuanha against the free living ciliate protozoon Glaucoma found both of them to be highly toxic to this ciliate Chopra and his associates (1927) showed that conessine killed free-living amoebae proteus and limax in dilutions of 1 in 280 000 Its action on the vegetative forms of *E histolytica* was tested on the dysenteric stools of experimentally infected kittens *In* mucus flakes in such stools motile amoebae were killed in dilutions of 1 in 280 000 in 8 minutes in the presence of an alkali and in 18 minutes in the absence of alkali, as compared with 1 in 200 000 of emetine Conessine produced little effect upon *Trichomonas hominis* but was markedly lethal to the coprozoic

flagellate protozoon, *Bodo caudatus*, killing it in dilutions of 1 in 280,000 as compared with 1 in 20,000 of emetine

Local Effects —Subcutaneous or intramuscular injections of conessine salts are painful and set up a marked oedema and swelling of the area round the site of injections There are signs of congestion and hyperaemia of the tissues at the site of injection, but no haemorrhage or necrosis of tissues was observed even when a 6 per cent solution was injected The effects were visible a few hours after the injection began to show signs of resolution after 24 hours and disappeared almost entirely after 48 hours

Alimentary System —Conessine has a bitter taste When given by the mouth it appears to have a depressing action on the digestive ferments The action of ptyalin, pepsin and trypsin is inhibited by it The preparations of *H antidysenterica* should, therefore, be preferably given two hours after meals so that the digestion is as little interfered with as possible Intravenous injections of conessine stimulate the peristaltic movements of animal intestines *in situ* The tone of the muscle of isolated pieces of gut is increased This is probably the reason why preparations made from the bark produce looseness of the bowel.

Circulatory System —In large doses, this alkaloid has a depressant action on the auriculo-ventricular bundle in the frog, the heart beats being markedly slowed and there being one beat of the ventricle to 3 to 5 beats of the auricle Later, the auricles beat quite independently of the ventricles, complete heart block being established Turtle's heart perfused with conessine showed marked slowing and decrease of amplitude of the beats In the mammalian heart, small doses produced a temporary increase in both auricular and ventricular contractions, but this was quickly followed by depression In the cat the heart was visibly slowed after 2 mgm given intravenously When repeated injections were given the heart became irregular After large doses a definite heart block is produced, fibrillation and finally stoppage of the ventricles takes place Isolated mammalian heart is depressed by conessine in such dilutions as 1 in 60,000 to

100,000 Conessine appears to act on the fibres of the auriculo-ventricular bundle causing slowing and increase of diastolic pause, arrhythmia and finally heart block Intravenous injections of conessine invriably produce a marked and persistent fall of blood pressure after a slight momentary rise With very small doses such as 0.25 mgm to 0 5 mgm, there is a tendency to recovery after the fall but with higher doses the fall is more or less persistent, the blood pressure not regaining its normal level for a very long time

Respiratory System —There is a preliminary stimulation followed by slowing With large doses the respirations become slow and shallow and finally stop earlier than the heart.

Nervous System —Conessine has a well marked narcotic action on frogs, 15 mgm injected into the lymph sac of an animal producing paralysis and loss of all reflexes in 10 to 20 minutes In mammals narcosis is not produced even after large doses A 5 per cent solution dropped into the eye of a rabbit produced irritation followed by complete anaesthesia in 6 to 12 minutes

Total Alkaloids —The pharmacological action of the other two alkaloids of H Antidysenterica is under investigation The action of the total alkaloids has been carefully investigated in view of the powerful action of conessine on the heart muscle If the action of the total alkaloids on the heart was the same, it would make one hesitate to administer them in large doses Any limitation of dosage would defeat the end we have in view, i e to attain a concentration of these alkaloids in the large intestine, sufficient to kill the amoebae in spite of the acidity that was present in the gut contents or in the surface tissues

(a) *Circulation* —Small doses, 2 mgm injected intravenously into the saphenous vein of a cat weighing 2 kilos caused a persistent fall of blood pressure but without any alteration in the intensity of frequency of the heart beat. In much larger doses, there was slowing of the heart beat. Perfusion through the isolated heart rarely showed any effect

on the frequency or force of the contraction. Doses of 2.5 mgm in a cat of 2 kilos showed no alteration in the auricular and ventricular contraction as seen in myocardiographic tracings. Although there is a marked rise in pulmonary pressure with conessine and holarrhenine, the rise is only slight when the total alkaloids are injected into the animal.

(b) *The Volumes of Various Organs and Structures in the Body*.—The limb volume and that of the liver, spleen and kidney were all decreased after intravenous injections of the total alkaloids, indicating that vaso-constriction was occurring at these sites. On the other hand, there was a very marked increase in the intestinal volume with complete inhibition of intestinal movements. From these results it can be reasonably concluded that the fall in blood pressure is due to dilatation of the intestinal vessels and to a lesser extent to engorgement of the lungs.

(c) *Local Effects on Intramuscular or Subcutaneous Injections*.—When a 6 per cent solution was injected into the tissues no haemorrhage or necrosis was observed but a good deal of oedema at the site of the injection. The oedema was most marked after 4 hours and began to disappear after 24 hours and disappeared completely within 48 hours after the injection, hyperaemia and oedema were caused most probably by the acidity of the salt of the alkaloids. 1 to 2 grains of the salts of the total alkaloids give rise to a certain amount of pain. There were no signs of bruising (haemorrhages) as is seen with emetine nor necrosis as with quinine.

(d) *On the Uterus*.—The total alkaloids have very little effect on the excised uterus or on the uterus *in situ* except in strong concentrations which it is impossible to attain in the circulating blood. The alkaloid kurchine with a low melting point is the most powerful, causing contractions in a concentration of 1,50,000. Most alkaloids circulate in the blood at a concentration of 1 in 150,000 to 1 in 500,000. Therefore, these alkaloids would have little or no effect if given to a pregnant woman.

for 10 consecutive days after the treatment was over and this was taken as a criterion of cure The results obtained were not very promising even in cases where the drug was used in 2 grains doses daily

The author, as the result of his researches from pharmacological point of view, commenced using the total alkaloids of *Holarrhena antidysenterica*—'kurchi alkaloids'—in the treatment of acute amoebic infections by intramuscular injections The results were very gratifying and showed that in acute cases, the total kurchi alkaloids were as powerful as emetine in their immediate effect on the symptoms as well as in their curative value, in such doses as 1 grain daily The intramuscular injections produced inflammation and swelling of the parts and were accompanied by considerable pain in some cases They did not, however, produce any of the general toxic effects usually met with when emetine injections are given especially for prolonged periods Some of the patients complained of a momentary sensation of flushing of the face and a feeling of heaviness in the head soon after the injection was given, but these quickly passed off

Intramuscular injections of the total alkaloids, although they were effective against acute amoebic dysentery, did not produce very satisfactory results in chronic and long standing cases It was therefore, considered advisable to give the alkaloids by mouth in view of the facts that preparations of H antidysenterica bark given by the oral route were much more effective in chronic cases This led to the preparation of a bismuth iodide compound of the total alkaloids

Kurchi Bismuth Iodide —Dale and Dobell (1917) first showed the value of emetine bismuth iodide in the treatment of chronic amoebic infections, and got constant curative results by this method of treatment Their results hold good when dealing with young soldiers in England, but the drug is not so successful when dealing with the class of cases met with in India Knowles (1928) clearly brought out this point in his paper by the numerous failures he had with all the different combinations of emetine he used in the treatment of these chronic cases

large intestine Such doses as 10 grains of the bismuth iodide, containing about 27 to 30 per cent of the alkaloids, are well tolerated morning and evening for periods ranging from 10 to 20 days There is no appreciable effect on the pulse rate or blood pressure There is no alteration in the heart sounds even in organic heart diseases The depressing, emetic or intestinal irritation that is usually produced by emetine was not observed No cumulative effects are produced as are observed in the case of emetine This drug has now been tried on a large series of cases of chronic amoebic dysentery and the results obtained compare very favourably with any of the other drugs used It is hoped that the advent of these alkaloids will mark a definite advance in the treatment of chronic amoebiases The action of the alkaloids in amoebic hepatitis is doubtful They do not appear to have such beneficial effects in non-suppurative and suppurtive hepatitis of amoebic origin as emetine has

It may be mentioned here that while the total alkaloids and their preparations from some batches of the bark gave remarkable results in clearing up very chronic cases of amoebic dysentery, others proved unsatisfactory The factors concerned have not been fully worked out and are still under investigation, but it is probable that maturity of the bark or changes in the alkaloids themselves of the nature of racemisation, oxidation, etc, while they are still in the bark may be responsible factors When these are cleared up and a uniformity of action is obtained an effective remedy will be found for chronic amoebic dysentery and the demand for the bark will be very large

Preparations —Decoction and Infusion (1 in 10), dose — 1 to 3 ounces Tincture (1 in 8), dose —½ to 2 drachms Powder, dose —½ to 1 drachm Solid and Liquid Extracts— *Kurchicine*, dose —2 to 5 grains Liquid Extract, dose —"10 drachms a day can be given for 10 days without the patient complaining of any symptoms 'Tabloids' dose upto 60 grains a day without discomfort'" *Kurchicine* is best given in powder

Uses—The Central Indigenous Drugs Committee Report of Calcutta, states "Before the discovery of the efficacy of ipecacuanha in dysentery, many chronic cases which did not get well under European medical treatment used to be cured by the Kabirajas by preparations of this bark Cases have also occurred of its having succeeded as a remedy in that complaint when ipecacuanha and other medicines failed" 'The bark has enjoyed much more reputation than the seeds"[4] A liquid extract of the bark (standardised preparations of the bark extract also) were distributed among many Doctors (European and Indian) for using and testing their efficacy in the treatment of dysentery Almost all of them are unanimous in testifying to the marvellous good effect of the drug in dysentery, acute and chronic of both children and adults, and also to its antipyretic effect "An infusion of the root bark, which is very bitter and most unpalatable, has been tried somewhat extensively in the treatment of amoebic dysentery Tablets made from the bark (by European and Indian manufacturers) can be easily taken and when combined with emetine treatment are quite beneficial Knowles found that simultaneous administration of emetine hypodermically and tablets of Kurchi bark orally is of marked value in amoebic dysentery Caius and Mhaskar (1927) had satisfactory results with powdered whole bark Knowles and others (1928) tried *Kurchi* orally, in the form of liquid extract and 'tabloids' of the bark, and the cures were far higher than failures for so simple a remedy the treatment involves no injections and has the additional merit of not developing toxic symptoms In acute cases, the improvement was less rapid than emetine, but cure appeared to be much more permanent Col Chopra used a standardised extract made from the bark which is on the market (one drachm—4 0 c c containing roughly half to one grain of the total alkaloids) in doses of 2 drachms 3 times a day for 4 to 6 weeks either by itself or in combination with *Plantago ovata*, in the treatment of very chronic cases of amoebic dysentery, with benefit No untoward symptoms or cumulative toxic effects were produced Even in patients suffering from bacillary dysentery the symptoms are markedly benefited."[3] 'Large doses of bark extracts as well as of the

alkaloids given in amoebic dysentery cases, and who had co-existing malaria, have disproved the firm belief existing in the United Provinces that the bark has very good anti-malarial properties, in none of these cases was any effect produced either in the clinical symptoms of the disease or on parasites in the blood" *Bark* of the stem and root, preferably of the young plants and the *seeds*, are generally used as remedies in acute and chronic diarrhoeas and dysentery. Seeds are given in powder in 30 to 60 grain-doeses mixed with sugar-candy, 1 drachm *A fluid extract of the bark* with the addition of ginger and *atis* is recommended in Chakradatta and according to Sharangdhara the *expressed juice* of the bark is given with honey "A comopund decoltion and a confection prepared from the bark and the seeds, are often given in dysentery with beneficial results" *Seeds* enter into the composition of many prescriptions for bilious affections, fever, bowel-complaints, (dysentery, diarrhoea, flatulence), piles, intestinal worms, etc Following recommended in Sharangdhara are a few illustrations (a) Take of *Indrayava* seeds and the tubers of Cyperus rotundas, each four tolas, rub them into a paste with water and boil in one seer of water till the latter is reduced to one-fourth This boiled emulsion is given in doses of about half to one ounce with honey (b) A decoction of *Indrayava* seeds made with milk in usual proportions is used for checking bleeding from Piles (haemorrhoids) It is given with the addition of ginger "Leaves are used as fodder in certain parts of the Punjab" "The bark of both the stem and the root and the seeds are amongst the most important of the medicines of the Hindu Materia Medica"

A decoction made by boiling 1 to 3 dracnms of the seeds in 12 ounces of water till it is reduced to 4 ounces and straining, given in one dose in the mornings is most useful in chronic dysentery and in bleeding piles also A decoction of *Kutaja* and *bael* fruit is beneficial in mucous diarrhoea with blood The drug is generally combined with *mocharas* and similar drugs to act beneficially in acute and chronic dysentery and diarrhoea ""*Indrayava*' powdered or

infused in warm water, has been found very useful in mild forms of dysentery complicated with worms in children" (8) A compound decoction called *Kutajashtaka* is recommended in Sharangdhara It is prepared thus —Take of *kutaja* bark, *atis,* root of Stephania hernandifolia, flowers of Woodfordia floribunda bark of Symplocos racemosa, root of Pavonia odorata, rind of pomegranate fruit, and tubers of Cyperus rotundus quarter tola each, water 32 tolas, boil together till reduced to one-fourth A hot decoction of the bark is used as a gargle in toothache For round and thread worms, a compound anthelmintic powder is given in doses of 15 to 20 grains twice or thrice daily for 3 days followed by castor oil It is prepared by taking 6 tolas each of Holarrhena seeds, seeds of Butea frondosa and Embelia ribes and 2 tolas each of Cardamoms (large), long pepper, Cinnamon, Cinnomon leaves, ginger, pepper, borax, bamboo manna, long pepper, root of Plumbago zeylanicum, tubers of Cyperus rotundus, black salt (vit salt), rock salt, Piper aurantiacum, Chebulic, beleric and emblic myrobalans Other compound powders known os *Gongadhara Churnas (Lagu* and *Brihot,* are astringent intestinal tonics useful in acute and chronic dysentery ond diarrhoea also giving tone to the intestines and increasing digestive power *Lagu Gangadhara Churna* —Seeds of Holarrhena antidysenterica, Cyperus rotundus, Aegle marmelos, bark of Simplocos racemosa, gum of Bombax malabaricum and flowers of Woodfordia floribunda, all in equal parts, oowder and mix Dose is 20 to 40 grains given thrice a day with whey *Vridha* or *Brihat Gangadhara Churna* —Seeds of Holarrhena antidysenterica, Cyperus rotundus, Bark of Bignonia indica, Zingiber officinale, Woodfordia floribunda, Simplocos racemosa, Andropogon muricatus, Aegle marmelos, Bombax malabaricum Cissampelos hernandifolia, Kernel of seeds of Mangifera indica, Aconitum heteroohyllum, and Nymphae stellata, all in equal parts powder and mix Dose —20 to 40 grains to be taken three times a day with whey Another compound powder called *Pathadya Churna* is recommended by Chakradatta and it is made thus —Take of the root of Steohania hernandifolia, fruit of Aegle marmelos, plumbago root, long pepper, black pepper, ginger, bark of Eugenia jambolana, rind of po-

megranate fruit, flowers of Woodfordia floribunda, root of Picrorrhiza kurroa, *atis*, tubers of Cyperus rotundus, wood of Berberis asiatica, chiretta, seeds of Holarrhena antidysenterica, one part each, *kutaja* bark, equal in weight to all the above ingredients, powder them finely and mix Dose—about one to two scruples to be taken with rice-water and honey *Kutajaarishta* (Fermented decoction of Holarrhena antidysenterica) is a preparation used as astringent, stimulant and antiperiodic given in chronic diarrhoea, dysentery, colitis and sprue and continued fevers Dose is ½ to 2 tolas It is pepared by taking 12½ seers of the rootbark of Holarrhena antidysenterica, 6¼ seers of raisins, 80 tolas each of flowers of Bassia latifolia and the bark of Gmelina arborea, boiling them together in 256 seers of water till reduced to 64 seers, and strain, then add 2½ seers of the flowers of Woodfordia floribunda and 12½ seers of treacle and let the mixture ferment for a month, after which it will be ready for use Another preparation is a compound decoction known as *Kalingakadi Kvatha*, of which the chief ingredients are the seeds of Holarrhena antidysenterica, Trichosanthes dioica and Picrorrhiza kurroa, it is useful as bitter tonic and antiperiodic, given in ½ to 1 ounce-doses twice daily, in fevers, especially those complicated with liver derangement A *confection* called *Kutajaleha* and recommended by Chakradatta is prepared thus —Take of kutaja bark 12½ seers, water 64 seers, boil down to 16 seers and strain Boil the strained decoction till reduced to a thick consistence, then add sanchal salt, *Yavakshara, wit salt*, rock salt, long pepper, flowers of Woodfrodia floribunda, *indrayava* seeds and cumin seeds each 16 tolas, in fine powder, and prepare a confection Dose is about a drachm with honey in chronic and acute dysentery Another confection known by the name of *Pradarari Lauham* and recommended in Bhashjyaratnavali for cases of menorrhagia and other uterine discharges is prepared thus —Take of 12½ seers of *Kutaja* bark, and prepare a fluid extract as in the preparation called *Kutajaleha*, above described, Then add the following substances in fine powder, *viz* —gum of Bombax malabaricum, Indian madder, root of Stephania hernandifolia, *bela* fruit, tubers of Cyperus rotundus, flowers of Woodfordia floribunda, *atis*, prepared talc and iron each 8 tolas, mix them

intimately and prepare a confection Dose is about a drachm Pers an writers prescribe the seeds in powder with honey in chronic chest affections such as asthma due to worms and also in colic An oil for external application called *Grahan-i mihira taila* is prepared with Sesamum oil, decoction of Holarrhena bark and a number of astringent and aromatic substances in small quantities *Bark* is used also as *Lep* or plaster applied in rheumatism, and over the part of the abdomen which is most painful They are also useful applications in pruritus, bad ulcers etc Arabian and Persian writers 'consider the seeds valuable in pulmonary affections"[9] and also recommend *pessaries* made of the *Indrayava* seeds, honey and saffron, they are supposed to favour conception They are also used after delivery to give tone to the soft parts "In the Laboratory and clinically, the total alkaloids obtained from H antidysenterica bark have a most remarkable action against acute and chronic forms of amoebic infections of the gut In acute amoebic dysentery, intramuscular injections of 1 grain of total alkaloids produce a cure at least as quickly as emetine In chronic cases 10 grains of the alkaloids twice daily for 10 days eradicate the infection in a large number of cases In very persistent cases, a course of 15 to 20 days is given according to the severity of the case Such prolonged use produces no toxic effects and untoward symptoms

A Bismuth Iodide Compound of *Kurchi* alkaloids, promises to be a valuable treatment for chronic amoebic affections of the bowel, particularly in the tropics"[10]

Following are a few additional useful Home Remedies —

(1) Take of seeds of Holarrhena antidysenterica 5, Cyperus rotundus 4, Symplocos racemosa 5, Bael Fruit 5, Bombax malabaricum 3, flowers of Grislea Tomentosa 4 parts Mix and make in powder—Dose½ dr. Used in bowel complaints and dysentery

(2) Take of the bark of Holarrhena antidysenterica 2 drs Bael fruit 2 drs., Pomegranate bark (dried) 1 dr Rub them together into a fine powder Dose—20 to 40 grains. Vehicle—Honey or syrup Used in diarrhoea and advanced stages of dysentery

(3) Take of the bark of Holarrhena antidysenterica 5 and Sugar 5 parts. Mix and boil with water till reduced to a syrupy consistence; then add Carbonate of potash 2, *Pancha lavana* (Rock salt, Common salt, *Goda lavana* i e sweet chloride of sodium, *Sanchal salt* & *Bida lavana* or vit salt) 2, dried slices of the root of long pepper 3, flowers of Grislea tomentosa 4, seeds of Holarrhena antidysenterica 4, and Cumin seeds 4 parts, and make a fine powder Dose—1 drachm. Vehicle.—Syrup. Used in acute and chronic dysentery.

(4) Take of the bark of Holarrhena antidysenterica 5, Bombax malabaricum 3, Rubia cordifolia 2, Cissampelos pareira 3, Bael fruit 5, Cyperus rotundus 6, flowers of Grislea tomentosa 6, Mica 2, and *Lahuna sara* 4 parts. Mix and make a powder Dose—10 to 15 grains. Used in menorrhagia and other uterine discharges

(5) Take of Holarrhena antidysenterica seeds 5, long pepper 4, dried slices of the root of long pepper 4, Solanum jacquini 3 and Apium graveolens 4 parts Mix and make a powder Dose is 10 to 15 grains Used to check vomiting, and in dyspepsia—(Khory)

(6) "The seeds of Holarrhena antidysenterica are a never failing specific for dysentery and hemorrhoidal flux. Take of the powdered seeds ½ dr., sugarcandy 1 dr., cold water 1 ounce to be kept for a few hours and then strained with a thin muslin cloth the result is a white mucilaginous bitter infusion, which is to be given twice or thrice a day to an adult, for children the dose is proportionate to their age If the infusion be prepared in large quantity, in the proportions mentioned it will keep fresh for many days"—(Tukina)

(7) "Another specific property of these seeds is its efficacy in jaundice Take of powdered *Inderjav* seeds dr. ½, powdered root of Helleborus niger grs. 20, pure water ozs. 3; to be boiled or made into a decoction, and either Sulphate of Magnesia drs 2 to 4 or sulphate of Soda drs. 2 to 4 to be added when cool; this decoction

is to be given early in the morning for 3 days at least, to patients suffering from jaundice caused by portal congestion, obstruction and inflammation of the gall-ducts, worms, cold, etc With the above decoction can be given during the day a simple mixture of taraxacum and ammonium chloride."—(Tukina).

1237. HOLIGARNA ARNOTTIANA, Hook.

(N.O.—Anacardiaceae):

Bom.—Bibu, is a tree commonly found on the Western Ghats, Annamalais and Tinnevelly in the Ghats

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1238. HOLIGARNA LONGIFOLIA, Roxb

(N O.—Anacardiaceae)

(*Ben* —Barola; *Bom* —Hulugiri) is a poisonous drug

1239. HOLIGARNA NIGRA, Bourd.

(N.O—Anacardiaceae)

Is a tree commonly found on the Western Ghats, Annamalais & Tinnevelly in the Ghats.

1240. HOLOPIERA VILLOSA

See Cocculus villosus

1241. HOLOPTELEA INTEGRIFOLIA, Planch.

(N.O —Urticaceae)

(*Hind* —Papri, Pipri *Mah.*—Vavala *Tel* —Navili *Tam* —Aya *Can* —Rasbija) is a tree extending from the lower Himlayas to Travancore, the mucilaginous bark of which is

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(1) Chopra's "I D of I" p 328, (2) p. 237; (3) p 333, (4) p 332, (5) pp 333/334, (6) & (7) p 327, (8) p 332, (9) p 327, (10) pp 337 and 338.

boiled and the *juice* squeezed out and applied to rheumatic swellings the exhausted bark is then powdered and applied over the parts covered by the sticky juice.

1242 HOLOSTEMMA RHEEDII, Wall.

(N O —Asclepiadaceae) or Asclepias annularis.

(*Bo n* —Dudurli, Tultuli, Sidori, Dudali. *Santal* —Apung Morourak *Tam* —Palay kirai *Tel* —Palakura Istarakuia) found in the tropical Himalayas from Sirmoor to Sikkim, Deccan, from the Circars and Kanara southwards. *Roots* are considered cooling and alterative In diabetes the root rubbed to a *paste* is given in cold milk *Externally* the paste is used as an application to the eyes in ophthalmia In spermatorrhoea the *dried root* with an equal quantity of the root of Ehodendron anfractuosum powdered, is given in doses of $1\frac{1}{2}$ drachms with milk and sugar twice daily *Decoction of roots* is used as a remedy for scalding in gonorrhoea, and also for coughs Externally it is used as an application for orchitis The *twin pods* form the favourite vegetable of the Hindus Central portion of the *flowers* is sweet and eaten

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1243 HOMALOMENA AROMATICA, Schott

(N O —Gramineae).

Ben —Kuschu-gundubi Action —Aromatic and stimulant

1244 HOMONOIA RIPARIA, Lour.

(N O —Euphorbiaceae)

Sans —Pashanabedaka *Tam* —Cheppunjerinjal Decoction of root is used in piles, stone in bladder, gonorrhoea, syphilis and thirst Action —Laxative and diuretic

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1245 HOPEA ODORATA, Roxb

(N O —Dipterocarpaceae)

(*Burm* —Thengan) Is one of the Coromandel plants it yields a fragrant copal like *resin* which reduced to powder, forms a popular styptic amongst the Burmese, its action is probably purely mechanical

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1246 HOPEA RACEMOSA

See Styrax Benzoin

1247 HORDEUM VULGARE, Linn

or H sativum, H decorticatum, H distichun,

H hexastichun, H zeocriton

(N O —Gramineae)

Sans —Yava Eng —Barley *Fr* —Orge anguleuse *Ger* —Sechszeilige Gerste *Pers* —Jao *Hind* —Jave, Jan *Ben* —Jab —*Sind* —Jawa *Guj* —Cheno *Moh* —Satu *Jav* *Tel* —Pachcha yavulu *Tam* —Barlhiarisi *Con* —Jave-godi *Kon* —Baarli

Habitat —This cereal is largely cultivated in several varieties in Sind, Bombay Presidency and other provinces of India H Decorticatum is grown in Great Britain and Europe

Parts Used —Dried decorticated grain called pearl barley and the seeds of *Yava*

Constituents —Fixed oil or fat, starch proteid compound (gluten albumin), cellulose other nitrogenous principles and ash containing silicic acid, phosphoric acid iron and lime Fixed oil or fat contains glycerine mixed with palmitic and lauric acids Hypoxanthine (Sarcine) is found to occur in this cereal Church, in his Food Grains of India gives the following analysis of barley (clean) —Water 12 5, Albuminoids 11 5, starch 70 0, fat 1 3 fibre 2 6 Ash 2 1 per cent respectively As—50 mg. in 100 g dry and 50 mg in 100 g fresh plant

Action —Java is nutritive, Seed or grain is demulcent. Decoction of seeds is a bitter tonic and astringent

Uses —Barley imported from Europe is specially suitable as a nutritious invalid's food *Decoction of barley* (made by boiling $2\frac{1}{2}$ ounces of pearl barley or a tablespoonful of the powder in 4 pints of water down to 2 pints and strained) though containing only a little over a $\frac{1}{2}$ per cent of nutriment, is an agreeable demulcent in affections of the mucous membranes, in catarrhs of throat and urinary tract and an excellent diluent drink in fevers It may be rendered more pleasant and useful as a fever drink by the addition of sugar and a little of lemon juice and straining If milk is added, lemon juice should not be added Medicated or simple barley-gruel, which is diuretic, is a good diet in simple mucous and chronic diarrhoea and in fistula in ano when there is no fever In puerperal *(Sutika)* diarrhoea, barley-gruel mixed with soup of meat, *masur* or vegetables according to indications is prescribed If a laxative is required, the compound decoction prepared as follows, may be given —Sliced figs and stoned raisins, of each $2\frac{1}{2}$ ounces, bruised liquorice root 4 drachms, water 1 pint, barley water as above, 2 pints, boil down to a quart and strain. For cases of irritation of bladder the demulcent properties of either of the above formulas may be increased by the addition of an ounce of gum arabic to each pint of the liquor As a food for infants brought up by hand, simple barley water and milk, in equal proportions, sweetened with a little refined sugar, has been recommended, care should be taken to stop it if the bowels should become relaxed Dr Pereira says that barley is rather laxative and hence not suited to such as suffer from relaxation of the bowels For general use, country-raised barley is superior to 'pearl', 'pot' and other kinds imported from Europe, because it is fresh *A barley* pudding good for invalids may be made as follows —Add to four tablespoonfuls of Prepared Barley powder sufficient cold milk to form a thin paste, pour on it a quart of boiling milk, then add a little butter, a table-spoonful of powdered lump sugar, sufficient lemon peel to flavour it, and two eggs previously well beaten up, mix well and let the whole bake for

an hour and a half in a slow oven This is very nutritious and easy of digestion it may be rendered more palatable by the addition of a slice or two of lemon The grain, though compared with wheat is poor in gluten, is very nutritious and like wheat contains a large proportion of nitrogen and other nutritive principles and the Greeks trained their athletes on it. Barley as a bread corn for unleavened cakes is used in Scotland The partially germinated and dried grain is the source of malt extract which is more nutritious than the , unmalted barley Malt extract consists chiefly of dextrin and malt sugar (maltose) and contains the ferment diastase which is developed during the malting process and which possesses the power of converting starch into dextrin and sugar, thus assisting in the digestion of starchy or farinaceous foods It is a valuable vehicle for other medicines especially cod-liver oil, with which it forms a palatable combination "Bombay barley is occasionally used in making the ready cooked food called Satuche pith (*Mahrathi*) or barley flour which is made after parching the grain and is made into little dough balls with water and eaten (Bombay Govt. Agri Dept Bulletin) *Jaua* or *Yaur* is used as food by the poorer classes, medicinally it is also used as *Conjee* "Barley grain is a good *feed for* both horses and cattle, either given alone or mixed with gram The straw of even ripe barley is a fairly good fodder when cut up as *'bhusa* but is inferior to that of wheat "—(Bombay Govt Agri Dept Bulletin)

1248 **HOYA VIRIDIFLORA, Roxb**

(N O —Asclepiadaceae)

See Dregea volubilis.

1249. **HUGONIA MYSTAX, Linn**

Is a rambling leafy tomentose climbing shrub belonging to Linaceae (*Tam* —Motirakanni Agure *Tel*—V noapa Kakvire *Mal* —Modera-kanni *Sinh* —Maha getiya *Kon* —

Padavakam) found in Western Peninsula from the Konkan to Travancore and Ceylon *Bruised roots* are employed *externally* in reducing inflammatory tumours and as an antidote to snake-bites In the form of a *powder* it is administered internally as an anthelmintic and febrifuge *Bark of the root* is also employed as an antidote to poison —(Watt).

1250. HUMBOLDTIA VAHLIANA, Wight.

(N.O:—Caesalpiniaceae).

Sans.—Jelavedesa *Tam*—Nirvanchi Bark is used in biliousness, leprosy, ulcers and epilepsy

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1251 HUMULUS LUPULUS, Linn.

(N O·—Urticaceae).

Bitter, aromatic, and astringent, contains essential oil, bitter substance, choline, asparagine

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1252 HUNTERIA·CORYMBOSA, Roxb

(N O·—Apocynaceae).

There is a toxic alkaloid in bark to the *extent* of 0 3%

1253. HURA CREPITANS, Linn.

(N.O —Euphorbiaceae).

Seeds are emetic & purgative There is a toxic substance crepitin

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1254 HYDNOCARPUS ALPINA, Wight.

(N.O:—Flacourtiaceae).

Bom.—Kastel, *Tam.*—Torathi; is a Nilgiri species of Chaulmugra Seeds are smaller than those from other varie-

ties Seeds when cold and hot pressed were found to give proportion of oil as follows —Cold Hot—12 1 Oil had a deep green fluorescence but after treatment with animal charcoal, it was light yellow in colour and possessed the usual smell of chaulmugra oil

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1255 HYDNOCARPUS ANTHELMINTICA, Pierre.

(N O —Flacourtiaceae)

Siamese —Dakrabo (seeds), *Chinese* —Peu t'sas (seeds).

Habitat —This tree is indigenous to Siam, Northern Cochin and Gamboja, also grows extensively all over China.

Remarks —Seeds about 30 to 40 in number are found in pods, which differ from chaulmoogra only in having a stronger testa Seeds were exported to China from Siam under the name of 'dakrabo'. Recently, the native Chinese tree 'ta-feng-tzu' has been identified as Hydnocarpus anthelmintica. There are several other species which have also been recognised as important sources of the oil In the following table, the names of the most important members with their habitat are given —

Description	*Habitat*
Hydnocarpus venenata	Ceylon, Deccan & Burma.
„ castanea ..	Burma
„ anthelmintica	Siam, French Indo-China
„ curtisii	Penang
„ hutchinsonii	Philippine Islands
„ Subfalcata ..	do do
„ woodii	India
„ alpina ..	Nilgiris (India)
Asteriostigma macrocarpa .	Travancore (India)
Onchoba echinata .	Sierra Leone
Carpotrochne brasiliensis ..	South America

Constituents —The specific rotation of the oil from *H. anthelmintica* is 52 5°.

Uses —Seeds are described in Chinese books (1590) as good for leprosy, itch, pityriasis psoriasis, syphilis, lipoma etc.

(Chopra s 'I.D of I" p. 497).

1256 HYDNOCARPUS CASTANEA, Hk f & T.

1257 HYDNOCARPUS OCTANDRA, Thw.

1258 HYDNOCARPUS WIGHTIANA, Blume.

H bnebrians, Wall

(N O —Flacourtiaceae)

Sans—Tuvaraka, Kushtavairi *Eng*—Jangli almond *Pers & Hind*—Chaulmoogra *Deccan*—Jangli badam (seeds) *Bom*—Kowti, Kava *Mah*—Kadu kawata, Kowtee *Tam*—Yetti, Maravetti *Mal*—Niradimuttu *Tel*—Niradi vittulu (seeds) *Sinh*—Makulu, Ratakakuna

Habitat—Grows over gardens and accessible places all over Western Peninsula, Konkan, along the coast range, Malabar, South India and Ceylon

Parts Used—Seeds and oil (Seeds are smaller than those of the Gynocardia odorata and of Taraktogenos kurzii)

Constituents—Seeds contain about 44 p c of the fixed oil, which contains chaulmugric and hydnocarpic acids with a small proportion of palmitic acid both acids are crystalline "Inside the shell is a copious oily albumen, which is white when fresh, but turns to a dark brown colour in the dry seeds, the odour resembles that of chaulmoogra [1] The specific rotation of the oil from H wightiana is 57 7° ' [2]

Action—Alterative, stimulant and parasiticide Seeds are detergent

Uses—Oil is considered as a specific for leprosy and superior to chaulmugra oil derived from the seeds of Gynocardia odorata and Taraktogenos kurzii, and "because the seeds of H wightiana can be readily had quite fresh, whereas the seeds of the latter drugs having been grown in the out of the way places, fresh seeds cannot be got for extraction of the oil

Therefore, the oil from H wightiana is preferred to oils from other varieties Hydnocarpus oil is further considered to be superior on account of its higher rotation value (5.5 degrees higher than chaulmoogra oil)"[3] Dose is 5 minims gradually increased to 30 minims. It is also used in intramuscular or intravenous injection for lenrosy "The best results are obtained by intramuscular injections of the ethyl esters or intravenous injections of the salts—chaulmugric and hydnocarpic acid It results in destruction of the lepra bacilli and the nodules"—(Chakravarthy)

Dr M. C Koman gives in the Madras Report on Indigenous Drugs, an account of even chronic cases of leprosy (in various stages and varieties of the disease—anaesthetic, mixed, tubercular or nodular, ulcerating etc.), considerably benefitted by the administration of this oil *internally* and *subcutaneously* (intramuscular injection of a mixture of 5 droos of the oil with an equal quantity of pythoo's fat, daily increased by one drop until 30 to 40 drops were administered) Some were given also a confection prepared by grinding the kernel of the seeds with cocoanut kernel, ginger and jaggery 'Pounded kernels mixed with 'unguentum simplex' was a preparation official in the Pharmacopoeia of India'[4] Oil was given in 10 drop-doses, an hour before breakfast and the confection in 20 grain-doses in the evening This treatment was invariably preceded by a preliminary purgation by purified powdered croton seeds for 8 to 10 days. In addition to the above treatment, some were twice a week subcutaneous injections of solution of *sodium hydnocarpate* (2 c.c) He concludes his note on the drug thus 'From what I have seen I have no doubt that Hydnocarpus inebrians is a potent drug for ameliorating the loathesome complications of leprosy' Dr Sudhamoy Ghosh, the Research Scientist of Calcutta, states (Indian Journal of Medical Research-Oct. 1920) that the sodium salt of hydnocarpic acid "was found to be most efficacious and convenient for use in the treatment of leprosy". He says that the oils from H. wightiana and H venensta are much cheaper than the oil from Taraktogenos kurzii, whilst they contain a larger percentage of hydnocarpic acid, i.e., about 10 p.c., as compared

1256. HYDNOCARPUS CASTANEA, Hk. f. & T.

1257 HYDNOCARPUS OCTANDRA, Thw.

1258 HYDNOCARPUS WIGHTIANA, Blume.

H hnebrians, Wall

(N O —Flacourtiaceae)

Sans—Tuvaraka, Kushtavairi *Eng*—Jangli almond *Pers & Hind*—Chaulmoogra *Deccan*—Jangli-badam (seeds) *Bom*—Kowti, Kava *Mah*—Kadu-kawata, Kowtee *Tam*—Yetti, Maravetti *Mal*—Niradimuttu *Tel*—Niradi-vittulu (seeds) *Sinh*—Makulu, Ratakakuna

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with 5 5 p c , and therefore the former are more economical to use in place of the oil from T kurzii for leprosy treatment "In the indigenous medicine the oil was orally administered mixed with clarified butter, the resultant mixture having a brownish yellow colour and the consistence of a soft ointment" [5] (Chopra) With lime water the oil is used as a liniment for external application not only to leprous ulcerations but also to rheumatic joints and for scurf on the head With *alkaline ashes* it is applied to abscesses, sore eyes and wounds infected with maggots, also as a stimulant dressing for phegedenic and other foul sores The oil is rubbed in phthisis, on scaly eruptions, on scrofulous nodules, in obstinate skin-diseases such as scabies lichen, prurigo and those of syphilitic origin For itch, the oil beaten up with the kernels and shells of castor seeds is applied Oil is a remedy for *Barsati* in horses Seeds are used externally in the form of *emulsion* or paste mixed with an equal quantity of Jatropha curcus oil, sulphur 2 parts, camphor ½ and lime juice 10 parts "In the Buddhistic literature of ten or more centuries ago mention is made of the great improvement in the condition of the lepers after eating raw chaulmoogra seeds" (Chopra) In the "Makhzan-el-Adwiya', one of the oldest books on Mahomedan Materia Medica, mention is made of the use of the seeds under the name of '*chaulmoogri*' '[6] An infusion of the seeds is used as an *injection* in gonorrhoea, as a vaginal wash in foetid discharges, especially after delivery Standard Sanskrit works, especially Susruta states that the efficacy of chaulmugra oil in leprosy is enhanced by taking with it a decoction of catechu If so, chaulmugric acid may be tried in combination with *catechol*, the active principle of catechu, since pyrogallol which is very much allied to catechol was used by Unna in the form of an oxide with marked success in leprosy . Under the Ayurvedic treatment of leprosy and skin diseases, both chaulmugra oil extracted from the seeds, and cow's urine are prescribed for internal as well as external use As the Scientist J C Ghosh states it is very likely that the acids of the oil coming in contact with the sodium and ammonium salts of urine, some alkaline salts are formed and these salts being soluble they will readily diffuse through the patient's blood, and act as if a

1263 HYDRANGEA ASPERA, Buch

(N. O —Saxifragaceae).

Fresh plant—HCN

1264 HYDRASTIS CANADENSIS

(Eng —Golden Seal).

Constituents —'Berberine' occurs to the extent of nearly 2 5 per cent, along with two other alkaloids known as hydrastine' and 'canadine' (Chopra's "I.D of I" p 296)

1265 HYDROCOTYLE ASIATICA, Linn

(N O —Umbelliferae)

Sans —Brahmi, Manduka-parni, Cheka-parni *Eng* —Indian Penny-wort *Fr* —Bevilacque *Ger* —Asiatischer Wassernabel *Hind* —Khulakudi, Brahma manduki *Bom* —Karinga, Karivana *Kash* —Brahmabuti *Mah* —Karivana, Karinga, Undri *Duk* —Valluri, Brahmamanduki *Ben* —Tholkuri, Brahma-manduki *Guj* —Karbrahmi *Arab* —Artaniyal hindi *Tel* —Saraswathi Aku, Manduka, Brahma-Kuraku, Bokuduchettu *Tam* —Vaellarai, Babassa *Mal* —Kutakam *Can* —Vondelaga *Kon* —Ekpanni *Sinh* —Hin gotu kola *Burm* —Minkhuabin *Malay* —Dawoopungah gah

Habitat —This small weed is common all over India, growing plentifully in moist localities.

Parts Used —The whole plant—leaves, fruits, roots, twigs, seeds, etc Roots are the most active part

Constituents —An oleaginous white crystalline substance *Vellarin* is the active principle of the leaves, resin and some fatty aromatic body, gum. sugar, tannin, albuminous matter, salts—mostly alkaline sulphates Vallarin has the odour and bitter persistent taste of the fresh plant, it is soluble in spirit, ether, caustic ammonia and partially in hydrochloric acid

"Leaves are dried in the shade so that no active principle is lost, powdered and kept in well stoppered bottle'[1]

Action—Alterative, tonic, diuretic and local stimulant, especially of the cutaneous system, and a bitter substitute It has a special influence on the genito-urinary tract, it sets up urinary and ovarian irritation, itching over the whole body It has also an emmenagogue action In large doses it acts as a stupifying narcotic producing headache, giddiness and with some people a tendency to coma 'Internally the powder is alterative and tonic'[2]

Preparations—(1) *Powder* of the leaves, prepared as follows—Leaves after careful separation from the plant are spread on a mat in the shade and dried so that no active principle is lost, by being freely exposed to the air (not to the sun nor heat, as it takes away all its virtues) When thoroughly dried they are finely powdered and kept in well-corked or stoppered bottles *Of this powder the dose is from 5 to 10* grains thrice daily (2) *Plaster* or *poultice* are prepared from the fresh leaves bruised into a paste with cold water (3) *Syrup* prepared from 90 grammes of powder, boiled in a quart of water till reduced to a pint, to which are added 2 lbs. of sugar and which are thoroughly mixed at 31 C till a syrup is formed, dose is 1 drachm gradually increased (4) *Fluid extract* of the fresh plant, dose is 1 to 5 minims gradually increased to 15 minims. (5) *Ointment* (1 part of the liquid extract or of the powder in 8 parts of vaseline or lanoline) (6) *Decoction* of the entire dried plant (1 in 20 of water, "or 1 oz. in a pint) boiled for about 15 minutes is an elegant preparation in doses of 1 to 2 ounces"[3] (7) *Bath* (in skin diseases) decoction prepared by adding 1500 grammes of the fresh plant to a tubful of hot water

sanity etc, enlargement of glands, in abscess and in chronic rheumatism, either as an ointment with vaseline or as a dusting powder its efficacy has been highly valued, and as a stimulant to healthy mucous secretion in infantile diarrhoea and ozoena, and in amenorrhoea it has been successfully employed. Brahmi is one of the recognised drugs used for *Rasayana* (Rejuvenation) purpose Two common forms in which the drug is used are as a *Swarasam* given as it is, and as a prepared *Ghritham* These will improve the colour of the body, youth, memory and give long life.

"*Brahmi Ghritham* and *Brahmi Rasayanam* are extensively used by Ayurvedic physicians and are showing appreciable results These preparations, used with the restrictions of *Rasayana Chikitsa*, will show much better results *Rasayana Chikitsa* is administered in two forms One is *Kuteepravesikam* in which the patient is confined to the central room of a house, not exposing himself outside to the sun, air, etc while the other, *Vathathapika*, the patient is allowed to go about his daily work while undergoing treatment This *Rasayana* treatment in some parts of India is known as *Kayakalpa Chikitsa* The *Kayakalpa Chikitsa*, which was given to Sri Pandit Malaviyaji about two years back by which he had improved his bodily and mental strength, comes under the first variety of *Kuteepravesika Rasayana Chikitsa*, though the drugs used are different So far as the Brahmi is concerned, all the authoritative writers of Ayurveda, viz Charaka, Susruta, Vagbhata, etc, have given it a very important place in *Rasayana* treatment"—(Dr N Krishna Rao, Principal, Government School of Indian Medicine, Madras, in "Hindu" of 11-4-1943)

For *internal* administration, the powder, the *fluid extract* and the *syrup (Brahma Rasayanam)*, are suitable, and for *external* application are employed the *powder*, the *juice*, the *plaster*, the *ointment* and the *bath*. In elephantiasis of the scrotum, legs, etc, and affections of the cellular tissues, over bruises, inflamed and swollen parts, over rheumatic swellings, the ointment or the juice extracted from the plant is an ex-

is useful in hoarseness of phthisis And a pill composed of this drug in 5 parts, Aplotaxis auriculata 4 parts and honey 6 parts, is useful in doses of 3 to 5 grains as a nervine tonic in insanity and hypochondriasis

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1266 HYDROCOTYLE ROTUNDIFOLIA, Roxb

(*Sans*—Manduka parni *Ben*—Gimasaka *Hind*—Khulkhuri *Tam*—Ballarikerai) is a species common in India sometimes substituted in medicine for H Asiatica, from which it may be distinguished by its much smaller fruits

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1267 HYDROLEA ZEYLANICA, Vahl

(N O—Hydrophyllaceae)

(*Sans*—Langali *Ben*—Kasschara Isha-languia *Malay*—Isjiru-vellel *Kon*—Kerili) found throughout India in wet places. Leaves beaten into a pulp and applied as a poultice have cleansing and healing effect on neglected and callous ulcers They apparently possess some antiseptic property

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1268 HYGROPHILA OBOVATA

N. O—Acanthaceae)

(*Hind*—Kouyadori *Ben*—Kaknasa) found in tropical India and the East Indies Leaves are used to reduce oedematous swellings

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1269 HYGROPHILA RINGENS

Is a species found in Malabar where the leaves are used together with salt as a depurative

1270 HYGROPHILA SPINOSA, T. Anders

See—Asteracantha longifolia, Ness.

H longifolia

(N O—Acanthaceae)

Sans—Kolistha, Kokilaksha, Ikshugandha *Hind.*—Gokhula-kanta, Gokshura, Talmakhana-ka pair, Kolsekajhar *Bom*—Talim-khana; Kolsunda *Mah*—Kolsundara, Talimakhana *Punj & Kash.*—(the seeds) Talmakhana, Talimkhana *Guj*—Ekharo, Gokhru *Ben*—Kantakalika, Kuliakhara, Kuliamara *Duk*—Kolsi *Tel*—Neerugobbi, Nirguvi veru *Tam*—Nirumalli *Mal*—Vayalculli Bahel sohulli *Can.*—Kolavalike *Santal*—Gokhula janum *Sinh*—Ikkiri, Katrerika *Burm*—Soopadan *Ger*—Langblattriger Sterndorn

Habitat—Common in moist places on the banks of tanks, ditches, paddy fields, etc, throughout India and Ceylon Seeds and root in the dried state are easily obtainable in the bazaars

Parts Used—The whole plant—seeds, root, leaves and ashes of the plant

Constituents—Roots are found to contain an alkaloidal principle named *Cholesterol* or *Phytosterol*, and as termed by Ghatak and Dutt 'Hygrosterol' But, N L Phalnikar, K. S Nargund & D D Kanga, on a thorough and systematic examination of the seeds, say that they did not find any alkaloid nor Hygrosterol Seeds are glutinous and mucilaginous They contain nitrogen 5 p.c, which is equivalent to 31 p.c of albuminoids, traces of an alkaloid and 21 to 23 p c of a pale yellow fixed oil belonging to the type of semi-drying oils. Oil has a sweet taste like an edible oil and is free from nitrogen and sulphur The solid acids of this oil are myristic, palmitic and stearic acids only Presence of linolic acid has been found in the liquid acids.

N B—For analytical constants and mixed fatty acids of the oil and other details read "Chemical Investigation of the Seeds of Hygrophyla Spinosa" by N.L.P., K.S.N., & D D Kanga in Sept. 1935 issue of "Journal of the University of Bombay"

Action —Root is a cooling bitter, tonic, diuretic, demulcent and refrigerant Seeds are diuretic and Unani physicians consider them aphrodisiac Leaves are demulcent and diuretic Ashes of the plant are diuretic Decoction of root is diuretic.

Action & Uses in Ayurveda and Siddha —Mathura amla-rasa, seetha veeryam, mathura vipaka, diuretic, aphrodisiac, pandu, dropsy, scanty urine, ascites *Seeds* —Premeham, athisaram, heat in the body (Therapeutic Notes)

Action & Uses in Unani —Hot 1°, Dry 1°, *Seeds* —Aphrodisiac, nutritive, *Leaves* diuretic, externally for lumbago and rheumatism (Therapeutic Notes)

Preparations —Decoction of the root and Infusion of the plant, dose —½ to 1½ ounces Dose of seeds—½ to 2 drs Ashes of the plant, dose —½ dr Acetum, dose —½ to 1 ounce

Uses —*Root* is employed in the form of decoction (about 2 ounces of root is boiled in a pint of water, or 1 in 20, for 20 minutes to half an hour in a closed vessel), dose —1 to 2 ounces two or three times daily, in rheumatism, in gravel, gonorrhoea and other diseases of the genito-urinary tract and in hepatic obstruction with dropsy, i e , jaundice and anasarca Dr Gibson & Dr K L Dey recommend the use of root as a valuable diuretic in dropsy *Leaves* and *seeds* are also useful in jaundice and anasarca 'Dr Kanai Lal Dey recommends an *Acetum* made by macerating 2 ounces of freshly dried leaves for 3 days in 10 to 16 ounces of distilled vinegar, then pressing, & straining, which is a very useful preparation given in doses of ½ to 1½ ounces, or 1 to 3 tablespoonfuls thrice daily"—(Chopra's "I D of ' p 567) An *infusion* of the leaves (1 in 10) macerated for 3 days and strained is also useful *Ashes of the plant* are also used in dropsy and gravel Tincture of the whole plant (1 in 3 of alcohol) in doses of 20 to 30 minims, three times daily was found beneficial in urinary affections, particularly dysuria and painful micturition Seeds are given by Hakims with 'sugar, milk or wine in doses of one to three dirhems" for impotence, gonorrhoea and spermatorrhoea Combined with Tribulus terrestris and Asparagus adsendens, the *seeds* are given in *powder*, with cow's

milk and sugar for general debility A *confection* of the seeds containing a large number of aphrodisiac, demulcent, nutritious and aromatic stimulant substances has been in use for impotence, seminal and other debilities For asthmatic complaints a powder of the *Talamkhana* seeds is recommended to be given in a mixture of honey and ghee For diarrhoea the seeds ground into a *paste* and given in buttermilk or whey prove very beneficial Following preparation has been recommended for leucorrhoea in AKSIR-UL-IMRAZ—Take of *Talamkhana* (seeds), *Kamarkas*, *Bijabanda*, Gum of Bombax Malabaricum, Nardostachys jatamansi, Pistachia terebinthes and Poppy seeds in equal parts, and ten *mashas* (2 drachms) each of Curculigo orchioides and Pitch of Shorea robusta and one tuber of *Salab misri*, pound and make a powder, dose is 5 to 9 *mashes* (1 to 1½ drachms), with cow's milk

Hygrophila terrestris—See Tribulus terrestris

1271. HYMENODICTYON EXCELSUM, Wall.

(N. O —Rubiaceae).

Hind —Bhaulan, *Bom* —Kala kadu, *Tam.*—Sagapu Action —Astringent Contains a toxic alkaloid, hymenodictine bitter substance aesculin

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1272. HYOSCYAMUS MUTICUS, Linn

(N O —Solanaceae) or H Insanus.

Found in Afghanistan, West Punjab, Sind and Baluchistan, where it is known by the name of *Kohibung* or Mountain hemp It is a powerful poison. It is smoked in small quantities by Faquirs and used also for criminal purposes. *Chief* symptoms produced by it are dryness and constriction of the throat and furious delirium The alkaloid in this is chiefly, if not entirely, hyoscyamine, which possesses mydriatic properties and which can be easily isolated.

1273. HYOSCYAMUS NIGER, Linn.

H. aureus; H reticulatus.

(N. O.—Solanaceae).

Sans—Parasikava, Yavani *Eng*—Henbane *Fr*—Jusquiame noire *Gr*—Afiyum *Hind.*—Khurasani-ajvayan; Ajwaina-kurasam *Ben & Guj*—Korasani-ajowan *Bom*—Khorasani-owa. *Hind. & Ben*—Buzrool *Tel*—Kurasani-yamani *Tam*—Kurasani-yomam (seeds) *Arab*—Bazri-ula banja *Kash*—Bagarbhang, Iskiras *Moor.*—Katfit *Syria*—Ajmalus

Habitat—Grows wild throughout the Himalayan range at altitudes of 8,000 to 11,000 feet, and in Kashmir H. reticulatus found in Baluchistan and Khorasan, is with black seeds and purple flowers H albus has white seeds, this is preferred by medical men Several species of hyoscyamus grow in India Three species have thus far been recognised H muticus grows in large patches along the river banks in the west of the Punjab and Sind

Parts Used.—Dried and the fresh leaves, flowering tops, and flowers with the branches

Constituents—Leaves contain hyoscyamine, hyoscine, scopolamine, hyoscipirin, cholin, fatty oil, mucilage, albumen and potassium nitrate 2 p c Seeds contain hyoscyamine, a fixed or fatty oil 25 p c, an empyreumatic oil (obtained by destructive distillation) and ash 4 to 5 p c Hyoscyamine is isomeric with atropine, it may be split up into hyoscine and hyoscinic acid Hyoscine is a volatile oily liquid about 5 times more powerful therapeutically than hyoscyamine "The alkaloidal content of the plants cultivated recently in the Government Nursery at Saharanpur and by the Kashmir State Authorities, has also increased (though the alkaloidal content of plants naturally grown in Kashmir, was lower than the standard laid down in the B.P, as samples of Kashmir analysed at the Calcutta School of Tropical Medicine & Hygiene had showed 0 03 percent of the total alkaloids as compared with 0 065 or more occurring in the specimen used in

the B P) and it is reported that it comes up to the standard of the imported variety used in the B.P " (Chopra's 'I.D of I " p 184)

Action —Seeds are intoxicating, narcotic, anodyne, digestive, astringent and anthelmintic Leaves and Hyoscyamine are sedative, anodyne, antispasmodic, stimulant and mydriatic in effect Their effect as deliriant are milder than those of belladona, but greater as hypnotic, and more reliable and rapid, and preferable to morphia and chloral Laxative, carminative and sedative

Action & Uses in Ayurveda & Siddha —Katu tikta rasam, ushna veeryam, vata kapha haram, pachanam, ruchyam, grahi, medhakaram, improves agni, soolam, prasava grahani (grahani after childbirth) (Therapeutic Notes)

Action & Uses in Unani —Cold and Dry 3°, in coughs due to balgham, checks nuzla, haemoptysis, hypnotic, sedative, dries the ruthoobath (Therapeutic Notes)

Preparations —Powder of the leaves, dose —5 to 10 grains, Fresh juice expressed and preserved, dose is from ½ to 1 drachm, Tincture of the dried herb, dose ½ to 1 drachm, Extract of the fresh plant (the most common form of administration), the dose is from 1 to 3 grains, Hyoscine and Hyoscyamine, the dose is from 1/200 to 1/100 grain (hypodermically) There are also cataplasms, plasters and oil of hyoscyamus intended for external applications In over-doses, hyoscyamus is a narcotic poison, producing delirium, coma and death, and its operation is generally very rapid

Uses Of cultivated-henbanes the second year's growth of the biennial plant has usually been preferred Hyoscyamus is largely prescribed in mental and maniacal excitement, epileptic mania, chronic dementia with insomnia, paralysis agitans convulsions, neuralgia, hypochondriasis functional palpitations, spasmodic cough, asthma hiccup laryngismus, in urinary affections as irritation of the kidneys, uterus and bladder, tetanus, locomotar ataxy, mercurial palsy and hysteria It has a peculiarly sedative effect particularly beneficial in irritable affections of the lungs, bowels, and genito-

urinary organs such as cystitis etc. "Tinctures and extracts are prepared from the Indian grown leaves of hyoscyamus by Indian pharmaceutical manufacturers."—(Chopra's "I.D. of I." pp. 184 & 185). A *paste of the leaves* with flour is made into small *cakes* which when dry retain their medicinal properties for sometime. A *poultice* of the juice with barley flour is applied to relieve pain of inflammatory swellings. "Seeds of hyoscyamus have been used by Hakims, for a long time, though rarely by Kavirajas"—(Chopra's "I D. of I." p 183) A *paste* of the seeds in wine or brandy is applied to gouty enlargements, inflamed breasts and swollen testicles. A powder made of ½ drachm of henbane seeds and 1 drachm of poppy seeds is given with honey and water in coughs, asthma, gout and hiccup A mixture of the powdered seeds with pitch is used for stuffing the hollows of painful teeth; it is used also as a *pessary* in painful affections of the uterus. A *paste* made of *Makangini*, 1 *Buch*, henbane seeds, *KHULANJAN* Alpinia galanga and long pepper in equal parts, and mixed with honey, is recommended to be given for laryngitis in drachm doses twice daily—*(Haj-ul-Gurba)*. Seeds when added to cathartics prevent griping. As a stomachic they are given with carminatives and aromatics in worm complaints, colic, and dyspepsia

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1274. HYOSCYAMUS, PUSILUS, Linn.

1275. HYOSCYAMUS RETICULATUS, Linn.

There is an alkaloid in this.

1276. HYPECOUM PROCUMBENS, Linn.

(N. O:—Fumariaceae).

Uses similar to Fumaria officinalis.

1277. HYPERANTHERA MORINGA

See Moringa pterygosperma.

1278. HYPERICUM PATULUM, Thumb.

(N. O:—Hypericaceae or Hypericineae).

Hind.—Thumbhul. Seeds are aromatic and stimulant.

1279. HYPERICUM PERFORATUM, Linn.

(N. O:—Hypericaceae or Hypericineae?)

(*Eng*—Hypericon. *Pers.*—Hyufarikum. *Arab.*—Dadi; Jau-l-jadu. *Hind & Punj.*—Bassant; Balsunt; Dendlu) growing on temperate Western Himalayas from Kumaon to Kashmir. Leaves are used as a vermifuge. The herb is astringent, aromatic, "detursive, resolutive, anthelmintic, diuretic, emmenagogue, purgative and externally excitant".—(Watt). Flowers contain a red resin (hypericum red) volatile essential oil and a red colouring matter. The oil in which the shoots or flowering tops have been steeped is sold as "Oleum hyperial". Leaves are used to cure diarrhoea, piles, prolapsus of uterus and of anus

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1280. HYPOXIS BREVIFOLIA & HYPOXIS ORCHIOIDES, Kurz.

See Curculigo orchioides.

1281. HYSSOPUS OFFICINALIS, Linn.

(N. O:—Labiatae).

(*Arab & Pers*—Zufab-yabis. *Hind*—Zupha) is met with on the Western Himalayas from Kashmir to Kumaon. Constituents—Glucoside and essential oil. Action.—Leaves

are stimulant, stomachic, expectorant, diaphoretic, emmenagogue and carminative, Uses —*Infusion* or *Syrup* of leaves is useful in hysteria and colic, coughs, asthma, sore-throat and chronic bronchitis, also in uterine affections as amenorrhoea and indurations of the liver and spleen *Sap* of the leaves made into a *syrup* with sugar and honey is used as a vermifuge for round worms A compound syrup of this drug together with several carminative, anodyne and demulcent substances is given in dyspepsia, flatulence, asthma, chronic bronchitis, amenorrhoea, rheumatism and influenza

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1282. HYSSOPUS PARVIFLORA, Benth.

Hind—Zupha

1283 ICHNOCARPUS FRUTESCENS.

Br. or Apocymene frutescens, or Echiles frutescens.

(*Eng.*—Black creeper *Sans*—Sariva *Hind.*—Dudhilata. *Ben. & Bom*—Shamalata, Dudhi *Burm*—Tansapal *Duk*—Krishna sariva *Mah & Kon.*—Kantebhouri *Mal*—Palvalli. *Tam*—Illu-katte *Tel.*—Nellatiga *Can.*—Kareambu, Gouriballi) (N O —Apocynaceae), is a climbing plant found throughout India Root is alterative tonic, diuretic and diaphoretic like Indian Sarsaparilla It contains an acid allied to Cinchotannic acid, a red colouring matter, resin, a small quantity of Coumarin and a Caoutchouc-like substance No alkaloid is detected *Stalk* and *leaves* in decoction (1 in 10) is used like country Sarsaparilla in doses of 1 to 4 drachms in the treatment of skin eruptions, useful also in simple fever. A decoction of the roots of colocynth, *Anantamul, Sariva* and Hedyotis biflora prepared in the usual way is administered with the addition of powdered long pepper and *bdellium* in chronic skin diseases, syphilis, elephantiasis, loss of sensation and hemiplegia (Sharangadhara). Uses are similar to Hemidesmus Indica

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1284. ILEX AQUIFOLIUM, Linn.

(N O —Ilicineae).

Leaves are emollient and diuretic Berries are purgative, emetic and diuretic Contains a glucoside and a bitter substance

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1285 ILEX PARAGUAYENSIS, St Hilaire.

(N. O—Ilicineae).

Is a purgative

1286 ILLICIUM GRIFFITHII

(N. O —Magnoliaceae).

Hk f & T

1287. ILLICIUM RELIGIOSUM, S & L.

(N. O—Magnoliaceae).

Hind —Anasphal *Bom.*—Badian *Tam* —Anashuppu There is an essential oil.

1288 ILLICIUM VERUM, Hook.

(N O —Magnoliaceae).

Eng —Star Anise *Hind* —Anasphal *Bom* —Badian *Tel.*—Anasapurvem *Tam* —Anasuppan *Arab* —Raziyanje-khatai *Pers* —Badian I-Khatai

Habitat —Indigenous to Cochin China (Southern China and (Tongking) from where the fruit is imported Star Anise of the particular species which yields the oil of commerce is not available in India N B —A variety known as Illicium griffithii is found but this is useless from the point of view of oil production

Constituents—Fruit contains a volatile essential oil (obtained by boiling it with water) 4 to 5 p c, sugar, a bitter principle and tannin in various proportions

Action—Aromatic, carminative, stomachic, stimulant, diuretic and expectorant

Uses—It is best given in the form of *infusion* It is specially suitable for children in doses of ½ to 1 drachm as carminative With tea it is given in flatulence and spasmodic affections of the bowels It is also used as an adjunct to cough mixture and as a spice with food• *Oil* is applied to the abdomen of children to relieve colicy pains, to the joints in rheumatism, and around the ear in otalgia or pain in the ear Dose of the oil for internal administration is ½ to 3 drops Following decoction is recommended for hemiplegia and facial paralysis in ILAJ-UL-GURBA—Take of *Badian* 6 *mashas* (70 grains), *Baikh Badian (root)* 1 tola, seeds of Soya and *Ajwan-ajmodha* each 3 *mashas*, Nardostachys jatamansi 4 *mashas*, Chicory root 1 tola, *Gulkhand* 2 tolas Make a decoction in 6 *chataks* of water

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1289 ILLYSANTHES PARVIFLORA

(N. O—Scrophularineae)

Abounds in paddy fields of South India

1290 IMPATIENS BALSAMINA, Linn

(N O—Geraniaceae).

Is an annual herb *Hind*—Gul-mendi *Punj*—Bontil Ben—Dupati *Bom*—Terada

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1291. IMPATIENS CHINENSIS, Linn

(Tam.—Pylee) is another species used in burns and internally in gonorrhoea

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1292. IMPATIENS ROYLEI, Walp.

1293. INDIGOFERA ANGUSTIFOLIA

(*Sans*—Nilini *Ben.*—Nila *Fr*—Indigotier a feuilles etroites, is a straight-leaved species of Papilionaceae found in Bengal yielding Indigo Its *root* is used as a bitter tonic and febrifuge

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1294. INDIGOFERA ANIL, Linn.

(N. O:—Papilionaceae).

Sans.—Visha-shodhani *Hind*—Vilaiti nil *Tam.*—Shimaiya-viri

1295. INDIGOFERA ARGENTEA, Linn.

or I. articulata.

(*Sans*—Kalak-litaka *Hind*—Surmamil *Tam.*—Kattaveri *Fr*—Indigotier argente *Ger*—Agyptische Indigopflanze), is a white coloured species found in Egypt, Arabia, Bengal and East Indies *Roots* and *leaves* are used as bitter tonic and in calculous affections In Egypt the seeds are used as vermifuge (anthelmintic).

1296. INDIGOFERA ASPALATHOIDES, Vahl.

(*Tam*—Shiva-narvaymbu; Shivanarvembu; *Can*—Shivamalli-gida, Neelamalligida *Mal.*—Manali, *Sans*—Shivanil. *Punj*—Nil), is another species commonly met with in South India, mostly growing on waste and barren grounds Action (Ayurveda & Siddha)—Bitter, *ushna-veeryam*, antiseptic, disinfectant Uses—*Leaves, flowers* and *tender shoots* are employed in decoction as a cooling and demulcent drink and in elephantiasis, leprosy and cancer, and as an alterative in secondary syphilis etc. *Root* Is chewed as a remedy for

toothache and aphthae The *whole plant* rubber with butter is applied to reduce oedematous tumours A preparation is made from the ashes of the burnt plant which is used to clean dandruff from the hair *Leaves* are applied to abscesses *Oil* got from the root is used to anoint the head in erysipelos. This is one of the important ingredients of a specific oil "considered equal to mercury, for syphilitis and other skin diseases used by Siddha physicians" (Therapeutic Notes)

1297 INDIGOFERA CAERULEA, Roxb

(*Sans*—Nilika *Fr* Indigotier blue) is a species found in Bengal yielding a light-blue indigo in large quantity

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1298 INDIGOFERA CARDIFOLIA

(Gwalior—Nilabari)

(N O—Papilionaceae)

Found in Gwalior State of India (Indigenous Plants of Gwalior State)

1299 INDIGOFERA ENNEAPHYLLA, Linn

(*Sans*—Vasuka, *Fr*—Indigotier a neuf feuilles, *Ger*—Neunblattrige Indigop flange *Mah*—Bhuiguli *Tel*—Cheruragaddhamu *Tam*—Adambedi, Cheppu neringie, Seruppu nerinji *Mal*—Cheru pullate *Can*—Kennegilu) a species distinguished by nine leaves, is found throughout the plains of India Its *juice* is given as an alterative in old venereal affections It is also antiscorbutic, and the *infusion* of the plant is given as an alterative and diuretic in fevers *Pills* made of the *leaves* are useful in 5 grain-doses in cases of marasmus

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1300 INDIGOFERA FRUTESCENS

Is another species found in Bengal and East Indies. Its decoction is given in calculus

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1301 INDIGOFERA GALEGOIDES, DC

Leaves contain HCN glucoside

1302 INDIGOFERA GLABRA, Linn

(Fr Indigotier glabre)

Is a smooth and hairless species found in Bengal where the *root* is used for calculous affections, *leaves* as a bitter tonic and febrifuge and externally as an emollient application

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1303 INDIGOFERA GLANDULOSA, Willd

(*Bom*—Vekhariyo, *Dohad*—Zinjru *Indian languages*—Barbada. *Tam*—Barapatam), an herbaceous annual plant grown in the Bombay Presidency Action—Seeds are nutrient and tonic. Uses—In the green condition before flowering this is a good fodder readily eaten by cattle both when presented by itself and when mixed with grasses. (Chopra's "I.D of I" p 498, and Bombay Government Agri Dept Bulletin)

1304 INDIGOFERA HIRSUTA

(Fr—Indigotier velu)

Is found in Bengal and East Indies, distinguished by a hairy coating Its decoction is given in cerebral disorders.

1305. INDIGOFERA INDICA.

Gaertn. Grows wild in Southern India

1306. INDIGOFERA LINIFOLIA, Retz

(*Hind*—*Punj*—Torki *Surat*—Damu, Amelio Indian Languages—Pandarphalli *Ben & Bom*—Bhangra), is an herbaneous plant annually grown in the Bombay Presidency, and used in febrile eruptions and amenorrhoea Seeds of this and other species of wild indigo are highly nutritious This plant is a fair fodder, as the bullocks do not relish it well (Chopra's "I.D of 1" p 498, and Bombay Govt Agri Dept. Bulletin)

1307 INDIGOFERA PAUCIFOLIA, Delile

(Tam—Kuttukkar-chammatli)

A wild species with few leaves is found in the plains in Sind and the upper Gangetic basin Action—Antisyphilitic and antiphlogistic It is used in decoction (1 in 10) as an antidote to poisons dose is 1 to 2 ozs, *root* boiled in milk is used as a purgative and *stem* in decoction, is used to foment the joints in rheumatism and periostitis and also given internally It is used as a gargle in mercurial salivation

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1308 INDIGOFERA PULCHELLA, Roxb

(*Hind*—Sakena *Bom*—Baoli *Santal*—Libi-bichi, Daichuter *Mal*—Baroli *Kon & Mahableshwar*—Chimnati, Nirda) is a species found throughout the Himalayan tract and the hills of India A decoction of the root is given by Santals for cough and a powder of the same is applied externally for pains in the chest

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1309 INDIGOFERA TINCTORIA, Linn

I Indica, I anil, I Sumatrana, I arrecta, etc.

(N O—Papilionaceae)

Sans—Neela, Neelinee, Nilika *Eng*—True Indigo, Dye's Indigo *Fr*—Indigotier des teinturiers *Ger*—Farbe-Indigop-

flanze *Hind Snd & Ben*—Nil *Guj*—Gali *Bom.*—Nila *Mah*—Nili *Tel Kon & Can*—Neeli *Mal*—Amari, Avari *Tam*—Neelum, Nilam, Aviri, Avari *Tel*—Aviri, Neelichettu, Neli *Pers*—Daorokhat-e nila *Arab*—Nilaja, Nabatuna milaja

Habitat—This small erect shrub is cultivated extensively in Northern India, especially in Bengal, Bihar, Orissa, Sind, Oudh, Southern India, Madras and Bombay

Parts Used—Plant and Expressed juice—Indigo

Constituents—Indican (a glucoside) the oxidized form of *Luc-indigo* or Indigo-white, the produce obtained from the fermentation of the fresh green plant The oxidized product—chiefly indigotin or Indigo-blue which settles to the bottom is collected, washed and pressed into cakes of 3 to 3½ inches square and finally dried The yield of indigo is as much as 50 p c Indigotin is insoluble in water, alcohol and dilute acids, it is soluble in strong sulphuric acid forming sulphate of indigo called "Extract of Indigo" Impurities present are water, mineral matter, indigo-red and other substances.

Action—The plant is stimulant, alterative, deobstruent and purgative Indigo is antiseotic and astringent

Action & Uses in Ayurveda and Siddha—Tikta rasam, katu rasam ushna veeryam, katu vipaka, anthelmintic, antiperiodic *Root*—Antipoison, giddiness, colic, gonorrhoea *Leaves*—Jaundice, produces complexion, vatha fever, mantham, gout (Therapeutic Notes)

Action & Uses in Unani—Hot 1°, Dry 2° Haemostatic, sedative, piles, healer of ulcers, diuretic, dropsy (Therapeutic Notes)

Uses—*Juice of the Leaves* and *indigo in powder* are used mixed with honey in enlargement of the liver and spleen, epilepsy and other nervous affections. In hydrophobia two ounces of fresh juice with an equal quantity of milk is given in the morning for 3 days, as a prophylactic, it might produce slight headache and nothing beyond it. In larger doses it causes purging Juice is also applied to the part bitten or the

leaves bruised are applied as poultice Juice is also given in asthma, whooping cough, palpitation of the heart, in some lung diseases and kidney complaints as in dropsy *Decoction of the* root is given in calculus, *root* boiled in milk and *stem* in decoc*tion* are useful both internally and externally like those of I paucifolia Juice of the young branches mixed with honey is a useful application for aphthae of the mouth in children An *infusion of the root* is given as an antidote in cases of poisoning by arsenic—(Watt) *Externally*, leaves crushed are used as stimulant poultice or *plaster* in various skin affections, to haemorrhoids etc, and to cleanse and heal wounds and ulcers Powdered indigo also is used for sprinkling on ulcers Indigo is applied to reduce swellings in the body, to the bites and stings of venomous insects (scorpion etc) and reptiles, and also as soothing application to burns and scalds It is applied mixed with castor oil to the navel of children to promote the action of the bowels and mixed with warm water to the pubes and hypogastrium as it stimulates bladder and therefore useful in cases of retention of urine

N.B —Tests The test for good indigo is its lightness and its bronze appearance when scratched, it should also float when immersed in water Indigo is often adulterated with sand and ashes It is of a deep-blue colour approaching to violet and has neither taste nor smell, and is sold in solid cubes—(Manual of Jail Industries, Madras 1931)

1310 INDIGOFERA TRIFOLIATA, Linn

Guj & Kon—Vekhario *Belgaum*—Malmandi) is a species found in Gujarat and Ceylon *Seeds* are alterative, astringent, aphrodisiac, tonic and restorative They are mucilaginous A *confection* is used in doses of ½ to 2 drachms in cases of rheumatism, lumbago, general debility after delivery, seminal weakness and leucorrhoea A *decoction* of the seeds (1 in 10) is useful for the relief of pain inthe back and waist, dose is from ½ to 1½ ounces When green, this plant is a good fodder for cattle

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1311 INDIGOFERA TRITA, Linn

(*Bom*—Vekhario) is a species growing wildly in Southern India

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1312 INULA HELENIUM, Linn

(N O —Compositae)

Pers & Arab—Rasan Constituents—Essential oil, bitter principle and benzoic acid Used in chronic bronchitis and rheumatism (Chopra's "I D of I p 498)

1313 INULA RACEMOSA, Hook

See I helenium (Arab—Rasan), is another species used in veterinary medicine as tonic and stomachic Other uses similar to those of I helenium (Chopra's 'I D of I p 498)

1314 INULA ROYLEANA, DC

This drug is used to adulterate Saussurea lappa (Chopra's "I D of I" p 498)

1315 IONIDIUM SUFFRUTICOSUM, Ging

(N O —Violaceae)—

See Viola suffroticosa *Sans*—Charati *Hind*—Ratanpurus *Ben*—Nun bora *Tam.*—Orilaiththamarai Action—Tonic, diuretic and demulcent Constituents—There is an alkaloid Used in scorpion sting (Chopra's 'I.D of I" p 498)

1316 IPECACUANHA—

See—Psychotria ipecacuanha.

1317. IPHIGENIA INDICA, A Gray.

(N.O:—Liliaceae)

Is a bulbous plant growing in dry sandy places

1318. IPOMOEA AQUATICA, Forsk. or I. reptans.

(N.O:—Convolvulaceae).

Sans—Kalambi, *Ben*—Kalmi-sak; *Mah.*—Nalichi bhaji; Tam—Sarkareivalli) is commonly used as a vegetable and as an antidote to opium and arsenical poisoning. Action:—Emetic and purgative

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1319. IPOMOEA BATATAS, Poir of I. edulis.

(N.O:—Convolvulaceae).

Eng.—Sweet potato *Fr* Truffle douce; potate de Malga. *Ger*—Batate, Bataten Trichterwinde. *Hind*—Ratalu; Sakharkanil, Mitha-alu *Punj*—Sakhar-kund, *Sind*—Lahori-gajar. *Mah*—Ratali, Ratalu *Tel. & Can.*—Genasu. *Tam*—Sak. keri-velleri-kelangu, Sakkaraivallik-kizhangu. *Guj*—Sakaria. *Ben*—Ranga-alu

Habitat—Sweet potatoes are the thickened roots of Ipomoea batatas of Bindweed family and indigenous to India

Constituents—Sweet potatoes contain a good deal of starch and (sugar saccharine) "The fresh vegetable (sweet potato) contains 68 00 p c. moisture; and the completely dried material contains Ether extract 4 50 p c, Albuminoids 21 45 p c (cont'g Nitrogen 3 43 p c); soluble carbohydrates 69 18 p c, woody fibre 1.75 p c, and Ash 3.12 p c. (cont'g 0 12 p.c. sand) respectively." (Bombay Govt Agri· Dept. Bulletin).

Action—As it is very fibrous it is apt to ferment easily and provoke flatulence, but it is aperient.

Uses—Out of the two main varieties, white and red or purple, the red variety is more nutritious A third variety called 'Cluster Sweet Potato" is from Ceylon. It is made into

nlterative in cutaneous diseases Dose of the sun dried and powdered seed is from 20 to 30 grains.

1325 IPOMOEA DASYSPERMA, Jacq.

Is another species, seeds of which are used in hydrophobia

1326. IPOMOEA DIGITATA, Linn.

or I paniculata.

(N O —Convolvulaceae).

Sans—Vidari, Ksheera-kanda, Vrashavalli, Bhumikushmanda, Payasvini *Hind.*—Bilai-khand, Bidarikand *Ben*—Bhumi-kumra, Bhuikumra, Bilai-kand *Mah. Guj.* & *Kon*—Bhui-kohala Pattana *Tel*—Matta-paltiga, Nelagummudu *Tam*—Phalmodika, Nelli-kumbala *Mal.*—Mothalkanta, Palmodikka *Can*—Bujagumbala, Nela-kumbala. *Gualior.*—Bilaikad

Habitat—Indigenous to the hotter parts of India

Constituents—Tuberous root contains a resin (similar to Jalap resin), sugar, and principally starch

Action—Roots are tonic, alterative, aphrodisiac, demulcent, lactagogue, mucilaginous, and have a bitter taste

Uses—*Root* enters into the composition of several diuretic and demulcent mixtures *Powdered root-stalk* is given with wine to women to increase the secretion of milk, to children in case of emaciation, debility and want of digestive power, also in spleen and liver enlargement as a cholagogue *Powdered sun-dried root* boiled in sugar and butter and administered, has the effect of promoting obesity, moderating menstrual discharge *Powdered root* acts as mild purgative, also as cholagogue, useful in liver complaints. A confection made

of the root and equal parts of wheat flour and barley with milk, ghee, sugar and honey is in general use as a restorative to emaciated and debilitated children In spermatorrhoea the juice of *the fresh root* is given with cumin and sugar and as a lactagogue, it is combined with coriander and fenugreek seeds Powder of the root macerated in its own juice and given with honey and ghee is recommended for use as an aphrodisiac — (Susruta) A compound decoction called *Vidarigandhadigana Quath*, consisting of Ipomoea digilata, Desmodium gangeticum, Tribulus terrestris, Asparagus racemosus, Hemidesmus indicus, Boerhavia diffusa and Solanum Indicum is given in 1 to 2 ounce doses twice daily in fevers, coughs and bronchitis and found very beneficial From the powder of the dried root, previously macerated 14 times in its own juice, a *paushtic* (aphrodisiac) is made by frying it in butter with equal parts of almonds, quince seeds, cloves, cardamoms, nutmegs, *satavari, gokhru*, seed of Mucuna pruriens, *musli*, etc, and making the whole into a conserve with sugar This conserve is taken dissolved in milk in doses of ½ tola or more The drug is also used in scorpion stings

N B —In Bombay and the Punjab roots are sold as 'gard' and are much in demand —(Chopra's "I.D of I" p 582)

1327 IPOMOEA DISSECTA, Willd HCN in sap

1328 IPOMOEA ERIOCARPA, Br.

(*Sans*—Nakhari *Tam.*—Pulichevidu) Oil is boiled with the plant and used to cure rheumatism, headache, epilepsy, leprosy and ulcers

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1329 OPOMOEA FASTIGATA,

Sweet contains glucoside ipomoein.

1330. IMPOMOEA HEDERACEAE, Jacq.

I. nil, Convolvulus nil.

(N O —Convolvulaceae).

Eng—Pharbitis Seeds *Hind. Ben. Bom Guj.* & *Mah*—(seeds) Kala-dana, Mirchai *Arab.*—Hab-un-nil. *Pers.*—Tukhm-i-nil *Tel.*—Kolli vittulu *Tam*—Kodikakkatan virai, Jirkivirai *Kon* & *Mah*—Nil-pushpi *Can*—Gouribija *Kash*—Iskpecha *U.P.*—Banura *Punj*—Bildi

Habitat—Found wild in some parts, and cultivated in several places in India

Parts Used—Dried seeds

Constituents—A thick oil 14 4 p c, mucilage, glucoside, albuminous matter, tannin, and Pharbitisin 8 p c, an active resinous principle closely resembling the convolvulin of Jalap

Action—Cathartic and anthelmintic The drug is described in Makhzan-el-Adwiya as a drastic purgative and attenuant relieving the system of *pitta* and *kafa* and acting as an anthelmintic As cathartic, the seeds are closely allied to official Jalap, and are used as a substitute

Preparations—Extract, tincture, compound powder and resin

Uses—In constipation, *seeds dried and powdered* are given as purgative in doses of from half to one drachm, either alone or as *compound powder*, combined with an equal part of cream of tartar and 5 to 8 grains of powdered ginger, or a powder containing 45 grains of *Kaladara*, 5 grains of black pepper and 10 grains of ginger is an efficient purgative producing 3 or 4 watery motions A powder containing 20 grains of *Kaladana*, 5 grains of black-pepper and 15 grains of *Atis*, all finely powdered, is a useful dose for feverish attacks, it may be given twice daily Dose of the Extract of *Kaladana* or of the resin is from 5 to 8 grains, in the form of *pill* Dose of the *tincture* (1 in 8) is from 2 to 3 drachms It is a good adjunct to purgative draughts Resinous principle is used as a substitute for Jalap

1331. IPOMOEA MURICATA, I. purga.

(*Hind*—& *Ben*—Mirchai, *Guj*—Garayo, *Bom*—Garıya; *Pers*—Tukhm-i-nil (Seed of Nile or purple.flower). *Kon*—Ravan-pudya, Bareekbhauri), is met with in the Himalayan region from Kangra to Sikkim and on Deccan Hills, also in Persia This was recently cultivated in the Ootacamund gardens, and it was found to be as rich in the purgative resins as the best kinds imported from South America—(Dymock). In Konkan this is known as Lesser-Bhuri (i e, Bareekbhauri) to differentiate it from big bhauri (Porana racemosa). "Juice of the fresh plant is instantly lethal to insects, but even the fresh plant, its dried powder and smoke of the coils made thereof are reliable insectiphobice An average sized coil like the similar foreign one can keep a 15 ft x 12 ft room from mosquitoes and sandflies Thus the mosquitoes could be kept away when and where the curtain cannot be used".—(Dr G.D Apte, M B B S, Poona, in "Health" Monthly, Dec 1944 of of Madras) *Seeds* are used as a substitute for those of I. hederacea *Juice* of the plant is used to destroy bugs (Dymock) Ipomoea obscura, Kir (*Tam.*—Sirutali) Leaves are used in aphthous affections

applied as *vesicans* to painful joints in rheumatism and to the abdomen in colic

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1333 IPOMOEA PESTIGRIDIS, Linn

(*Ben* —Langulilata *Tam* —Mekamuaduga) The drug is an antidote to dog-bites, and is used in boils and carbuncle

(*Sans* & *Hind* —Kamalata *Eng* —Cupid's Flower

1334 IPOMOEA QUAMOCLIT, Linn

Sans & *Hind* —Kamalata — *Eng* —Cupid's Flower, *Mah* —Sitache-kes *Ben* —Tarulata *Tam* —Vishnu krant) It is considered to have cooling properties *Pounded leaves* are applied to bleeding piles and a tola of their *juice* with an equal quantity of ghee is administered twice a day internally Crushed leaves are also applied as *lep* (plaster) to carbuncles

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1335 IPOMOEA RENIFORMIS, Chois

(*Sans* —Mooshakarni *Hind* —Mushakani *Mah Kon* & *Bom* —Underkani *Ben* —Indurkani *Tam* —Paerattae-kirae Perretay-Kiray *Can* —Vallaharuhi) is found on the Nilgiris A decoction *of the plant* (1 in 20) is said to act as deobstruent, diuretic and alterative, useful in rheumatism neuralgia, headache, etc , dose is from ½ to 1 ounce *Leaf-juice* is also given for migraine, headache etc , a *sherbet* of it is a nice remedy and it acts as purgative *Leaf-juice* is also given in rat bites and snake-bites in doses of 1 to 2 tolas It is also locally applied to the parts bitten It is used also for dropping in to the ear in cases of ulcers, abscesses etc In epilepsy, powder of its leaves is snuffed up *Paste of the root* or its *powder* mixed with Java flour and water is applied to swellings

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1336 IPOMOEA SEPIARIA, Koen

Is found throughout India It has a reputation as an antidote to arsenic, *juice* which is strongly acid is to be used 'ad purificatinem Corporis"—(Dymock)

1337 IPOMOEA SINNATA or I Sinuata?

Ort, is a native of tropical America introduced in the U.P It is the "Noyean Plant", contains HCN in sap *Leaves* have an odour of oil of bitter almonds and are used in the preparation of the French Liquer known by that name

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1338 IPOMOEA TRIDENTATA, Roth

(Sans—Prasarini *Tam.*—Mudiyakunthal), used in rheumatism, piles and urinary disorders Action —tonic and laxative

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1339 IPOMOEA TURPETHUM, Br

(N O —Convolvulaceae).

Sans—Kalaparni, Trivrit, Triputa, Nandi, Kalameshi *Eng*—Turpeth root, Indian Jalap *Fr*—Turbith Vegetal *Ger*—Turpeth-Trichterwinde *Hind.*—Pithori, Nakpatra, Nisut, Tera, Nishoth *Ben*—Teori, Dhud-kalmi *Guj & Mah*—Taed, Turbeda, Nishotar, Phutkari *Gwalior & Guj*—Nisoth *Tel*—Tegada *Mal*—Chivakaver *Tam*—Shivadai, Sivadai-ver, Gunakandi *Mal Can & Kon*—Tigade *Bom*—Nishotar *Punj*—Chitabansa *Arab*—Turband, Thurbud

Habitat—This perennial plant grows wild nearly all over India There are two varieties—*Sveta* (white) and *Krishna* (black)

Parts Used—Dried root, stem and the root-bark

Constituents—Turpeth resin consisting of 10 p.c. resin known as *Turpethin* yielded by the root bark, which is a glucoside analogous to Jalapine and Convolvulin and insoluble in

ether, benzine, carbon sulphide and essential oils, some ether-soluble resin, a volatile oil, a yellow colouring matter, albumin, starch, lignin, salts and ferric oxide Under the action of alkaline bases Turpethin is transformed into turpethic acid and in the presence of hydrochloric acid becomes converted into glucose and turpetholic acid "Turpethin is an excellent substitute for jalap (Ipomoea purga) Roots alone are rich in the purgative principle "[1]

Action —Root and root-bark of "white turpeth" which are in common use are cathartic and laxative, the dark variety 'black turpeth" is drastic in action like hellebore black and therefore it is not in use It is supposed to be the root of Lettsomia atrepurpurea, a native of Nepal and Sikkim

Action & Uses in Ayurveda & Siddha —Katu-rasam, ushna veeryam, katu vipakam, krimi, jwaram, purgative, pandu, enlarged spleen, kapha-udaram, pitta vayu *Black variety* —rat-poisoning, pitta gulmam *White variety* — Kashaya rasam (Therapeutic Notes)

Action & Uses in Unani —Hot 3°, Dry 3°, expels Balgham and Souda, brain diseases, purifies stomach and uterus In paralysis, balgham coughs (Therapeutic Notes)

Uses —Dried and *powdered root-bark* of the white variety is useful for the removal of propsical effusions, it is best administered in doses of ½ to 1½ drachms in combination with chebulic myrobalans or with ginger and cream of tartar each 10 to 15 grains, or about two scruples of the root are rubbed into pulp with water and taken with the addition of 10 grains each of rock salt and ginger or sugar and 5 grains of black-pepper It is preferable to both jalap and rhubarb It is particularly beneficial in rheumatic and paralytic affections "Trivrit powder 20 grains and *Gokshuradi* (Tribulus Terrestris) 10 grains mixed and made into three powders and taken 3 times a day with hot water, relieves jaundice "[2] *Bark of the fresh root* is rubbed up with milk and administered as purgative Combined with the three myrobalans, long pepper, ginger, hyoscyamus niger, and Heliospermum montanum, it forms an ideal laxative, useful in melancholia, gout, dropsy, leprosy etc In constipation with hard faeces a compound powder

called *Naracha Churna* is recommended in doses of 20 grains — (Bhavaprakash) It consists of the Turpeth root 8 tolas, long pepper 2 tolas and sugar 8 tolas Another compound powder known as *Tumburadya Churna* consisting of Zanthoxylon alatum, rock, *vit* and *Sanchal* salts, *Ajowan, pachak* root, *Yavakshara,* chebulic myrobalans, asafoetida and *baberang* seeds, one part each and turpeth root 3 parts, is recommended for painful dyspepsia with costiveness and flatulence — (Sharangdhara) Dose is about a drachm with warm water In anasarca supposed to be caused by "pitta" a decoction of the turpeth root, with *gulancha* and the three myrobalans is recommended—(Chakradatta) Milk diet is to be prescribed along with this medicine In paralytic diseases with constipation the following powder is recommended —Take of Ipomoea turpethum 2, Dodder (Cuscuta Sp) Aloes ½, Meadow saffron 1 and Terminalia chebula 4, Viola odorata 4, dry Ginger 3, and Scammonium 1 part Mix and make a powder Dose —10 to 15 grains Following confection is given in colic, chronic gout, rheumatism, lumbago and sluggish liver and intestines —Take of Ipomoea turpethum 4, scammonium 5, Cardamoms 5, Cinnamomum bark 5, Dry ginger 5, Common Indian parslane 5, Cloves 5, Black pepper 5, and Honey 150 parts Prepare a confection Dose is 1 to 3 drachms Another confection called *Trivrit Leyham* is in common use as purgative It is prepared thus —Take of 2½ *visses* of the Turpeth roots, cut into small pieces, bruise and boil in 24½ measures of water till it is reduced to its ¼ quantity, strain and add to the filtrate about 3½ *visses* of sugar-candy After it has melted in the filtered docoction, reducing the latter to the consistency of treacle, add a fine powder of Cardamoms, Cinnamon leaves and Cinnamon bark 1 *palam* each, and of I *viss* of turpeth root, and turn the whole into a confection Dose — 2 drachms in the morning A pill called *Chandraprabha gutika* is a good remedy for gonorrhoea, albuminuria and phosphaturia It consists of, besides the turpeth root, Croton tiglium, Cinnamon bark, Cardamoms, Iron bhasmum, Sugar, Bamboo manna, *Yavakshara,* Carbonate of soda and Calcined iron pyrites. Dose —1 to 4 pills of 6 grains each three times a day with milk or water It acts as tonic, diaphoretic and diuretic —(Indi-

genous Drugs Report, Madras). In the same Report the composition of a compound powder "*Trivrit Churnam*" is given as as follows:—42 *palams* of turpeth root and 1 *palam* each of chebulic, beleric and emblic myrobalans, Embelia ribes, dry rose buds, cardamoms, cinnamon bark, cinnamon leaves, tubers of Cyperus rotundus, dry ginger, pepper, long pepper, senna leaves and Picrorrhiza kurroa each 1 *palam*. Dose is ½ to 1½ drachms, with sugar in the morning, as purgative. The drug is used in scorpion sting and snake-bites.

1340. IPOMOEA UNIFLORA, Roem.

This drug is a purgative, and is used in bilious dyspepsia.

1341. IPOMOEA VITIFOLIA, Sweet.

(*Bom.*—Nawal): Action.—Cooling; is applied to inflamed eyes; contains a glucoside.

1342. IRIS ENSATA, Thunb.

(N. O:—Iridaceae).

Hind.—Irisa; Keore-ka-mul. *Pers.*—Bikh-e-banafshah. Arab.—Irsa.

1343. IRIS FLORENTINA, Linn.

(N. O:—Iridaceae) I. Germanica & I. pallida.

(*Sans.*—Pushkaramula; Padma Pushkara. *Arab.*—Sosan; Kusht-el-bati. *Bom.*—Balva-ekhanda. *Eng.*—Orris root. *Hind.*—Irsa; Sosun; Keora-ka-mul. *Punj.*—Irisa. *Kash.*—Bekh-sosan. *Pers.*—Bekh-i-banfsa (violet root) are plants cultivated in Kashmir, Persia and Kabul. Orris root is to be found in the bazaars of Calcutta and Bombay. *Root* is cathartic, diuretic, stimulant and alterative. *Dry root* contains a volatile oil, starch, resin and tannin. *Essential oil*, otta of

orris is highly valued in perfumery *Tincture* of orris root is sold as essence of Violets *Root* is chewed to sweeten offensive breath *Powdered root* enters largely as a fragrant ingredient into the composition of hair and tooth powders Root is used in bronchitis, dropsy and liver complaints *Roasted seeds* approach very nearly coffee in quality Externally, root in *powder* or *poultice* is used as an application to sores and pimples

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1344 IRIS FOETIDISSIMA, Linn

(*Hind*—Dadmari. *Ben*—Dabidubi *Tam.*—Kochillitti pulla) This contains essential oil, bitter substance and a glucoside Used for ringworm

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1345 IRIS GERMANICA, Linn

(*Sans*—Padma pushkara *Ind. Bar*—Keore-ka mul), grows in Kashmir and Persia Root is alterative, aperient, diuretic and cathartic. Contains an essential oil. Used in gall bladder diseases Orris root obtained in the Bombay market is mainly derived from this species Hakims use the root as aperient and diuretic and in liver complaints.

1346 IRIS KUMAONENSIS, Wall

(*Punj*—Piaz)
Root and leaves are used in fever

1347 IRIS NEPALENSIS, Don.

(*Eng*—Blue Lotus. *Hind.*—& *Punj*—Chiluchi U.P.—Sosan, Shoti) is found on the Western and Eastern Himalayas. Root is similar in action to Costus, which is aperient and diu-

retic From the large number of diseases in which the drug is recommended it would appear to be regarded as a panacea. Useful in bilious obstructions (Chopra)

1348 IRIS PSEUDOCORUS

Is known as *Pakhara-bheda lakri* in Gujarati to distinguish it from the mineral *pakhanabheda* It is used in the form of decoction or powder in hepatic disorders It acts as diuretic and also as an aromatic and stimulant The drug is seldom used alone

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1349 ISCHOEMUM SULCATUM (Hack)

Mah —Sheda, Pavna, Pavanya

Habitat —Common annual grass of Bombay Presidency

Composition —	Before flowering	In flower	After flowering
Moisture	66 20	62 00	56 20
Ether extract	0 72	0 62	1 03
Albuminoids	1 10	1 12	1 01
Carbohydrates	15 70	18 80	18.29
Woody fibre	10 00	11 02	15 27
Ash	6 30	6 46	8.20

Uses —The best time for feeding this grass is in the flowering stage The grass is fine and makes a first-class hay, and is much liked by cattle The grass can also be turned into silage

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1350 ISCHOEMUM PILOSUM Hack

Broach —Khavo *Bijapur* —Kanigyanhullu *Poona* —Kunda *Mah* —Nuth

Habitat —Tall perennial grass grown in Bombay Presidency

Composition —	Before flowering	In flower	After flowering
Moisture	70 03	67 02	63 17
Ether extract	1.03	1.19	1.01
Albuminoids	2.17	2.12	1 07
Carbohydrates	14.56	15 14	15 61
Woody fibre	9 09	10 06	15 08
Ash	3 12	4.47	4 06

Uses —Used as fodder The grass is succulent and comparatively rich in albuminoids The grass should be fed green before flowering or just when the flowers appear In the seed stage the increas in woody fibre and decrease in albuminoids are so great as to render the grass almost useless as fodder This is one of the commonest grasses for hay-making in the districts of Sholapur, Ahmednagar & Bijapur It gives, however, a very rough hay For making silage, it is advisable to put the grass into the silo in the flowering stage as the moisture is rather excessive before this stage This grass ismo derately relished by cattle

1351 ISEILEMA ANTHEPHOROIDES (Hack.)

Dhulia.—Tambad gota. *Dohad*—Fudali Bhathi *Bijapur.*—Jejjegyanhullu

Habitat —An annual grass growing abundantly in certain parts of Konkan and Maval, in Bombay Presidency

Composition —	Before flowering	In flower	After flowering
Moisture	73 12	72.21	63.54
Ether extract	1.80	1 71	1.92
Albuminoids	2.37	3.37	1.62
Carbohydrates	18.55	16 56	21.39
Woody fibre	2.15	3.21	6.29
Ash	2 01	2.94	5.24

Uses —Best to feed this grass in the flowering stage

1352. ISEILEMA WIGHTII (Anders).

Dohad.—Mabil; *Mah.*—Sona; Tambrut; Tambit; Gondral; Ganni; Mussan. *Surat.*—Moshi. *Chharodi.*—Gandhi. *Panch Mahals.*—Gandheli.

Habitat.—Tall thin perennial grass found all over the Bombay Presidency, especially in Poona and Thana districts.

Composition:—	Before flowering	In flower	After flowering
Moisture	73.58	71.85	66.23
Ether extract	1.89	1.49	1.80
Albuminoids	2.25	2.50	1.79
Carbohydrates ..	17.82	18.04	18.59
Woody fibre	1.82	2.18	6.32
Ash	2.64	3.94	5.29

Uses:—This grass should be fed before flowering and while in flower.

1353. ISOPYRUM THALICTROIDES, Linn.

(N. O:—Ranunculacae).

Contains an alkaloid isopyrcine, HCN.

1354. ISORA CORYLIFOLIA

See Helicteris isora.

1355. IXORA COCCINEA; Linn.

I. grandiflora; I. bandhuca.

(N. O.—Rubiacae).

Sans.—Raktata; Pathalee; Binduka. *Tam.*—Cheddi; Vitchie. *Eng.*—Jungle Geranium. *Port.*—Ixora. *Ben. & Hind.*—Rangan; Rajana. *Can.*—Kepala; Kissargida. *Mal.*—Thechhi. *Mah.*—Pentgul. *Kon.*—Patkali. *Burm.*—Pansayeik.

Habitat.—This small shrub is found growing almost everywhere in India.

Parts Used.—Root and flowers.

Constituents.—Root is found to contain an aromatic acrid oil, tannin, fatty acids, and a white crystalline substance. Flowers contain a colouring and astringent principle of the nature of an organic acid, a wax, a yellow colouring matter related to quercitrin and ash 6.4 per cent.

Action.—A sedative stomachic tonic, intestinal antiseptic and cholagogue, "a true intestinal alterative". Externally astringent and antiseptic.

Uses.—Root is useful as a sedative in hiccup, nausea, loss of appetite etc. Root about 30 to 40 grains, ground into pulp with a little water and long-pepper, or in the form of *tincture* (1 in 5) is a remedy in diarrhoea and dysentery; better than ipecac since it does not induce nausea; also useful in fever and gonorrhoea. Dose of the tincture is 1 to 1½ drachms. Two tolas of the *flowers* fried in ghee are rubbed down with four *gunjas* (7 grains) each of cummin and cinnamon buds and made into a *bolus* with butter and sugarcandy and administered twice a day in cases of dysentery; they are usefully employed also in leucorrhoea and gonorrhoea. They are administered with whey or buttermilk or goat's milk. Externally to sores and chronic ulcers, *powdered root* moistened with a little water is applied on a piece of lint. With or without cocoanut milk it is applied to boils and in headaches. In sorethroat, root is used in the form of *tincture well diluted*, as a gargle.

1356. IXORA PARVIFLORA VAHL; or I. alba.

Sans.—Iswara. *Hind.*—Kotagandhal. *Ben.*—Rangan. *Eng.*—Torch tree. *Mah.*—Kurat; Raikura; Lokandi; Guavilakri. *Can.*—Gorjvi; Korgi. *Tam.*—Shulundu kora. *Tel.*—Karivi-pola. *Kon.*—Kurati. Are found chiefly in Western, Central and Southern India. *Bark* is found to contain fatty matter, tannin, red coloring matter and ash containing a trace

of ferric oxide *Decoction of the bark* (1 in 20) is given in oses of ½ to 1 ounce, as a tonic in anaemia and general debi- y *Flowers* pounded in milk are given in whooping cough

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1357. IXORA PAVETTA

See Pavetta Indica

N B —Several species of Ixora are met with on the hills of both Western & Eastern ghats

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1358 JAMBOSA VULGARIS

See Eugenia jambos

1359 JASMINUM ANGUSTIFOLIUM, Vahl

(N O —Oleaceae)

Sans —Priya Supooja, Malati, Vanamalti *Fr* —Jasmina feuilles etroites *Hind & Ben* —Ban-mallica *Guj & Mah* — Kusara *Tel* —Adavi-malle *Tam* —Katu-mallige, Shiru malli, Chattu mallika *Mal* —Kattu-malika *Can* —Kadu-mallige *Kon* —Kusari) a climbing shrub generally met with in the forests in the sea-board districts of India Bitter powdered root, mixed with the root of Acorus calamus and lime-juice is a valuable external application in cases of ring-worm and herpes

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1360 JASMINUM ARBORESCENS, Roxb

(*Sans* —Madhumadavi, Navamallika *Hind* —Chameli *Ben* —Barakunda *Bom* —Kundi, Kusar rangini *Tel* — Adavi malli *Mah* —Kusar) is a plant of the N W Himalayas Oudh, Kumaon, Deccan, also of the hot lower hills *Juice of seven leaves* is ground in cold water with a few grains of pepper and a few ribs of garlic and 4 *mashas* (45 grains) each of bark of Moringa pterygosperma and red

Hasani, and strained, is given in ½ tola dose as an expectorant and emetic in cases of obstruction in the bronchial tubes by viscid phlegm For young children, juice of half a leaf of J arborescens and of four leaves of red Sesbania grandiflora may be mixed with two grains each of black pepper and dried borax and given in honey —(Dymock) The leaves are slightly bitter and astringent and might be used as a tonic and stomachic —(S Arjun)

1361 JASMINUM AURICULATUM, Vahl

(*Sans*—Yuthika *Ben*—Jui) is a small fragrant flowered species much cultivated and esteemed in Ajmir and Bengal Used in consumption

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1362 JASMINUM CHRYSANTHEMUM Roxb

See J humile Action —Antibilious and astringent

1363 JASMINUM FLEXILE, Vahl

Madras Presy—Mullugundu Constituents—Bitter glocuside

1364 JASMINUM GRANDIFLORUM, Linn

(N O—*Oleaceae*)

Sans & Hind—Jati *Mah*, *Ben*, *Guz*, & *Gwalior*—Chameli *Eng*—Spanish Jasmine *U P*—Jahi *Bom*—Chambeli *Tam*—Malligai *Tel*—Malle *Mal*—Pichhakam Malati *Can*—Jaji malle *Kon*—Jayiche-mogre Sanjui) a plant with fragrant flowers is generally met with all over India especially in the temperate regions, and on the temperate Himalayas. *Leaves* and flowers have long been known in Hindu medicine Leaves contain a resin salicylic acid, an alkaloid named *jasmine* and an astringent principle *Leaves*

are astringent *Whole plant* is anthelmintic, deobstruent, diuretic and emmenagogue From the *flowers* a perfumed essential oil or otto is prepared, which is greatly esteemed as cooling and used by the rich for anointing their bodies before bathing, also used as a perfume It is cooling when applied externally, in skin diseases, headache and weak eyes According to Bhavaprakash, *leaves* are chewed in aphthae and ulcers in the mouth and leaf-juice or *oil* obtained from it is dropped into the ear, according to Chakradatta, in cases of otorrhoea etc, and the *fresh juice* of the leaves is a valuable application for soft corns between the toes. For ulcerations in the mouth, throat and gums, the *leaves fried* in ghee are recommended to be applied Mahomedan writers mention the use of *flowers* applied as a *plaster* to the loins, genitals and pubes as an aphrodisiac A *poultice* of *the leaves* is also used similarly The plant is used in scorpion-sting

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1365 JASMINUM HUMILE, Linn

or J Chrysanthemum, Roxb

(N O—Oleaceae).

Sans—Svarnajuthica Hemapushpika *Punj*—Chamaba, Jauai *Kumaon*—Sonajahi *Ben Bom & Kon*—Svarnajui *Hind*—Peetmalati *Tel*—Pachche adavimalle) is found on the hills of India and Ceylon *Root* is useful in ringworm *Milky juice* which exudes on an incision in the bark of this plant has the power of destroying the unhealthy lining walls of chronic sinuses and fistulas—(Major B Gupta-Watt) 'It is bitterish sweet, astringent, cooling, light, antibilious, phlegmatic and beneficial in burning, thirst, skin diseases, vitiated blood, boil, diseases of teeth, head diseases and poison"—(Kaviraj N S Sen Gupta)

1366 JASMINUM OFFICINALE, Linn

(*Sans & Ben*—Mallika *Hind*—Motiya *Guj*—Dojar *Mah*—Ran mogri *Fr*—Jasmin blanc *Ger*—Gebranchlicher

jasmin) is a white-flowered plant Its *flowers* are used as an emollient remedy Fragrant oil which it yields is mixed with the sesame oil and rubbed on the head as a nerve-sedative Its *fruits* are narcotic It contains an alkaloid 'jasmin' and an essential oil.

1367 JASMINUM PUBESCENS, Willd

(*Sans*—Kunda *Hind & Ben*—Kundphul *Guj & Mah*—Mogra. *Tel*—Kundamu Gujari *Mal*—Kundam, Kurukutti mulla *Can*—Kasturi malligе *Kon*—Kasturi mogre) Habitat—Common in most parts of India, especially in Bengal and on the East and West Coasts Action—*Plant* is emetic, *flowers* are lactifuge Uses—*Dried leaves* soaked in water and made into a poultice are applied to indolent ulcers to generate a healthy action *Root* of the wild variety (*Kadu malligе*) is used as an emmenagogue, also used in snake-bite (cobra venom) and weakness of sight.

1368 JASMINUM REVOLUTION

Is a species indigenous to Nepal, distinguished by yellow-petalled flowers which yield a delightful essential oil, used in perfumery and the root is employed in ringworm

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1369 JASMINUM RITCHIEI, Clarke

Leaves are used in tooth ache and flowers in piles

1370 JASMINUM ROTTLERIANUM, Wall

(*Sans*—Vanamalliga *Tam*—Kattumalligei) Leaves are used in eczema

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1371. JASMINUM SAMBAC, Ait.

(*Sans.*—Vaarshiki, Mallika *Eng*—Arabian Jasmine. *Fr.*—Jasmine d'arabie *Ger*—Arabischer Jasmin *Hind & Ben*—Balphul, Mugra *Guj. & Mah*—Batmogri *Tel*—Malle, Millipu *Tam*—Malligai *Mal*—Cherupichhakam, Nallamulli *Can*—Mallige *Kon*—Vismogri, Batmogri *Arab*—Sumana Yesmana, Varda abyaza *Pers*—Cule supada, Zambak) in another of the jasmine species largely cultivated in India, Burma and Ceylon A variety of this plant is a double-flowered mogra known as *Bata-mogra* *Flowers* yield a fragrant essential oil similar to that of J grandiflorum It is used as a deodorant in foul-smelling ear and nose diseases *Root, leaves* and *flowers* are galactagogues and therefore valuable as a lactifuge, a poultice of the bruised root or leaves or flowers unmoistened applied to the breasts to arrest the secretion of milk in the puerperal state in cases of threatened abscess In China, flowers are used for scenting tea *Leaves*, if boiled in oil exude a *balsam* which is used for anointing the head in eye complaints, and to strengthen vision It is also used as a remedy in cases of insanity *Dried leaves* soaked in water and made into a *poultice* are applied to indolent ulcers

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1372 JASMINUM UNDULATUM

(Fr—Jasmin Ondule)

Is a bitter-leaved species found in Malabar and regarded by some as a variety of J. sambac and its flowers are esteemed for their elegance and their fragrance

N B—There are several species of Jasminum growing in Southern India

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1373 JATEORHIZA CALUMBA, Miers

(N O—Menispermaceae).

Constituents—Bitter substance columbin Action—Bitter, tonic, anti-periodic and anthelmintic (Chopra's "I D of I." p 500).

1374. JATROPHA CURCAS, Linn.

(N. O —Euphorbiaceae).

Sans —Kanana-eranda, Parvata-yeranda *Eng* —Angular-leaved physic nut *Fr* —Medicinier *Hind* —Jangli-erandi; Bag-berenda, Safe-dind, Bhernda *Ben* —Bon-bheranda; Bag-bherenda Eranda gach, Gab-bherenda *Guj* —Jepal *Mah* —Moghli-erendi, Ran erandi *Arab* & *Pers* —Dande-nahri *Punj* —Rattanjot, Japhrota *Tel* —Pepalam, Adavia-amudamu, Nepalam. *Tam* —Kattamanakku *Mal* —Katama-nak *Can* —Kadaharalu, Bettada-haralu *Kon* —Kad-eradi. *Sinh* —Valerandu *Burm* —Kesugi, Simbo-kesu *Goa* —Gala-mark

Habitat —This evergreen plant is common in waste places throughout India, in the southern parts it is cultivated chiefly for hedges.

Parts Used —Seeds, juice, leaves and oil

Constituents —Seeds contain a fixed oil 30 p c, sugar, starch, a tonic albumin (tox-albumin analogous to ricin and named curcin), caseine and inorganic matters Oil contains jatrophic acid (the active principle of the oil) Kernels and husks yield ash 6% and nitrogen 3%

Action —Seeds are acro-narcotic Oil from the seeds is purgative internally, and externally it is depurative and anti-septic Leaves are lactagogue locally, stem-juice is haemo-static and styptic Root bark is stomachic astringent

Uses —Seeds yield a pale yellow oil which in doses of 10 to 20 drops as purgative is equal in action to one ounce of castor oil, but it is far less certain in its operation and causes more griping than castor oil Its ill-effects griping etc., are corrected by lime-juice as in the case of croton seeds *Externally* it is an esteemed remedy for itch, herpes and eczema, and it is a cleansing application for wounds, sores and ulcers. Diluted with a bland oil (1 part to 2 or 3) it forms a useful embrocation in chronic rheumatism. It is generally used for adulterating olive oil "Seeds have also been used as a drastic purgative but are likely to give rise to toxic symptoms",—

(Chopra) *Leaves* locally applied to the breasts increase the secretion of milk For this purpose *fresh leaves* are warmed before a fire and layers of them are applied over the breasts, or the breasts are bathed for a quarter of an hour with a decoction made of a handful of the plant in six or eight pints of water and then the boiled leaves are spread over them in the form of a *poultice* In a few hours the effects of the application will be manifest Leaves warmed and rubbed with castor oil and applied to boils and abscesses have the suppurative effect Fresh viscid *juice flowing from the stem* is employed to arrest bleeding or haemorrhage from wounds, ulcers, cuts and abrasions, it promotes healing by coagulating the blood and forming an air-tight film when dry like that produced by collodion "Decoction of leaves is also used for similar purposes and as a gargle to strengthen gums"—(Chopra) It is a successful local remedy for scabies, exzema and ringworm Wonderfully good results have been obtained by injecting a drachm of the juice into a varicose aneurism, the pulsation having ceased within a few hours and a good firm clot produced "No ill effects resulted from the injection"—(Dr Evers) Juice when dried in the sun forms a brownish brittle substance like shellac *Root-bark* is applied externally in rheumatism Rubbed with a little osafoetida it is given with butter milk in dyspepsia and diarrhoea *Fresh stems* are used as tooth-brushes, to strengthen the gums and to cure bleeding, spongy-gums and gum boils

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1375 JATROPHA GLANDULIFERA, Roxb

(*Sinas*—Nikumba *Bom*—Velaty erandi *Hind & Ben*—Lal-bhranda *Mah*—Underbibi, Ran-erandi *Tam*—Udalai *Tel*—Dundigapu, Nela-amudumu) is found in Northern Circars, Deccan, Bengal, especially on the bunds of tanks Constituents—Similar to those of J curcas Action—Purgative, counter-irritant and stimulant *Root* brayed with water is given to children suffering from enlargement of spleen or liver It purges and reduces glandular swellings Uses—Juice is escharotic, acrid, counter-irritant *Juice* removes

opacity of the cornea or thickening of the conjunctiva *Oil* obtained from the seeds by roasting them is applied to joints in chronic rheumatism, chronic ulcerations, sinuses, ringworm and paralysis.

1376 JATROPHA GOSSYPIFOLIA, Linn

Madras Presy—Chuvanna kodala vanakku Leaves are applied to boils, carbuncles, eczema and itches Decoction of the bark is emmenagogue, seeds cause insanity and act as an emetic. (Chopra's "ID of I" p 500)

1377 JATROPHA MANIHOT

(Eng—Cassava Manioc or Mandiocca plant Is the plant from the roots of which the starch *Tapioca* is obtained It is an excellent food for invalids but not so easily digestible as sago There are two varieties, viz "Sweet" and 'Bitter". But the "Bitter" variety is more generally cultivated, as it gives greater yield of roots Even in the "Bitter" there are a dozen or more varieties, which contain a considerable amount of the active poison prussic acid, but fortunately the poison is very volatile and is entirely dissipated by moderate heating so that after proper cooking there is no danger of poisoning when eating the roots or the starch prepared from them Cassava meal is made into bread or into thin circular "Cassava Cakes" Cassava freed from the liquor, contains but little poison, and this is entirely dissipated in the subsequent process of cooking The poisonous juice expressed from the Cassava pulp is not wasted, for it is the source of 'Cassareep" which is well known as an essential ingredient of the West Indian dish "pepper pot" Cassareep is prepared by boiling the juice until it becomes of a thick treacle-like consistency, when it is no longer poisonous It is largely used in Europe as a basis for sauces

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1378 JATROPHA MONTANA or Baliospermum montanum or B. axillare

(*Sans*—Danti-nana, Makulaka *Hind*—Hakni *Guj*—Danti-mul *Bom Mah & Kon*—Jamalgot *U P*—Jangli-Jamalgot *Tam*—Nagdanti *Burm*—Tha-du-wa) is found in tropical Himalayas, Deccan, Bengal, N Circars, and Burma Root contains resin and starch *Root* is purgative, often used in combination with aromatics, in constipation with flatulence and in anasarca and jaundice *Seeds* have properties more or less similar to Croton tiglium, and are drastic purgative, and given with *trikatu* and *kankankhara* Dose is one seed of 1 to 3 grains Locally *seeds* act as stimulant and rubefacient Following are two useful Home Remedies—(1) *Naracha Rasa*—Take seeds of Baliospermum montanum 9 parts, mercury, borax and black pepper, one part each, sulphur, ginger and long pepper two parts each, powder the ingredients and make into two-grain pills with water These are given in constipation and tympanites (2) *Gudashtaka*—Take of *Danti, trivrit* and plumbago roots, black pepper, long pepper, ginger and long pepper root, equal parts in fine powder, treacle, equal in weight to all the other ingredients and mix Dose is about a tola every morning in flatulence and retained secretions, anasarca, jaundice, etc—(Bhavaprakash) Root is sold as 'dantimul" by drug-dealers Root and leaves have similar properties and are used in the indigenous medicine in dropsy and general anasarca *Expressed juice of young leaves* applied to a bleeding cut or bruise, and leaves applied as bandage, stops haemorrhage, prevents suppuration and heals the wound

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1379 JATROPHA MULTIFIDA, Linn

(*Eng*—Coral Tree *Fr*—Medicmer d'Espagne) is a common ornamental shrub in Indian gardens It is not used medicinally since its seeds are too powerful purgative and emetic One seed acts as emeto-cathartic Lime juice and stimulants are the best antidotes in cases of poisoning by the seeds Constituents—Fatty oil and bitter substance

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1380 JATROPHA NANA, Dalz. & Gibs

(Mah —Kirkundi) is a rare plant found in waste stony places near *Poona* *Juice* is used as a counter-irritant like that of J glandulifera, in ophthalmia

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1381. JONESIA ASOKA & J. PINNATA

See Saraca Indica

1382 JUGLANS REGIA, Linn.

(N. O —*Juglandaceae*)

(Sans —Akshota *Eng* —Walnut *Hind & Ben* —Akhroot *Mah* —Akroda *Tam* —Akrottu *Arab* —Jouz *Pers* —Charmaghz *Fr* —Noyer cultive, gognier, *Ger.*—Wallnussbaum) found wild in the temoerate Himalayas and largely cultivated in Afghanistan, Kashmir and Tibet Walnuts of commerce are fruits denuded of their pulp Constitutents —Seeds yield a *fixed oil 40 to 45%, As—0,013* mg in *100* g seeds, nucin or juglandic acid and a resin, kernels also yield oil Fruits contain oxalic acid There is an alkaloid 'barium' Action —Anthelmintic, antiseptic, leaves are alterative and astringent *Unripe fruit* also is a vermifuge, *Ripe fruit* or *kernel* of the seed is palatable and edible and possesses aphrodisiac properties Husks of fruit or pericarp possess vermifuge and *antisyphilitic properties* Unripe fruit is given to children as a kermifuge *A spirit* distilled from the leaves or fruits is reputed to be anti spasmodic, Spirit distilled from leaves or fruits is useful in checking the sickness of pregnancy, dose is 1 to 2 drachms *Bark* of the tree is used as an astringent, anthelmintic and lactifuge *Decoction of the bark* is used to stop mammary secretions, and as a gargle in sore-throat Uses —*Leaves* are given in the form of *decoction* (1 in 12) in scrofula, rickets and leucorrhoea, and used as a wash for malignant sores and pustules Fresh cold-pressed oil is suitable for edible purposes Oil is used internally as a taenicide *especially for tapeworm, a mild* laxative and cholagogue and externally in caligo (dimness of vision)

1383 JUNEPERUS COMMUNIS, Linn

(N. O —Coniferae)

Sans —Hapusha *Eng* —Juniper berry *Hind* —Aaraar *Pers* —Hab ul-ushara *Bom & Arab* —Habhhul aaraar *Punj* —Abhul Haubera Petthri, Pama *Duk* —Abbal *Ind Baz* —Padma *Fr* —Geneverier FRUIT — *Latin* —Juniperi-fructus, Baccae Galbuli Juniperi *Fr* —Baies de Genievre *Ger* —Gemeiner wacholder, Wacholderbeeren OIL —*Latin* —Oleum fructus juniperi *Eng* —Oil of juniper berries *Fr* —Huile Volatile de Genievre *Ger* —Wacholderol Wacholderbeerol

Habitat —Juniper tree and several species thereof are common on the North west of the Himalayas, Kumaon and Kuriam valleys, and Persia

Parts Used —Fresh ripe berries and the volatile oil (01 Juniper B P)

Constituents —A volatile oil 1 2 p c , grape sugar 50 p c , resin 10 p c , a noncrystallizable principle *(Juniperin)*, fat, wax, proteids 4 p c malates, formic and acetic acids An oil is distilled from the leaves and young twigs The perennial greyish green needles contain a large amount of resin Berries contain oxalic acid and an essential oil

Analysis of varieties of Juniper Oil —

	Hungarian	Italian	Indian
Specific gravity at 20°	0 867	0 866	0 8788 (at 30°)
Optical rotation .	—12°	—9 82°	Not determined as the oil is dark
Saponification value	5 9	6 1	21 2
Saponification value after acetylation	20 9	21 3	49 1

The differences might probably be accounted for by the particular liability of juniper oil to change on keeping The differences are minor and the Indian oil possesses practically

the same proportion and character of the alcohol and esters to which the flavour of the oil is chiefly due (Chopra's "I.D of I" pp 187/188)

Two species of Juniper commonly growing in Kashmir, viz J communis and J macropoda were tested at the Calcutta School of Tropical Medicine In general appearance, there was not much difference between them in their berries excepting that the latter are somewhat longer in shape The amount of volatile oil obtained by steam distillation was 0 25 per cent and 3 24 per cent respectively from J communis and J macropoda The colour, odour and solubility of the oils were almost same as that of the official oil of juniper The oil from J macropoda showed some difference in optical rotation and other minor physical properties The characteristics of the oil are given below for comparison with the standard laid down by the British Pharmocopoeia —

	J communis (B.P standard)	J macropoda
Optical rotation	—30 to —150	—24 30
Specific gravity	0 86 to 0 89	0 912

(Chopra's "I.D of I" pp 187/188)

Action —Fruit is aromatic, carminative, stimulant, emmenagogue, digestive and diuretic Wood is sudorific Oil is stomachic, diuretic and carminative in small doses, powerful renal stimulant and diuretic in ordinary doses In the Middle Ages the berries were credited with antiseptic properties

"Juniper Berries promote the flow of urine conspicuously, but that "in summa", the value and virtues of the Juniper tree are impossible of adequate description Externally the oil is a skin irritant —(Dr Touton) Juice of the berries possesses disinfectant properties, and even resistant bacilli, such as b coli, are killed by the juice in high dilution" (Dr Madaus)

Preparations Powder of the berries, dose —1 to 3 drachms, Oil as stomachic and carminative, dose —½ to 2 minims as diuretic from 4 to 6 minims. Spirit (1 in 20), dose is from

20 to 60 minims Compound Spirit containing the oils of juniper, caraway and fennel dissolved in alcohol, dose is from 1 to 4 drachms Infusion of Juniper tops (1 in 20), dose is from 2 to 3 ounces Infusion is best used as a vehicle for other diuretics

Uses —Wood is resinous and is used as an incense As the fruits "juniper berries" are rich in sugar and are terebinthinate, a volatile oil from them, viz "Juniper berry oil" obtained by fermentation and steam distillation of berries, is used in Europe principally to flavour a spirit called "Geneva", the well-known beverage "gin" *Fruit* and oil are useful in scanty urine, chronic Bright's disease, hepatic dropsy, coughs and pectoral affections, in chronic gonorrhoea and leucorrhoea. *Oil should not be given in acute nephritis* Locally, *powder of berries* is rubbed on rheumatic and painful swellings In some parts of Europe, "during Middle Ages the berries were used for the fumigation of hostels Today they serve for the preservation of meat and the preparation of Juniper brandies — (Dr Genevre) " (Dr Madaus's Book) Juniper berries are roasted, ground and used as a substitute for coffee, they are employed in Sweden and Germany as a conserve and as a culinary spice *Ashes of the bark* are applied in certain skin affections

'Dr Matthiolus regards juniper as a preventive of pestilence Drs Osiander and Hufeland have also frequently prescribed it Dr Schulz reports that juniper has been used with success in nephritic dropsy of children, chronic vesical catarrh, gonorrhoea, pulmonary blenerrhea, chronic rheumatism, arthritis, amenorrhoea and diabetes Dr Khare recommends stewed juniper berries in infantile tuberculosis, stating that it improves the appetite and increases the weight, thereby stimulating metabolism as well as activity and re-activity of the organism Dr Heinigkes prescribed juniper in bladder affections, dropsy with anuria, chronic pyelonephritis and dysmenorrhoea." (Dr Madaus's Book)

1384 *JUNIPERUS EXCELSA, Bieb

There is an essential oil, and the smoke of the branches is used in delirium of fever

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1385 *JUNIPERUS MACROPODA, Boiss

(*Hind*—Dhup) *Uses same as J communis*

1386 *JUNIPERUS RECURVA, *Ham*

(*Hind*—Bettir, *Nepal*—Tupi)
Action—Emetic Smoke of green wood is used as emetic
*(Chopra's I D of I" p 500)

1387 JURINEA MACROCEPHALA Benth

(N O—Compositae)

(*Punj*—Dhup Dhup gugal) found on the Western Himalayas from Kashmir to Kumaon Bruised root is applied to eruptions and a decoction is given in colic, and is also considered a cordial and tonic, and given in puerperal fevers and eruptions—(Dr Stewart)

1388 JUSSIEUA SUFFRUTICOSA, Linn, J villosa

(N O—Onagraceae)

(*Sans*—Bhallavianga Ben—Lalbunlanga *Hind*—Banlaunga *Tel*—Neerbatsala *Mal*—Karambu *Can*—Ravacula *Bom & Kon*—Panlvanga *Sinh*—Haemarago) are found throughout the greater part of India The plant reduced to a pulp and steeped in butter milk is considered useful in diarrhoea and dysentery A decoction (1 in 20) is astringent, carminative, diuretic and anthelmintic (vermifuge) It is given in flatulence in doses of ½ to 1 ounce *As astringent it is given* in haemoptysis and leucorrhoea

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1389 JUSTICIA BIVALVIS & J. ADHATODA

Eee Adhatoda vasaka

1390 JUSTICIA ECBOLIUM, Linn

(N O —Acanthaceae).

Hind—Oodoojati Roots are useful in jaundice and menorrhagia gout and dysuria, the whole plant is used in gouty affections and dysuria

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1391 JUSTICIA GENDARUSSA, Linn

See Gendarussa vulgaris

1392 JUSTICIA NASULLA

See Rhinacanthus communis

1393 JUSTICIA PANICULATA

See Andrographis paniculata

1394 JUSTICIA PICTA, Roxb

(*Tam*—Ysjucemaram) is a garden shrub used like Adhatoda vasaka The veriegated variety is called "white Adulsa" and the dark leaved kind 'black Adulsa" The first is used pounded with cocoanut milk to reduce swellings Leaves are emollient and resolvent and used as a cataplasm to inflamed breasts due to obstruction to the flow of milk, and in scorpionsting There is an alkaloid

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1395 JUSTICIA PROCUMBENS, Linn

(N O —Acanthaceae)

(*Fr*—Carmeutine Couchee *Mah & Kon*—Ghatipithpapra *Tam*—Nerei poottie) is a species found oft the pasture grounds (abundant in the rainy season) in South India, Deccan and Ceylon Herb contains alkaloid, it is used

as a substitute for Fumaria official (the true *pithpapra)* It is alterative, laxative, diuretic and expectorant and given in the form of *infusion* (1 in 20) in asthma, cough, rheumatism etc, dose is from 4 to 6 drachms Juice of the leaves is squeezed into the eye in cases of ophthalmia.

1396 JUSTICIA REPENS

See Rungia repens

1397 JUSTICIA TRANQUEBARIENSIS

(Tam—Sivanarvembu) is a species found in India, the juice of whose leaves is cooling and aperient, and is given to children in small pox Bruised leaves are applied to contusions

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1398 JUSTICIA ZEYLONSESIUM

(Eng —Common Malabar Nut) is a species found in Ceylon related to J adhatoda

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1399 KAEMPFERIA ANGUSTIFOLIA, Rosc

(N O —Scitaminaceae)

Hind. & Ben—Kanjan bura Roots are used in veterinary practice

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1400 KAEMPFERIA GALANGA, Linn

(N O —Scitaminaceae),

(Sans—Sugandhavacha, Chandramulika *Tel.*—Chandramoola Sime-kich-chilik *Tam.*—Kachhola Kilangu, Kachulakalanga *Mal.*—Kachhuram *Hind.*—Sidhoul *Bom.*—Kapurkuchri *Ben*—Chandumula, Humula *Guj & Mah*—Kapurkachri *Can. & Kon.*—Kachhur *Duk.*—Vilati Kachu) grow-

ing abundantly in gardens in the southern parts of India. The *tubers* are diuretic, carminative, stimulant and expectorant; they are used as a masticatory with betel leaves and arecanut. Tubers are used generally in perfumery. They are attached to the necklaces for their perfume and also placed in the clothes *Leaves* are also used as a perfume in washing the hairs *Tubers* reduced to powder and mixed with honey are given with much benefit in coughs and pectoral affections *Oil* in which they are boiled, or the tubers boiled in oil are used in applying to remove obstructions in the nasal organs Tubers contain an alkaloid, starch, gum, fatty matter with a fragrant liquid essential oil and a solid white crystalline substance and mineral matter

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1401 KAEMPFERIA ROTUNDA, Linn & K. longa

(N O—Scitaminaceae).

(*Sans*—Bhumichampaka, Bhuchampaka *Hing & Ben*—Bhuichampa *Tel*—Bhuchampakamu *Tam*—Nerpichan, Konda-kalava *Mal*—Chenchineerkilang *Can.*—Nelasampige *Mah*—Bhuichapa *Guj*—Bhuichampo) are found cultivated in gardens in India and Burma Constituents—Essential Oil. *Roots* have a hot ginger-like taste Fresh bruised *tubers*, even the *whole plant*, are in popular use in many parts of India in the form of *powder* or *ointment* as an application to wounds and bruises to reduce swellings, used in mumps and cancerous swellings also *Decoction* is applied with much benefit to wounds with coagulated blood and with any purulent matter, and also taken internally with the object of purifying blood and removing pus from the body

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1402 KALANCHOE LACINIATA, Dc. & K Pinnata

(N O—Crassulaceae).

See Bryophyllum calycinum. (*Tam.*—Ranakalli; Malakullie *Tel.*—Sima-jamudu. *Ben.*—Pathurkuchi. *Sans*—Hemasagara Astibhaksha. *Hind. & Ben.*—Hamsagar, Pathur-

kuchi *Bom*—Parnabij, Jakhmhyat. *Mah*—Ghaipat, Aranmaran *Hind. & Pers.*—Zakhm hyat. *Duk*—Ghaemari *Can.*—Kalanaru) cultivated in gardens, and wild on the hills of North Western India, Deccan and Bengal *Leaves* contain chlorophyl, fat, a yellow organic acid, cream of tartar, sulphate of calcium and free tartaric acid and calcium oxalate *Leaves* are styptic, astringent and antiseptic *Leaves* roasted over a fire or fresh *bruised leaves* and *juice* are applied as *poultice* to bruises and contusions to allay inflammation and prevent discolouration and as a styptic on fresh cuts, abrasions, wounds etc, and over bites of venomous insects, gnats, house-leek etc. Internally the *juice* is given in ½ to 1 tola doses with double the quantity of butter in diarrhoea, dysentery, lithiasis, cholera and phthisis

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1403 KALANCHOE SPATHULATA, DC.

(Hind—Tatara) The plant is poisonous to goats Leaves are used in cholera and in wounds

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1404 KANDELIA RHEEDII, W. & A.

(N O—Rhizophoraceae)

Ben—Guria Bark is used in diabetes

1405 KARIYAT

See also Andrographis paniculata. (*Sans*—Mahateeta *Hind.*—Kiryat. *Ben*—Cherorta *Guj.*—Kiryata. *Mah*—Chirayita *Sinh*—Binko hamba. *Malay*—Charita) Is the dried stalk and root of Andrographis paniculata which is common throughout the plains of India and cultivated in gardens in some parts. *Kariyat* is a valuable bitter tonic useful in general debility, in convalescence after *fevers* and in the advanced stages of dysentery It is best given as follows—Take of kariyat bruised ½ ounce acorus or sweet flat root and dill seeds bruised, each 60 grains, boiling water ½ pint, infuse in a cover-

ed vessel for an hour and strain. Dose:—from 1½ to 2 ounces twice or thrice daily. Following preparation has been highly spoken of:—Take of kariyat cut small, 6 ounces; myrrh and aloes in coarse powder, each 1 ounce; brandy two pints; macerate for 7 days in a closed vessel, occasionally shaking it, strain, filter and add sufficient brandy to make two pints. Of this the dose is from 1 to 4 teaspoonfuls in a little water taken on an empty stomach. It acts as a gentle aperient and will prove very useful in many forms of dyspepsia attended with torpidity of the bowels. In the bowel complaints of children, a *decoction of the fresh leaves* of the *Kariyat* plant has been well spoken of. It is prepared by boiling 2½ ounces of the fresh leaves in 1½ pints of water down to 6 ounces; of this the dose is one ounce every two or three hours. It may be used in conjunction with other remedies required.

1406. KOCHIA INDICA, Wight.

(N. O:—Chenopodiaceae).

Punj—Kaura-ro. This is a cardiac stimulant.

1407. KOKOONA ZEYLANICA, Thwaites.

(N.O:—Celastraceae).

Sinh.—Kokun. Powdered bark is used in headache.

1408. KOPSIA FLAVIDA, Blume.

(N. O:—Apocynaceae).

There is an alkaloid.

1409. KYDIA CALYCINA, Roxb.

See Hibiscus tiliaceus.

1410 KYLLINGA MONOCEPHALA, Roxb. & K TRICEPS, Rotto.

(N. O —Cyperaceae).

Sans —Nirvisha *Hind* —Nirbishi *Ben* —Nirbishaghas; Sveta-gotubhi *Mah* —Musta *Mal* —Mothenga, Pee-mottenga *Port* —Coquinha) are found throughout India Root in decoction (1 in 10) is refrigerant, demulcent and tonic, it is given to relieve thirst in fevers and in diabetes, dose is from 1 to 2 ounces, also used as antidote to poisons *Oil* distilled from the root is used to relieve pruritus of the skin. Internally, oil is given in torpor of the liver Other properties are similar to those of Cyperus rotundus It is "alterative of wind and phlegm" *(vata* and *kapha).*

1411 LACTUCA HEYNEANA, D C.

(N O —Compositae).

Mah —Undera-cha-kan This is used as a substitute for Taraxacum

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1412 LACTUCA REMOTIFLORA, DC.

Is also used as a substitute for Taraxacum

1413. LACTUCA RUNCINATA, DC.

Is a common weed found in South India

1414 LACTUCA SCARIOLA, Linn. L. sativa, Linn. L. capitata, L. virosa.

(N O —Compositae).

Eng —Lettuce *Fr* —Laitue Cultivee *Hind, Duk & Ben.*— Kahu, Salad *Bom., Pers, Guj & Mah* —Kahu *Arab* —Bazr-ul-khas *Pers* —Tukm i-kahu *Tam* —Shatlatu-virai *Tel* — Shallattu *Can* —Hakkarike, Saleet.

Habitat —L. scariola is found wild on the Western Himalayas L. virosa is a variety closely allied to L. scariola. Lac-

tuca sativa, the common or garden variety, is cultivated in many parts of India as a culinary vegetable

Parts Used —Seeds and concrete milky juice (Lactucarium)

Constituents —L scariola contains an alkaloid, Lactucarium, which is a mixture of lactocin and three bitter principles —Lectucin (chief active bitter principle), lectopicrin and lectucic acid, it also contains lactucerin—an inert waxy substance about 50 p c , and a trace of hyoscyamine, also a non-volatile acid and a volatile acid smelling like valerianic acid, albumen 7 p c , mannite 2 p c , and ash 3 to 6 p c , which contains potash, soda, manganic oxide, ferric oxide and lime Lectucin occurs in white crystals or scales Leaves of L scariola contain albuminous matter, starch, sugar, gum, cellulose, lignose, chlorophyll, fat and ash rich in nitrates Lettuce is exceptionally rich in iron, but in the cell-sap only a very slight proportion of iron exists, and this is almost entirely precipitated by boiling L sativa —As, 0 023 mg in 100g plant

Action —Anodyne, sedative, hypnotic, diuretic and expectorant, similar to opium, but it leaves no bad after-effects Wild variety possesses sedative property in greater degree than the cultivated Seeds are cooling, demulcent and refrigerant Leaves are slightly hypnotic and sedative

Preparation —Decoction and infusion, dose is 1 to 1½ ounces inspissated juice *Lactucarium*, dose is 3 to 8 grains, Powder of the seeds, dose is 10 to 20 grains, Tincture, dose is 10 to 30 minims Syrup, containing 10 p c of the tincture, dose is 1 to 4 drachms, extract, dose is 5 to 15 grains, Oil and Confection Lectucarium is a brownish viscid substance obtained by evaporating the juice exuding from the stem of the wounded wild lettuce It has a peculiar opium odour and acts as a narcotic

Uses —*Extract* or the *juice* is given in nervousness and palpitation of the heart *Seeds in powder* are used in fevers, active inflammations, in coughs, bronchitis, asthma and pertussis. Seeds in *decoction* or *tincture* are useful in insomnia and wakefulness due to mental overwork, in rheumatism, insanity, spermatorrhoea etc *Dry juice* also is useful in these

complaints *Seeds* are given *boiled* or in *confection* in chronic bronchitis, in doses of 2 to 4 drachms Lettuce *poultice* is a soothing application to painful ulcers For delirium the following *inhalation* has been recommended in *Ilaj-ul-gurba*— Take of Extract of Lettuce, Coriander and Catechu Mix these with vinegar and use for inhalation In the same is recommended for insomnia a *confection* made of the mucilage extracted by soaking in water two parts of poppy seeds to every one part of Lettuce seeds sweetened with sufficient quantity of sugar Combined with hot water lettuce is given to cure certain forms of dyspepsia and liver ocmplaints Lettuce is chiefly used by Europeans as a salad plant

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1415 LAGASCA MOLLIS, Cov

(*N O*—Compositae)

Is an introduced weed found in South India

1416 LAGASCEA SPINOSISSIMA, Cov

(*N O*—Compositae).

There is an alkaloid

1417 LAGENANDRA TOXICARIA, Dalz

(*N O*—Araceae)

Bom—Rukh alu *Tam*—Maravara Tsjembu This is very poisonous, and is a remedy for itch

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1418 LAGENARIA LEUCANTHA, Rusby

See *Lagenaria vulgaris*

1419 LAGENARIA VULGARIS Seringe

or Cucurbita lagenaria, C pepo

(N O—Cucurbitaceae)

Sans.—Katu tumbi *Tikta tumbi, (sweet) Alabu Fr*— Courde *Ger*—Flaschenkurbis *Eng*—Bitter bottle gourd,

(sweet) white pumpkin, Benares pumpkin, Long white gourd *Hind* —Lauki, Jangli-khaddu, (sweet) Khaddu *Ben* —Tikta lana, Lau, Kodu *Guj* —Dudhi, Kadwitumbade or bopla *Sind* —Kadu, Kohla, Kaddu irao, Hurrca kadava *Mah* —Ran bhopla, (sweet) Dudh-bhopla, Kashiphal, Kashi-bhopla, Kadu-bhopla *Pers* —Kaddu *Tel* —Chiti-Anab, Surakaya *Tam* —Sorakai *Mal* —Anapa-kai, Katuchuram *Can* —Kahi-sore, Halagumbala *Kon* —Kadu duddi, (sweet) Duddi

Habitat —This climbing plant is found wild and cultivated nearly all over India

Parts Used —Seeds, seed oil and pulp of fruit

Constituents —Fresh vegetable contains 90 36 moisture, and the completely dried material contains Ether extract 1 24 albuminoids 0 87 (cont'g Nitrogen 0 14), soluble carbohydrates 75 28 woody fibre 18 05, and Ash 4 56 (cont'g Sand 0 21) per cent respectively Saponin and fatty oil[1]

Action —*Fruits* and *leaves* are edible, leaves are purgative White pulp of the fruit of the cultivated variety is sweet and edible and cooling, diuretic and antibilious, while that of the smaller wild variety is bitter, emetic and drastic purgative like colocynth Oil from the seeds is cooling Seeds are nutritive and diuretic

Uses —*Seeds* yield a clear limpid *oil* which forms an emollient application for the head and to relieve headache It is also administered internally *Pulp* of the cultivated forms is occasionally employed as an adjunct to purgatives, and also as ingredient in various confections, it is useful in coughs, and as an antidote to certain poisons and for scorpion-sting *Externally* the pulp is applied as a *poultice* and a cooling application to the shaved head in delirium and to the soles in "burning of the feet" "Indians boil and slice the whole fruit or the pulp is eaten with vinegar or made into a vegetable curry, and is also used for sweets"[2] "When cut young, the fruit takes the place of vegetable marrow"[3] *Bitter fruit* burnt into *ashes* and mixed with honey forms a nice application to eyes for night blindness Juice of the fruit boiled with sweet oil in equal parts till the juice is all absorbed in

the oil, forms an application to scrofulous glands This is recommended in ILAJ-YL-GURBA for application to the head in cases of delirium For insomnia it recommends an oil extracted from the seeds of Lettuce, Pumpkin, Watermelon and Poppy in equal parts for rubbing on the head And for atrophic rhinitis the same recommends the instillation of a few drops of the juice of the bitter pumpkin For vaginal contraction, seeds of pumpkin and *lodhra* both ground down with water, form a useful local application *Leaves* of pumpkin are recommended to be taken in the form of decoction with sugar for jaundice "The skin and seeds are used in *chatni* It is also made into a sweetmeat called *"Doodhi-halva"*. This fruit is said to be a native of America and a form of this species if the Vegetable Marrow"[4]

1420 LAGERSTROEMIA FLOS—REGINAE, Retz.

(N O —Lythraceae)

Sans & Hind—Arjuna *Ben*—Jerul *Assam*—Ajhar *Bom*—Tamana *Kon*—Mota bandara *Mah*—Mota-bon Dara *Tam*—Kadali, Kodali *Tel*—Chennangi *Can*—Challa, Holedasal, Maruva *Sinh*—Murute, Muruta gass) is found in East Bengal, Assam, Burma and the West Coast *Root* is prescribed as an astringent, *seeds* are narcotic, *bark* and *leaves* are purgative—(Rev J Long) Dr Stewart considers the bark of L. Indica as stimulant and febrifuge

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1421 LAGERSTROEMIA LANCEOLATA. Wall

(N O—Lythraceae)

Is common enough in Sandur Hills of Bellary and on the Western Ghats

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1422. LAGERSTROEMIA PARIR FLOSH, Roxb

(N O —Lythraceae).

Is a plant common enough in Northern Circars.

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(1), (2), (3) & (4)—Bombay Govt. Agri Dept. Bulletin.

1423 LALLEMANTIA ROYLEANA, Benth.

(N. O:—Labiatae).

Hind—Gharee *Hind & Punj*—(seeds) Gharei-kash-malu *Pers & Bom*—Tukhm-i-balangu (seeds). This drug is cooling, sedative Used in flatulence and constipation. Seeds known as *'tokmalanga'* resemble *'isphagul'* but are of a black colour Seeds are given internally as diuretic and soothing drink in urinary troubles Locally they are applied on boils and abscesses (Bombay Govt Agri Dept. Bulletin)

1424 LAMARKIA AUREA, Moench.

(N O—Gramineae).

Constituents—HCN-glucoside (Bombay Govt Agri Dept Bulletin)

1425 LAMINARIA SACCHARINA

Lam., L. digitata, L. potatorium, are Algae belonging to the Seaweed Family.

(*Hind*—Galpar-ka-patta *Eng*—Sweet Tangle, Sugar Sea-beet) found throughout India in salt lakes and deep seas The plant contains 12 p c of mannite and iodine When dried in the sun it exudes a whitish saccharine substance A *syrup* made of this plant combined with decoction of quince seeds is given for the cure of goitre (Bronchocele), also given in scrofulous and syphilitic affections A simple *infusion* made by steeping the seaweed in cold water overnight and taken in the morning on an empty stomach is a remedy for bronchocele

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1426 LAMPRACHAENIUM MICROCEPHALUM, Benth.

(N O—Compositae).

Sans—Ajadandi *Mah*—Bramhadandi Action—Aromatic and bitter

1427. LANSIUM DOMESTICUM, Jack

(N. O.—Meliaceae).

Contains lansinic acid (toxic heart poison) 6 per cent

1428. LANTANA INDICA, Roxb

(N. O —Verbenaceae).

Ajmir.—Ghaneri Leaves are used for snake-bite

1429. LANTANA ACULEATA or L. CAMARA, Linn.

(N O.—Verbenaceae).

Bom.—Vhaneri *Tam.*—Arippu A troublesome weed growing in somewhat higher elevations in South India Contains an essential oil

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1430 LAPORTEA CRENULATA, Gaud.

(N. O.—Urticaceae).

Hind.—Utigun *Ben.*—Chorpata Uses are same as Coriander.

1431. LASIA SPINOSA, Thwaites.

(N. O.—Araceae).

Ben.—Kanta-katchu *Tam.*—Mulasari Root is a remedy for affections of throat

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1432 LASIOSIPHON ERIOCEPHALUS, Decne.

(N O —Thymelaeaceae).

Mah.—Rametha *Tam.*—Rami This is a fish-poison Bark is vesicant

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1433. LATHRAEA SQUAMARIA, Linn.

(N. O —Scrophulariaceae).

This contains a glucoside, rhinanthin.

1434 LATHYRUS ALTAICUS, Led

(N O —Papilionaceae)

1435 LATHYRUS APHACA Linn

(*Hind* & *Ben* —Jangli matar *Punj* —Rawan) Ripe seeds are narcotic

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1436 LATHYRUS INCONSPICUUS, Linn

1437 LATHYRUS LUTEUS Baker

1438 LATHYRUS PRATENSIS Linn

1439 LATHYRUS SATIVUS Linn

(N O —Papilionaceae)

Sans —Triputa *Eng* —Chickling Vetch *Hind* —Kesari *U P* —Latri *Ben* —Teora *Assam* —Kalamaha *Mah* —Lakh *Guj* —Lang —*Sind* —Mattar *Kon* —Lang *Tel* —Lamka *Pers* —Masang *Arab* —Habul Bakar Khalagi *Fr* —Masaing

Habitat —Largely cultivated as a pulse crop on alluvial soils in Sind North West and Central Provinces

Constituents & Action —Church gives following analysis Water 10 1 Albuminoids 31 9 Starch (including fibre) 53 9 Oil 0 9 and Ash 3 2 per cent respectively

Seed is a nutritious food but its continued use with other seeds often mixed with it in duces paralysis preceded by rheumatoid pains and termed lathyrismus in the lower limbs It is a kind of vegetable food poisoning (sito-toxismus) Specially seeds and bark contain the poison This toxin has been traced to a volatile alkaloid which is said to be readily dissipated when the pulse is sufficiently heated and properly cooked —(Dr Watt) But Scientists and Research Workers after careful investigations of the chemistry of the seeds and experimentation with

them on aimals have recently come to the coelusion that the seeds of L sativus contain no alkaloids and that the small traces of alkaloids separated by previous workers have owed their origin to *extraneous* seeds and were not derived from the seeds of L sativus Owing to the general observation that ordinary *Kesari* seed was a mixture of the seed of L sativus with other weeds, chiefly the vetch Vicia sativa, *var* L angustifolia, known as *akta*, the seed was examined more minutely On extracting the crushed seeds with Prollius fluid evidence of the presence of bases showing alkaloidal properties was obtained From careful chemical researches and experiments they have come to the following conclusions —(1) Seeds of L sativus have been found, on chemical examination, to be free from substances of an alkaloidal nature Contorlled experiments with this seed over long periods with ducks and monkeys have demonstrated that the grains are harmless and provide a nourishing diet for these animals (2) An examination of the weeds which contaminate *kesari*, has proved that Vicia sativa *var* L angustifolia contains bases showing alkaloidal properties Two such bases, vicine and divicine, and a cyanogenetic glucoside vicianin, have been isolated, prepared in the pure state, and used in inoculation experiments on animals Divicine, which occurs in *akta* in combination with a sugar as the glucoside vicine, produces on inoculation in guinea-pigs a characteristic and fatal disease *Akta*, when fed to ducks causes death In monkeys, it produces a very characteristic train of symptoms affecting the nervous and muscular systems (3) Though certain of the symptoms occuring in monkeys fed on diets containing *akta* have been described in cases of human lathyrism, we are not yet in a position to state, in the absence of pathological proof, that *akta* is the cause of lathyrism in man —("Studies on Lathyrism" by L A P Anderson, Albert Howard & J L Simonsen, Central Research Institute, Kasauli, Institute of Plant Industry, Indore, and Forest Research Institute, Dehra Dun, in April 1925 of the "Ind an Journal of Medical Research")

Uses —*Pulse* of L sativus, which is generally used split, is inferior and is usually consumed by the poorer classes

Leaves are used as a vegetable by the cultivating classes The crop as fodder is highly nutritious and is frequently grazed by cattle Horses will not eat L sativus variety crop, though the chaff makes a good mixture in cattle food (Bombay, Gova Agri Dept Bulletin)

N B —In the Nagpur and Bhandara Districts of the C.P, a smaller seeded variety known as *Lakhori* and devoid of the toxic property above referred to is extensively cultivated — (Watt)] Oil expressed from seeds is a powerful and dangerous cathartic Lathyrism as described in the Ayurvedic Works —"*Triputa* pulse is sweet, bitter and astringent, very dry, destroyer of *Pitta* and *Sleshma*, savoury, constipating and cold But it causes a man to become lame and cripple, and it irritates the nerves" In the Madan Pal Nighantu or Madanvinode by Raja Madan Pala, the two varieties of Kesari are described as the larger and the smaller seed varieties *Kalai* is called *Khandika*, *Triputa* is small *khandika* *Kalai* corrects *Sleshma* and *Pitta* is constipating and irritates nerves *Triputa* has similar properties The green leaves also correct *Sleshma* and Pitta

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1440 LAUNAEA ASPLENIIFOLIA, Hook.

(N O —Compositae)

Ben —Tikchana Root is lactagogue

1441 LAUNAEA NUDICAULIS, Hook

Punj —Batthal This is a cooling drink

1442 LAUNAEA PINNATIFIDA, Cass

(N O —of Compositae).

(*Bom* —Pathri *Sind* —Kneekhowa, Bankahu *Goa* — Almirao) met with on the sandy coasts of India from Bengal to Ceylon, Madras to Malabar It is used in Goa as a substi-

1446 LAVANDULA CARNOSA

See Anıscochilus carnosus

1447. LAVANDULA STOECHAS, Linn.

(N O —Labiatae).

(*Eng*—Arabian or French Lavender. *Fr*—Stoechas Arabique *Arab & Bom.*—Ustukhudusa *Hind.*—Dharu, Alaphajana Dharu *Guj*—Lavendara-na-phula *Port*—Alfazema) is a native of Arabic and Mediterranean Coasts to Asia Minor The drug has an agreeable odour resembling that of lavender Mahomedan physicians regard it as "cephalic, resolvent, deobstruent and carminative and prescribe it in colic and chest affections", they also think that it assists in "expelling *pitta* and *kafa*" In MAKHZAN-EL-ADWIYA it is called the broom of the brain, it is said to sweep away all kafa impurities, remove obstructions, strengthen brain powers, expel brain crudities and clarify the intellect It is a good stimulant, aromatic, general carminative, disphoretic, expectorant, antispasmodic, antiphlogistic and emmenagogue An *essential* oil is distilled from the flowers and is used in colic and chest affections and to relieve biliousness, locally to relieve nervous headaches Fomentation with the flowers relieves rheumatic and neuralgic pains

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1448 LAWSONIA ALBA, Lam.

L Spinosa, L. inermis, Linn

(N O —Lythraceae).

Sans—Mendhi, Mendika, Raktagarba, Kuravaka *Eng*—Henna, Samphire *Fr*—Henne *Hind.*—Hena, Mehndi *Guj*, *Mah*, *Duk & Punj*—Mehndi, Panwar *Ben*—Mehedi, Mendi, Shudi. *Kash*—Mohuz *Pers*—Hina *Arab*—Yoranna *Sinh*—Meritondi *Burm*—Dambin *Tam.*—Maruthonri, Aivanam, Marithondi *Tel.*—Goeranta, Kuravamu *Mal.*—Mailan-

chi *Can*—Madarangi *Kon*—Methhi, Padche-methi *Malay*—Hinie, Pontaletsche

Habitat—Common all over India, cultivated chiefly as a hedge and garden plant

Parts Used—Leaves, bark, flowers and seeds

Constituents—Leaves yield a colouring matter (henna' dye) 12 to 15 p c Hanno-tannic acid, a kind of tannin and an olive green resin soluble in ether and alcohol Seeds yield an oil Flowers yield a fragrant otto or oil There is also a glucoside in the plant

Action—Bark is alterative, sedative and astringent "Siddha physicians consider leaves as astringent, detergent and deodorant, and as *Thuvarapu, Ushnaveeryam,* flowers are refrigerant and soporific, seeds are deodorant, root bark is astringent, sedative and alterative, bark reduces copper to a *Sindooram*" (Therapeutic Notes)

Uses—*Juice* of the plant with sweet oil is an application to the head in headaches, and 'Siddha physicians prepare a specific *thailam* (oil) for grey hair"—(Therapeutic Notes) *Fresh leaves* beaten into a *paste* with vinegar or lime-juice are applied as a *poultice* to the soles of the feet to cure the troublesome affection 'burning of the feet' Another plan is to use strong friction with the bruised leaves over the parts Arabic and Persian writers recommend a paste of the leaves with oil and resin added as a valuable application to the head in headaches, and to the soles of the feet in small pox to prevent the eyes from being affected by the disease This plant is held in particularly high esteem by Muslims *Leaves* or the herb ground into a *soft paste* with water are also similarly applied with benefit in cases of rheumatism. Dye yielded by leaves or leaf paste, is extensively used for staining hands and fingers nails to protect them from decay and diseases in conjunction with catechu and indigo, leaves are also used as a cosmetic hair-dye Applied to the hair they promote healthy growth An *ointment* prepared from the leaves is used to cure wounds and ulcers Their *decoction* is useful as

an external fomentation in bruises, sprains, inflammations and burns, it is also an astringent gargle in ulcers of the mouth, and is an excellent injection for gonorrhoea *Leaf juice* mixed with water and sugar or milk is given in spermatorrhoea and in the condition known as hot and cold fits —(Dymock) *Bark in infusion* is given in jaundice and enlargement of the liver and spleen, in calculus affections and as an alterative in leprosy, and obstinate skin diseases In decoction it is applied to burns, scalds, etc With honey and tragacanth the *seeds* act as cephalic *Leaves* and *seeds* are useful in menorrhagia, vaginal discharges and leucorrhoea In such cases a *powder of seeds and leaves* is put into a piece of calico or cotton and kept as a small bag into the vagina *Fragrant water* distilled from the flowers was formerly employed by the Jews in baths and for perfuming oils and ointments with which they anointed the body, and for embalming According to Ainslie an *extract* from the flowers, leaves and tender shoots is a valuable remedy in cases of lepra and other depraved conditions of the body in doses of half a drachm twice a day *Infusion* of the flowers or of seeds cures headache and is a good application to bruises A pillow stuffed with flowers will act as soporific

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1449 LEDEBOURIA HYACINTHOIDES, L macula.

See Scilla Indica

1450 LEEA ARGUATA or L hirta

(N O —Ritaceae).

(*Sans Hind & Ben* —Kakajangha *Tam* —Surapadi). Found in Sikkim, Himalayas and East Bengal *Tubers* and *stems* are astringent, bitter acrid, anthelmintic, mucilaginous, "stimulant and alleviative of phlegm and bile and beneficial in worms, boils deafness, indigestion and jaundice" —(N N Sen Gupta)

1451. LEEA CRISPA, Willd

Ben —Ban-chalta *Malay* —Nalagu Is found in Sikkim, Terai, Assam, Decca and Chittagong *Tubers* are used as a

specific remedy for guineaworm and *leaves bruised* are applied to wounds

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1452 LEEA HIRTA, Roxb

See L arguata

1453 LEEA MACROPHYLLA, Roxb

(*Sans*—Dhola samudrika *Ben*—Dholshumoodra, Tulsamudra *Hind*—Samoodraka, Dholshumoodra *Bom & Mah*—Dinda *Santal*—Hatkan) is a plant of tropical India and the East Indies Mucilaginous root like that of L crispa is employed as a *paste* or *poultice* in the cure of guineaworm, and obstinate ulcers and ringworm *Root* has anodyne properties and applied externally to allay pain and also to stop bleeding from wounds—(Mason)

1454 LEEA ROBUSTA, Roxb

(N O—Vitaceae)

(*Nepal*—Gubui, Galeni *Santh*—Haramada *Goa*—Gino) met with in Sikkim and Western Himalayas Its soft and fleshy *root* is applied externally as an anodyne and also given to cattle for diarrhoea See also L staphylea

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1455 LEEA STYPHYLEA or L. sambucina, Willd

See L robusta also (*Hind & Ben*—Kakurjiwah *Mah*—Karkani *Goa*—Dino *Tel*—Ankados *Mal*—Nalugu *Sinh*—Burulla guralla) is met with in the hotter parts of India and Ceylon *Root* is cooling and its decoction relieves thirst It is given also in colic and other intestinal complaints Root is used as sudorific also *Roasted leaves* are applied to head in vertigo *Juice of young leaves* is digestive and is much used in diarrhoea and dysentery and *externally* as an application in gout

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1456 LENS ESCULENTA, Moench

or Ervum lens, Cicer lens

(N. O —Papilionaceae).

(*Sans* —Masurika, Masura *Eng* —Lentils *Hind Guj. Kon & Mah* —Masur *Bom* —Masuri dal *Ben* —Masuri *Arab* —Adasa *Tel* —Misur pappu *Tam* —Misur-purpur *Can* —Channangi *Pers* —Miraju-maka).

Habitat —Grown in most parts of India as a food pulse
Constituents —As 0 01 mg in 100g seeds

Church's Composition of Lentils —

	Clean	With Husk
Water	11 8 p c	11 7 p c
Albuminoids (legumin)	25 1 „	24 9 „
Starch	58 4 „	56 0 „
Oil (fat)	1 3 „	1 5 „
Fibre	1 2 „	3 6 „
Ash	2.2 „	2 3 „

General analysis —Moisture 8 15, Ether Extract 1 75, Albuminoids 25 50 (cont'g Nitrogen 4 08), Soluble carbohydrates 63 20, Woody fibre 5 45, Ash 6 30 (cont'g Sand 2 35) per cent respectively

(Bombay Government Agri Dept Bulletin)

Uses —*Lentils* are used as a strengthening and stimulating article of food Lentils soup is sometimes given in place of barley gruel, during simple diarrhoea only, *but prohibited in mucous diarrhoea, and in the "Pitta" and "Vayu-Pitta" forms of diarrhoea* It has the reputation of being useful in constipation which it prevents also It is one of the pulses which contain uric acid or material which in the body is capable of producing uric acid and which can be got rid of by careful preparation and cooking When boiled with rice it forms the dish called *Khichri Internally,* it acts as a mild aperient, and *externally* a *paste* or *poultice* prepared from the seeds is a cleasing application to foul and indolent ulcers, and over small pox ulcers also "Green pods are sometimes eaten

as a vegetable and when ripe they yield a very delicate pulse, which is cooked in many ways, both split and whole—(Bombay Govt Agri. Dept Bulletin) The ð is used in snake-bite also

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1457. LEONOTIS NEPETAEFOLIA, Br

(N. O.—Labiatae).

(*Beng*—Hejurchei *Guj.*—Matisul *Mah*—Dipinal. *Bom*—Matije *Tel*—Ranabheri, Mulagolimedi) is found throughout hotter parts of India, common in some parts of Madras Presidency *Decoction of leaves* (1 to 10) is given in intermittent fevers and during convalescence from acute diseases, with the addition of a little rum and lime juice it is a great tonic and febrifuge *Ashes* of the flower-heads with curds is applied to ringworm and to allay itching in skin affections

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1458 LENOTODON TARAXACUM

See Taraxacum officinalis

1459 LEONURUS SIBRICUS, Linn.

(N. O—Labiatae).

Hind.—Guma This is a febrifuge.

1460 LEPEOCERCIS SERRATA or Andropogon serratus or A. filliform.

Is a species found in Bengal and East Indies, its root is used as a carminative

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1461. LEPIDAGATHIS CRISTATA, Willd.

(N O—Acanthaceae):

Bom—Koli-che-chular *Tel.*—Bhuya-terada. *Santh*—Otdhomps Used in fever.

1462. LEPIDIUM DRABA, Linn.

(N. O:—Cruciferae).

Afgh—Bijindak Young leaves contain HCN.

1463. LEPIDIUM IBERIS, Linn.

Rubefacient in rheumatism.

Seeds are used in dropsy. There is an amorphous bitter substance

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1464. LEPIDIUM LATIFOLIUM, Linn.

(Punj—Gonyuch). Antiscorbutic.

1465. LEPIDIUM SATIVUM, Linn.

(N. O.—Cruciferae).

Sans—Chandrasura, Ahaleeva *Eng*—Cress, Common or Water-cress *Hind.*—Chansaur; Halim; Hurf; Akalam. *Guj & Bom*—Asaliya *Ben & Duk.*—Halim *Mah.*—Athaleeva, Ahliv *Bom*—Asalia *Sind.*—Ahera; Ahreo. *Tel.*—Adityalu *Tam*—Aliviraı *Can*—Allibija; Alvi.

Habitat—This familiar shrub is cultivated as a culinary vegetable all ov a It is the garden cress of Europe and Asia.

Parts Used—Seeds, leaves, root and flawers

Constituents—Seeds contain a valatile essential aromatic oil, the active principle and a fatty oil. Water-cresss is found to contain iodine, iron, phosphates, potash and other salts, a bitter extract, water and much sulphur.

Action—Seeds are aperient, diuretic, alterative, tonic, deobstruent, aphrodisiac, carminative, galactagogue and emmenagogue Leaves are gently stimulant and diuretic. Mucilage of the seeds allays the irritation of the mucous coat of intestines

Preparations—Decoction, Infusion, Confection, Powder, Paste and Poultice.

Uses—*Herb* and *seeds* should be freely used during spring time of the year when scrofulous tendency is very prevalent Seeds are useful in hiccup, dysentery, diarrhoea and skin diseases caused by impurity of blood, in the form of a *decoction of seeds* (1 in 20) or *cold infusion* (1 in 10), chiefly owing to its mucilaginous property Seeds are recommended also for the dispersion of certain chronic enlargements of spleen etc. *Emulsion* made by soaking or boiling the seeds in 8 times the weight of water is given as a drink to relieve hiccup, in doses of half to one ounce every half hour until complete cure—(Bhavaprakash) Seeds boiled with milk are administered "to cause abortion"—(Bellew) A *powder of seeds* mixed with fine sugar is a nice remedy for indigestion, diarrhoea and dysentery A preparation made of seeds, ghee and sugar is a common household remedy useful as a restorative in general debility Another invigorating and nutritious tonic to relieve flatulence and to increase the secretion of milk among the lying in (recently delivered) women is prepared by boiling the seeds in milk so as to form a thin soft mass, and adding to it sufficient sugar or jaggery to make it a confection, this is useful also in seminal debility, leucorrhoea, in cases of lumbago or any other pains about the loins through rheumatism Still another invigorating and nutritious diet made of L sativum seeds is prepared by mixing together sufficient quantity of seeds, flowers of *tender* cocoanut and jaggery and heating them on fire till they melt, mix together and form a molten mass, which is then left to cool and made into boluses and kept for use Small cakes or balls made for use as aphrodisiacs are made of a mixture of seeds with several other aromatic, nutritious and strength giving ingredients —Take of 10 tolas of *Ahaleeva* seeds, 1 pucca seer of rolong (of wheat) and ¼ seer of *Udid* flour, Mix them all together and try them in ghee and then melt them together in 1 pucca seer of ghee and add sufficient sugar, and also aromatics like *Bedana*, Almonds, *Charoli*, Cardamoms, nutmeg, mace, *Pimpalmul* and prepare balls or cakes out of the molten mass These are to be used during winter or cold weather Water cress is "Nature's remedy for Scurvy".

Externally a *Lep* or *paste* made of seeds rubbed in water is applied to skin-diseases caused by impurity of blood *Bruised seeds* mixed with lime juice and spread on linen is an application for relief of internal inflammation and rheumatic pains Seeds are said to be of service in all the diseases in which mustard is resorted to, and also regarded as more satisfactory rubefacient than mustard A *paste* made of the mixture of *Ahaleeva* seeds 5 parts, Carbonate of soda 5, Curcuma longa 4, and Litsea sebifera 5 parts, ground together into a paste with water is an application recommended for sprains, bruises and subluxation (dislocation) According to Honigberger this plant in the Punjaub was administered in cases of asthma, cough with much expectoration and bleeding piles Leaves are used by Europeans in salads Balfour says that the salad is serviceable in scorbutic diseases *Oil* extracted from seeds is also useful *Flowers* are also much prized by some invalids being palatable and beautiful They are spread over ordinary salads *Root* is used in secondary syphilis and tenesmus

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1466 LEPTADENIA RETICULATA, W & A

(N O —Asclepiadaceae)

See Gymnema aurantiacum This is a common twiner

1467 REPTADENIA SPARTUM

or Gymnema spartum

(*Sans*—Mahameda) is an erect glabrous species with long twiggy branches, found in Arabia and the North West Himalayas Its tuberous root is larger than that of L reticulata It is eaten as a vegetable and used as restorative

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1468 LESPEDOZA JUNCEA

See Indigofera asphalathoides.

1469. LETTSOMIA MYSORENSIS, Clarke.

(N. O:—Convolvulaceae).

Paste of leaves is applied externally in cough and quinsy

1470. LETTSOMIA NERVOSA, Roxb.

See Argyreia speciosa.

1471. LEUCAS ASPERA, Spreng.

(N. O —Labiatae).

Hind & Ben—Chota-Kalkusha *Bom*—Tamba *Tam*—Tumbai-cheddi *Tel*—*Tammachettu*. *Ben*—Hulkusha, Ghal Ghase Used as insecticide, and in cold, scabies and snake-bite

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1472. LEUCAS CEPHALOTES, Spreng,

L. aspera, Spreng., L. linifolia.

(N. O —Labiatae).

(*Sans*—Dronapushpi, Chitrapathrika, Chitrak-shupa *Punj*—Guldora *Ben*—Darunaphula, Hulkasha *Guj*—Kulannuphul *Hind*—Goma Madhupati *Sind*—Kubo *Mah.* Bahuphul *Bom*—Tumba *Kon*—Tumbo *Tel*—Tumni *Tam*—Tumbay-keere *Mal*—Tumba) found throughout India from the Himalayas down to Ceylon Flowers contain a small quantity of essential oil and an alkaloid Flowers are stimulant, expectorant, aperient, diaphoretic, insecticide, and emmenagogue Juice of *flowers* is given in 5 to 15 minim doses with double the quantity of honey and a few grains of borax mixed together in nasal and laryngeal coughs and colds, and in intestinal catarrh, especially of children 6 drops of the juice with a little powdered dry date may be given L. aspera is given in amenorrhoea Infusion is known as an insecticide Juice is also sniffed up as a remedy for colds, headaches, and also in snake-bites Bruised leaves are applied locally in snake-bites, scabies etc.

1473. LEUCAS LINIFOLIA, Spreng.

(*Sans.*—Dronapushpi. *Ben. & Hind.*—Hulkussa). Stimulant and disphoretic. Used in rheumatism and snake-bite.

N. B:—Many species of Leucas occur in the plains and on the hills of South India.

1474. LEUCAS STELLIGERA

(*Pers.*—Mishk-i-Taramshi) is a plant of Persia. Its leaves are used medicinally and therefore imported into India. The drug is used as a stimulant, carminative and also as emmenagogue.

1475. LEUCAS ZEYLANICA, Br.

(*Sinh.*—Gatta-tumba) is a species found in Ceylon where its bitter root and the bitter and pungent leaves (or flowers) are used in skin diseases, especially scabies.—(Chakrabarty).

1476. LEUCONOTIS EUGENIFOLIA, DC.

(N. O:—Apocynaceae).

There is an alkaloid.

1477. LICHIN ODORIFEROUS

See Parmelia perlata.

1478. LIGUSTICUM DIFFUSUM

See Seseli Indicum.

1479. LIGUSTRUM ROBUSTUM, Blume.

(N. O:—Oleaceae).

There is an alkaloid. Two or three species of Lifustrum commonly grow on higher elevations in Southern India.

1480. LILIUM GIGANTEUM, Wall.

(N. O:—Liliaceae).

Leaves are applied to wounds and bruises.

1481. LILIUM NEILGHERRENSE, Linn.

Occurs on the hills, at higher elevations, in South India

1482. LIMNOPHILA GRATIOLOIDES, Br.,

L. intermedia; L. elongata.

(N. O:—Lerophulariaceae).

Are common aquatic weeds (root-parasite) of the plains of Bengal (the *Karpur* of the Bengalees) (*Sans.*—Ambuja, Amragandhaka *Hind.*—Kuttra *Ben.*—Karpur *Mah.*—Ambuli *Mal.*—Manganari) found throughout India in swamps. Constituents —Essential Oil It is antiseptic and carminative Odour of the fresh plant is agreeable and resembles that of camphor or oil of lemons *Juice* of the plant is rubbed over the body in pestilent fevers *Liniment* is made from the plant with cocoanut oil which is used in elephantiasis Internally, juice is given in dysentery combined with cumin and other aromatics

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1483. LIMNOPHILA GRATISSIMA, Blume.

Is a galactagogue.

1484. LIMNANTHEMUM CRISTATUM, Griseb.

(N.O—Gentianaceae)

Used in fever and jaundice.

1485 LIMNANTHEMUM NYMPHAEOIDES, Link.

Is another species (*Punj*—Kuru), fresh leaves of which are useful for periodic headaches

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1486. LIMONIA ACIDISSIMA, Linn.

(N. O:—Rutaceae).

(*Hind.*—Beli *Bom.*—Ram limbu). Leaves are purgative and sudorific, and are used in snake-bite. Dried fruit diminishes intestinal fermentation.

1487. LIMONIA MONOPHILLA; L. acidicimma; L. crenulata.

(N. O:—Rutaceae).

(*Hind*—Belsion *Uriya*—Bhentia. *Bom*—Ran-limbi *Mah. & Can*—Kawat, Naibel *Tel*—Toralaga *Kon.*—Sitaran limbu) found on dry hills in various parts of India *Leaves* in *infusion* or *decoction* are supposed to be a remedy for epilepsy *Root* is purgative and sudorific and employed for the cure of colic and cardialgia *Dried fruit* or *berry* is tonic, it diminishes intestinal fermentation, has the power of resisting the contagion of small-pox, malignant and pestilent fevers, and its red coloured mucilage is considered an excellent antidote to various poisons

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1488 LIMONIA SCANDENS

See Luvunga scandens

1489 LINARIA CIRRHOSA, H.K.

(N. O:—Scrophulariaceae).

Used in diabetes

1490. LINARIA CYMBALARIA

Is also used in diabetes

1491. LINARIA MINOR, Desf.

There is HCN in young branches

1492 LINARIA RAMOSISSIMA, Wall

This is also used in diabetes

1493 LINDENBERGIA URTICAEFOLIA, Lehm

(N O—Scrophulariaceae)

Mah—Dhol. Common throughout India upon walls and banks *Juice* is given in chronic bronchitis, and mixed with that of coriander plant it is applied to skin eruptions It has a faint aromatic odour and a slightly bitter taste

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1494 LINDERA NEESIANA, Benth.

(N O—Lauraceae)

Aromatic, carminative Yields excellent sassafras

1495 LINUM USITATISSIMUM, Linn

(N O—Linaceae)

Sans—Uma *Eng*—Linseed, Flax plant *Fr*—Linculive *Ger*—Gemeiner Lein or Flachs *Hind*—Tisi Alsi *Punj*—Alish, Tisi *Ben*—Masina, Tisi *Guj*—Alshi *Mah*—Javas *Bom & Kon*—Alashi *Tam*—Alshi-virai *Tel*—Alshivıral, Atasi *Can*—Agashi *Pers*—Zaghu, Tukhmizaghira (oil) Roghani zaghira *Arab*—Bazarul kattana

Habitat—Flax plant is a native of Egypt, extensively cultivated in India, chiefly in Bengal, Bihar and the United Provinces "In the Bombay Presidency only two types are known white flowered and blue flowered, white seeded and red seeded '—(Bombay Government Agricultural Dept Bulletin)

Parts Used—Seeds, oil and flowers.

Constituents—Seeds contain 37 to 44 per cent of a fixed oil which consists of glyceryl combined with linoleic acid 30 to 40 p c, mucilage 15 p c, (6 p c in the testa), proteins, amygdalin, resin, wax, sugar and ash 3 to 5 p.c Ash contains, sulphates and chlorides of potassium, calcium and magnesium.

Oil lies in the outer skin of the seed and is soluble in boiling water If ground into a meal the oil is soluble in cold water also Linseed oil contains 10 to 15 p c of mineral substances, chiefly phosphates of potassium, calcium and magnesium and about 25 p c of protein substances Pure fresh oil is colourless, commercial oil is dark yellow, on exposure to the air, oil dries up to a transparent varnish consisting chiefly of Linoxyn "Seeds yield about 32 to 38% oil in the country oil-mill White varieties seem to contain slightly more oil than the brown or the red ones from the same place, e g —Nagpur White 43 0 p c, Nagpur brown 41 0 p c, Dohad farm white 42 8 p c and Dohar farm red 40 8 p c oil."—(Bombay Government Agri Dept Bulletin) Seeds contain HCN—glucoside linamarin, and 0,0812 mg arsenic oxide in 1Kg seeds

Action —Demulcent, expectorant, diuretic and emollient Seeds are "aphrodisiac, hot and dry", and roasted seeds are astringent Flowers are cordial Poultices dilate the local blood vessels, relax the tissue and thereby relieve the tension and pain T e quality of oil from the white seed is generally reckoned superior The colour of linseed oil varies from a light to a brownish yellow Oil possesses an acrid taste and smell, soon becomes rancid on exposure to the air, and has the property of taking up oxygen from the air and drying to an elastic skin This drying property is considerably increased by heating the oil with certain metallic salts, e g, litharge, known as "driers" producing the so-called "boiled" linseed oil, although it is now known that a temperature of 65°C is sufficient for the purpose

Preparations —(Of the seed) —Decoction and Infusion (1 in 30), Confection, Poultice, Smoke Of the oil —Emulsion, Liniment and Soap (Sapomollis).

Uses —Mucilaginous matter contained in the seed is extracted by cold water and a viscid jelly-like mass is formed The *mucilage* is used for dropping into the eye in irritable conditions of the conjunctiva With honey it is prescribed in coughs and colds *Crushed seed* or the *powdered seed cake* is called *Linum-contusum* and popularly "linseed meal".

short, linseed is used for a variety of purposes, being useful in diarrhoea, catarrh, dysentery and visceral obstructions A mixture of equal parts of linseed oil and lime-water makes the popular remedy for burns and scalds known as *"carron oil"*. It makes a good emollient application Crushed seed or Linseed oil cake is very useful for fattening cattle and is also a good manure

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1496 LIPARIS PARVIFLORA, Lindl.

(N O —Orchidaceae)

There is an alkaloid in this plant

1497 LIPPIA NODIFLORA, Rich

(N O —Verbenaceae).

(*Sans* —Vashira, Vasaka *Ben* & *Hind* —Bakkan Bhuiokra *Guj* & *Bom* —Ratavilo, Ratolia *Mah* —Vekkan Ratalio *Tel* —Bokkena *Tam* —Poduthuvalai, Poduthalai, Talaibodam *Mal* —Katu-tippali *Can* —Nela-hippali) growing in moist ground, found mostly in the southern parts of India The plant is demulcent, febrifuge, resolvent and diuretic *Leaves* and *young shoots* are very bitter and astringent, they are given to children in diarrhoea dysuria and indigestion in the form of *infusion* or decoction in doses of 1 to 2 ounces twice daily, also given in lithiasis and to women after the lying in-state In cases of gonorrhoea with scalding in the urine it is given combined with cumin or *suva*. *Chutney* made from its leaves and fruits is eaten to relieve the irritation of internal piles A *fumigation* by the compression of the plant between two red-hot bricks gives relief in inflamed and bleeding piles A *paste* or *poultice* of the plant is applied to promote suppuration in boils, to swollen cervical glands and to erysipelas, and to chronic indolent ulcers

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1498 LIQUIDAMBAR ORIENTALIS, Miller.

(N. O —Hammamelideae).

(*Sans*—Silhaka *Eng*—Liquid Storax, Rose malloes *Fr Styrax liquide Hind Ben Guj Can Tel & Mah*—Silaras *Pers*—Asli, Lubhani, Meihsila *Arab*—Miah sayelaha *Tam*—Neri-arishippal Meri-arishippal *Mal*—Rasamalla) is a forest tree of Asia Minor, yielding liquid storax which is an article of import at Bombay The balsam obtained from the trunk of the tree and purified is called "prepared storax' It contains not less than 20 p c of cinnamic acid, a volatile oil—styrol styracin or cinnamate of cinnamyl, a resin, storesinol and cinnamic acid closely allied to benzoic acid into which it can be oxidized It is stimulant, expectorant, diuretic, antiseptic, disinfectant and astringent Mahomedan physicians regard it to be tonic, resolvent, and astringent It is supposed to strengthen all the viscera chiefly the respiratory and urinary organs *Liquid storax* obtained by boiling the inner bark of the tree in water is an aromatic, semi-fluid, opaque, grey balsam It is used for perfuming medicinal oils also useful in bronchitis, chronic coughs of the aged, and pulmonary affections and in chronic catarrh of the genito-urinary organs, as cystitis, pyelitis gonorrhoea, leucorrhoea etc The drug is also used in scorpion-sting Dose is from 5 to 30 grains in *pill* or *emulsion* As *ointment* (1 in 4) it is used for scabies, pityriasis and glandular swellings and to orchitis in which it is applied and covered with tobacco leaves It is applied over the abdomen of children to relieve colicky pains and to the chest in throat and lung affections with copious expectoration It forms an ingredient of the compound tincture of Benzoin of the B P Following are simple successful remedies recommended for use—(1) Take of liquid storax 3½ drs, Opium 15 grs, castor-fibre or castoreum 1½ drs, mix and add sufficient mucilage to form a pill-mass, dose is from 5 to 10 grains, used in chronic bronchitis, spasmodic cough, asthma, and chronic coughs of the aged (2) Take of liquid Storax 10 parts, Hemp leaves 1, Gall nut 3, Saffron 1, and liquorice 1 part Mix and make a powder. Next add Kokum butter and make pessaries, used in leucorrhoea

1499 LITHOSPERMUM OFFICINALE, Linn

(N. O —Boraginaceae).

Hind —Lubis firinun This is a remedy for stones.

1500 LITSEA CITRATA, Bl.

(N O —Lauraceae).

There is an alkaloid laurotetanine, which is toxic

1501 LITSEA POLYANTHA, Juss

(*Hind* —Meda *Ben* —Bara-kukur-chita *Mah* —Ranamba *Tam* —Nara) Bark is astringent, stomachic and stimulant

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1502 LITSEA SEBIFERA, Pers

(N O —Lauraceae)

(*Hind* —Garbijaur, Menda *Ben* —Kukur-chita, Ratum; Garur *Bom Mah* & *Kon* —Maida-lakri Maida-lakin (bark), Chickana (leaves) *Tam* —Maida-lakti, Mushaippe yetti (bark) *Tel* —Narraalagi, Meda *Punj* —Medasak, Chandna *Arab* —Magha-thi-Hindi *Pers* —Khilza) common in Upper India, especially in Bengal and in the Hills of South India Bark contains a good deal of mucilage or Laurotetanine—an alkaloid producing tetanic spasms in animals *Bark in infusion* or decoction is a popular remedy in Bengal for diarrhoea It is esteemed as a demulcent and astringent, and used in diarrhoea and dysentery, owing to its feebly balsamic and mucilaginous nature Externally, *freshly ground bark* is used as an emollient application (haemostatic) to bruises, sprains, rheumatic and gouty joints, also to scorpion-sting

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1503. LITSEA STOCKSII, Hook.

(Bom—Pisi) There is an alkaloid and an essential oil This is used in irritation of bladder and urethra Oil is used in sprains and bruises

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1504 LOBELIA NICOTIANAEFOLIA, Heyne.

(N. O—Campanulaceae).

Mah—Dhavala *Tam*—Kattu-papillay There is an alkaloid lobeline Used as an antiseptic in asthma and in scorpion-sting

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1505 LODOICEA SECHELLARUM, Comm. & Labill

(N O—Palmae)

(Sans—Ubdie-narikaylum, *Eng*—Sea Cocoanut, *Fr*—coco-de mer *Hind Guj & Duk*—Daryaka-nariyal *Bom Kon. & Mah*—Jahari-naral *Tam*—Kadat-rengay *Mal.*—Kadala-tangay *Tel*—Samudrapu-tenkaya *Arab*—Narjil-banri Pers—Narjil-i-Darayai) is a palm growing in the Seychelles, but its fruit is obtainable on the Bombay side *Fruits* or *nuts* are of great size, frequently 40 to 50 lbs, in weight They were formerly cast ashore on the West Coast of India and Ceylon from the Indian Ocean They are now imported and used to some extent by the natives of North-Western India as food and medicine being regarded as preservative and alexipharmic *Kernel* is used in India as a tonic and *paste* made of it in conjunction with the powdered horns of Sambhar deer and the seeds of Strychnos nux vomica is applied to enlarged glands Vaidyas consider it useful in reducing the quantity of sugar in the urine in cases of diabetes mellitus and they give a decoction of it in doses of 3 ounces three times daily

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1506 LOLIUM TEMULENTUM, Linn

(N O —Gramineae)

Hind —Machni Constituents —There is a glucoside and a toxic alkaloid temuline This is a cattle poison

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1507 LONGIFOLIUM OCHROCARPUS

The seeds of which are known as Cytrus seeds, is used in medicine *Powder of seeds* is given with cow's milk in menstrual disorders to restore normal flow It promotes conception among barren women

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1508 LONICERA GLAUCA, Hk f & T

(N O —Caprifoliaceae)

Punj —Shewa Seeds are given to horses for colic

1509 LOPHOPETALUM WALLICHII, Kurz

(N O —Celastraceae)

Burm —Mondaing This is a febrifuge

1510 LORANTHUS ELASTICUS, Desr

(N O —Loranthaceae)

Tam —Mavi witthil Leaves are used to check abortion, also in stone in bladder and kidney affections

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1511 LORANTHUS FALCATUS, Linn

This is a narcotic and is a substitute for betel nut

1512 LORANTHUS LONGIFLORUS, Desr

(*Tam* —Plavithil) Bark is used in wounds and menstrual troubles and also as a remedy in consumption, mania and asthma

Uses—Fruit is a highly-valued well-known culinary vegetable, which is eaten boiled According to Roxburgh, the half grown fruits, when boled and dressed with butter, pepper and salt, are little inferior to green peas *Infusion of ripe* fruit (1 in 80) is used in doses of one to two ounces, or 20 to 30 grains of the *dried kernel* is administered "Seeds in doses of 5-10 grains act as an expectorant Dr Mohideen Sheriff highly praised the seeds as a valuable substitute for ipecacuanha in dysentery An emulsion of the kernel of the seed in water is a good form of administration "[3] *Oil of the seeds* is used in cutaneous complaints and the root is laxative and used in dropsy *Leaves* are applied locally in splenitis, haemorrhoids and leprosy *Juice of the fresh leaves* is droped into the eyes of children in gronular conjunctivitis, also to prevent the lids from adhering at night on account of excessive meibomian secretion Juice of heated L acutangula is good in adrenal variety of diabetes

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1515 LUFFA AEGYPTIACA, Mill, L pentandra, L cylindrica, L patola, L. riscada

(*Sans*—Raja-Koshataki Dirgha patola *Eng*—Smooth luffa, Wash sponge Patola *Hind*—Ghiaturai, Ghiatarui *Ben*—Dhundul *Guj*—Turia *Mah*—Ghosali *Bom*—Turi *Tam.*—Guttibira *Tel*—Numbeera *Can*—Tiprikayi *Nepal.*—Palo *Sind.*—Turi, Liasada *Assam*—Bhat karola) are hairy climbing herbs extensively cultivated in several parts of India *Seeds* are emetic and cathartic like L acutangula They yield a dark or reddish brown oil Young fruits are used as vegetable It is described as "cool, costive, demulcent, producive of loss of appetite and excitive of wind, bile and phlegm"—(N N Sen Gupta)

1516 LUFFA AMARA, Roxb, or L plucketiana or L. foetida, is a climbing plant

is a climbing plant (*Sans*—Katuki, Kratavedhana, Tiktakoshataki *Fr*—Luffe amere *Ger*—Bittere Luffe *Hind.*—

Karvi-turai *Ben*—Teetadhudaka *Bom*—Kadu-sirola *Guj*—Kadu ghisodi, Ran-turai *Tel*—Verri-beera, Sendubeerkai *Tam*—Peppirakam *Can*—Kahi-keera *Mal*—Athanga *Kon*—Kadu-ghosali) found growing mostly in Southern India and Bengal. Every part of the plant is remarkably bitter and the fruit is violently cathartic and emetic. *A powder of the fruit* is used for rubbing on the swollen haemorrhoids. *Kernel of the seeds* is a safe, sure and efficient remedy for dysentery, equal to ipecacuanha. In smaller doses it is expectorant and demulcent as it contains albumen and oil. It is rubbed and mixed with water, forming a greenish white emulsion which is used for administration. Dose—as emetic, 20 to 30 grains, as nauseant, 10 to 15 grains, as demulcent and expectorant, 5 to 10 grains. *Juice of the roasted young fruit* is applied to cure headache, *juice or the pulp of fruit* is also applied to different kinds of bites and also administered internally, it causes vomiting and purging through which the poison is eliminated. *Dried fruit* is used as a snuff in jaundice or its *watery extract* is dropped in the nostrils, or the fruit ground with pipli and mustard into a fine powder is used as snuff. For decayed or carious teeth *cigarettes* made of the fruit or seeds are smoked. In hemicrania a *powder* of the roasted fruit carefully sniffed causes a flow of fluid from the nostrils and relieves the headache. *Root* with equal parts of root of Hibiscus rosa sinensis and Hemidesmus is given with milk, cumin and sugar in gonorrhoea. In swellings, *leaf juice* with sugar is given. *Infusion* of the fresh stalks (1 to 32) is a powerful diuretic.

stance It is bitter and stomachic in small doses, in large doses it is emetic, anthelmintic and drastic purgative *Fruits* or even *stems* are used as tincture (1 in 20) or hot or cold *infusion* (decoction) in the treatment of ascites, jaundice and biliary and intestinal colic, and also in enlarged liver and spleen *But here it is to be stopped when it produces diarrhoea* Dose of the tincture is 10 to 20 minims Cold infusion is made by infusing two bruised fruits in a pint of water In obstinate cases the dose is increased gradually Externally, infusion is used as a stimulant antiseptic in carbuncles and other unhealthy ulcers In congestion of the brain causing intense headache and in jaundice the infusion is used as an errhine, causing profuse discharge of mucus from the nostrils But it is not a safe sternutatory in atheromatous degeneration of blood vessels as it increases blood pressure from reflex irritation Under the name of *bindaal* it is extolled as a remedy for spleen affections especially in malarious enlargement of that organ In dropsy supervening an enlargement of the liver and spleen from malarious origin", a hot infusion (1 in 80) in doses of 1 to 2 ounces three times daily combined with nitro hydrochloric acid has been found to be a powerful diuretic In many cases of ascites, this drug has given more satisfactory results as diuretic than many other diuretics In infantile cirrhosis of the liver the tincture, as a purgative and diuretic, in the commencement of the cirrhosis, has been found very useful.—(Dr Hem Chandra Sen) Sanskrit writers describe the drug as expelling *pitta* and *kafa* and removing piles, swellings, jaundice phthisis hiccup, worms and fever" Fruit is considered in North India to be a powerful remedy for dropsy S Arjun states that the fruit has purgative properties In Gujarat it has a reputation on account of its bitter properties and is an ingredient in compound decoctions In the Konkan a few grains of the bitter fibrous contents of the fruit are given in infusion for snake bite In putrid fevers the infusion is applied to the whole body, and in jaundice it is applied to head and also given internally, *infusion* has also a reputation as a remedy for colic —(Watt)

Rishabha, (3) *Jivaka* (4) *Meda*, (5) *Mahameda*, (6) *Riddhi*; (7) *Vriddhi*

1524 LUZULA CAMPESTRIS, DC

(N O —Juncaceae).

This is a diuretic

1525 LYCIUM BARBARUM, Linn

(N O —Solanaceae)

Baluch —Koh tor Young leaves contain HCN

1526 LYCIUM EUROPAEUM, Linn

(*Punj* —Kangu *Bom* —Ganger) This is an aphrodisiac

1527 LYCOPERDON GEMMATUM, Batsch

This drug is official in the Punjab

1528 LYCOPERSICUM ESCULENTUM, Mill or Solanum lycopersicum, Linn

(N O —Solanaceae).

Eng —Tomato *Hind* —Bilatee Baigun, Gur Began *Ben* —Belathi-begoon *Mah* —Bailwangi, Wel wangi *Bom* —Goot-Baigun *Guj* —Vilaiti vangan *Kon* —Tambuta *Can* —Chapper bhende, Chapperbadnekai *Tam* —Seemay Tekkali *Sind* —Tekkali) is first of American origin, then grown in Europe and thence to India Varieties —European varieties such as "Baltimore ', ' Bonny Best", "Peach Blow" and "Magnum Bonum" are cultivated in the Bombay Presidency *Pulp* and *juice* (of acid-taste) *of the tomato* is digestible and a mild aperient, a promoter of gastric secretion, and a blood purifier, also considered to be an intestinal antiseptic as it has a cleansing effect in the enteric portion of the alimentary canal It is said to be useful in canker of the mouth "nurses sore mouth"

wash away the poison which cause disease and contaminate our systems

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1529 LYCOPODIUM CLAVATUM L spores, Linn

(N O —Lycopodiaceae—the Club Moss family)

(*Eng* —Clubmoss Spores Vegetable Sulphur Wolf Claw *Fr* —Lycopode *Ger*—Barlappsamen Hexenmehl *Tam* & *Kan*—Bendarli) is found universal in cold, temperate and warm climates It contains a bland fixed oil 48 p c , cane sugar 2 p c a volatile base (methylamin) and ash 4 p c It is diuretic demulcent antispasmodic and emmenagogue It is used in the form of tincture (1 in 10) lycopodium spores being first treated with ether dose of the tincture is from 15 to 60 minims and of the spores in powder it is from 10 to 30 grains It is generally given in rheumatism epilepsy and pulmonary disorders It is invaluable in irritable bladder cystospasms (not dependent on organic disease or foreign body) frequent micturition and spasmodic retention of urine in children It is very beneficial especially in nocturnal micturition in children or adults *Externally spores* are employed owing to their absorbent qualities in the form of powder, as a protective and absorbent in erysipelas eczema herpes between the thighs and armpits of infants also it is used as a pill excipient in coating pills to render them tasteless as a powder for hygroscopic pills to prevent them from adhering together

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1530 LYCOPUS EUROPAEUS Linn

(N O —Labiatae)

Kash —Gandamgundu *Baz*—Jalnim Contains a bitter substance This drug is cooling and is used as poultice

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1531 LYTHRUM FRUTICOSUM—

See Woodfordia floribunda

1532 MACARANGA ROXBURGHII, Wright.,

(N O —Euphorbiaceae)

(*Can* —Chandkal *Mah* —Chandwar *Tam* —Vattekanni *Tel* —Bodichettu *Mysore* —Chutha kanni *Kon* —Chandivadio) found in the Deccan, in the Circars and on the Ghats from the Konkan to Travancore *Gum powdered* and made into a *paste* is reckoned a good external application for veneral sores —(Drury) Country people use the following in enlarged spleen —One part of the young shoots of Ficus asperima are sprinkled with hot water and the juice extracted in this is rubbed down two parts each of the barks of both trees The preparation is administered twice a day in doses of 1/8 of a seer —(Dymock)

1533 MACHILUS MACRANTHA, Nees

(N O —Lauraceae)

Common on the Hills of South India (*Tam* —Kolamavu) Bark is used in consumption, asthma and rheumatism. Leaves are applied to ulcers

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1534 MACROTOMIA BENTHAMI Boiss

(N O —Boraginaceae)

Ind Baz —Gaozaban Useful in diseases of tongue and throat

1535 MACROTOMIA PERENNIS, Boiss

Roots are applied to eruptions.

1536 MACROTOMIA SPECIOSA Aitch et Hemsl

Roots are applied to eruptions.

1537. MAERNA ARENARIA

(N.O:—Capparidaceae)

(*Eng*—Earth Sugar-root. *Tel*—Puta-tiga *Tam.*—Pumi-chakarei. *Guj.*—Vaka) is a large woody climber, found in Southern and Central India, and Ceylon. The part used, viz: the earth sugar root of the Tamils has been known in Southern India for centuries. Root slightly resembles liquorice root in appearance and taste It is used as an alterative, tonic and stimulant From an analysis of the drug made by Hooper it was found to contain ordinary plant constituents and a quantity of sugar.

1538. MAESA INDICA, Wall.

(N.O·—Myrsinaceae).

Tam—Kirithi Leaves are used as fish-poison

1539. MAJORANA HORTENSIS, Moench.—

See Origanum majorana

1540. MALACHRA CAPITATA—

See Hibiscus tiliaceus.

1541. MALLOTUS PHILLIPPINENSIS, Muell, Arg., or Croton philippinensis; or C. punctatus; C. coccineum (Glandulae rottlerae).

(N.O:—Euphorbiaceae)

Sans.—Kapila; Kambha; Rechanaka. *Eng.*—Indian Kamala; Rottlera; Monkey Face Tree; Kamala Dye. *Hind*—Kamala; Kambila. *Ben.*—Kamalaguri; Kamila. *Kash*—Kamila. *Bom. & Mah.*—Shendri. *Arab*—Kinbila; "Wars" or

"Wuras" *Punj*—Kamal *Gwalior*—Seria *Pers*—Kanbela *Guj*—Kapilo *Tel*—Kunkuma *Tam*—Kapli, Kapila *Kon*—Komati *Can*—Vasare, Chandrahittu

Habitat—"This small evergreen shrub belonging to the Spurge family, is distributed over the whole of India (Orissa, Bengal, Bombay), Ceylon, the East Indies, Malay Archipelago, as far as Australia"[1]

Parts Used—Glands and hairs from the capsules or fruits

Constituents—"The most important active constituent is a brownish red or reddish yellow (laminar plates) resin composed of a crystalline substance called *rottlerin* whose molecular formula is C_{33} H_{30} O, and it contains four benzene-nuclei (Sikhibhushan Dutt and Dhanraj Puri Goswami, Allahabad), traces of a volatile oil, starch, sugar, tannin oxalic and citric acids Kamala is a beautiful purplish red or brick-red powder having no taste or odour It is insoluble in cold water and only slightly soluble in boiling water, but it is freely soluble in alkalies, alcohol and ether, forming a deep red solution When acted on by hot caustic alkalies, *rottlerin* yields methly phloro glucin and by reduction with zinc powder and soda, dimethyl phloro glucin' Filicic acid ond Kosotoxin also yield these substances Besides *rottlerin* there is another substance called "*isorottlerin*" which is probably impure rottlerin"[3] Resins 80 per cent tannic acid, gum volatile oil, wax, albuminous matter, colouring matter, cullulose and ash 4 per cent Resins contain colouring matter

Action—Cathartic and athelmintic, also aphrodisiac nnd lithontriptic In full doses it is violently purgative causing nausea and griping "According to Waring *Kamala* has lit tle or no effect on intestinal parasites other than tape-worms The drug irritates the gastro-intestinal tract and even in therapeutic doses produces considerable nausea and increases the peristaltic movements of the intestines, acting as n good cathartic"[4]

Preparations.—Kamala Powder, which is prepared thus—(Ripe fruits are placed in a cloth or sack and beaten until the

grandular pubescene is removed In some places, fruits are simply rubbed between the palms of hands or are kneaded with the feet on the ground The powder thus obtained is then sifted to free it from fruits and broken pieces and in this condition it is ready for the market"—(Industry', April 1942—page 31)

Uses —Kamala powder has been known as an anthelmintic in India for a very long time "It is well tolerated by children also, and debilitated individuals in whom extract of filix mas is not advisable"—(Dr Kobert) [5] "Good quality powder is a reputed remedy having an assured action against taenia or tapeworm, as it is also an aperient, no further purgative is required for the treatment"—(Dr Trendelenburg) Dose of powder for an adult is about two to three drachms suspended in mucilage, syrup, milk, curds, honey, gruel or dissolved in a little aromatic water, though it may cause nausea and griping before free purging, but with no after-effects Probably its effect would be enhanced if it is given after preliminary preparation such as dieting and purgation, as is the case with malefern"[6] It may also be given in the form of a night draught made of Kamala powder 15 grs, mucilage of tragacanth 4 drs, syrup of ginger 1 dr and clove water 1½ ounces, followed next morning by a brisk purge of castor oil It is also given to kill and expel all intestinal worms as well as threadworms, and is given without any preliminary preparation, dietary or otherwise Dr Heinigkes besides prescribing against tapeworms, uses it in canine practice It may also be given in the form of a liquid extract Should the first dose not prove successful it may be repeated after the interval of a week 'Cains & Mhaskar (1923) found it to be useless against hookworms, round-worms and whip-worms, although earlier observers have claimed it to be a good vermifuge against these worms"[7] Kamala taken internally relieves leprous eruptions and also *externally* it has been used in skin diseases Kamala powder mixed with its eight times of sweet oil forms a useful ointment for ringworm, pityriasis and freckles Kamala powder alone is applied over syphilitic ulcers Following are useful compound powders for use in worms —(1) Take of Kamala 5, Crataeva nurvala or C reli-

giosa 4, Rose buds 5, Chebulic myrobalans 4 and Rock salt 4 parts Mix and make a powder Dose —grs 30 to 40, in treacle (2) Take of Kamala, baberang seeds, chebulic myrobalans, impure carbonate of potash and rock salt, equal parts powder and mix Dose —about a drachm with butter milk —(Chakradatta)

N B —Kamala consists of the glands and hairs covering the fruits

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1542 MALVA PARVIFLORA, Linn

(N O —Malvaceae)

(*Hind* —Panirak *Punj* —Narr, Sonchal) is found in N W Himalayas Sind Punjab and Upper Bengal Seeds are as a demulcent in coughs and ulcers in the bladder —(Watt)

1543 MALVA ROTUNDIFOLIA Linn

(N O —Malvaceae)

(*Eng* —Country mallow *Hind* —Kubazi *Sind* —Chanderee *Punj* —Sonchala *Mal* —Katkadalekka *Tam* —Kattukadalai *Tel* —Trikala mulla *Can* —Kadu kadlesoppu *Kon* —Kadu-chanyapallo) is generally met with in the Deccan and Mysore Provinces *Leaves* are mucilaginous and emollient when applied as a poultice or *paste* in scurvy, piles etc *Seeds* are demulcent and prescribed in the form of powder in cases of bronchitis cough inflammations and ulcerations of the bladder and in haemorrhoids They are also externally applied in the form of *paste* in skin diseases.

1544 MALVA SYLVESTRIS, Linn , or M vulgaris

Is a herbaceous plant (*Eng* —Common Mallow *Hind* —Gul kheir Vilayati kangni *Pers* —Khitami i kuchaka Nan i kulagh *Arab* & *Bom* —Khubazi *Kon* —Patari) growing on the temperate Western Himalayas, from Kumaon to Kashmir and the Punjab Like other Malvaceous species it—especially the fruit—abounds in mucilaginous principles It is prescribed in pul-

monary affections as well as those of the urinary tract. *Seeds* are employed internally in *decoction*, simple or compound, as a cooling and demulcent It is generally used as a substitute for Marsh-Mallow A *decoction* made of equal parts of common-mallow, marsh-mallow, seeds of common cucumber, seeds of water melon and Indian sweet fennel seeds, is used in urinary complaints and gonorrhoea dose is ½ to 1 ounce. *Leaves* are made into a poultice as an emollient external application.

1545 MAMMEA ASIATICA—

See Barringtonia speciosa

1546. MANDRAGORA OFFICINALUM, Linn.

M. autumnalis; M. vernalis or Atropa acuminata; or

A. mandragora, Solanaceae.

Sans—Putrada, Lakshamana, Raktavindu *Eng*—Mandrake, Devil's apples *Hind*—Lakmani, Bhagener *Ind. & Baz*—Lebruj *Pers*—Mardami, Giatya bruz. *Arab*—Astrang; Dastam Haryah *Tam*—Katavjate *Tel.*—Kattai-jati *Malay*—Lufahat) found in North India, Central Asia and South of Europe It contains a basic substance isomeric with hyoscyamine, i e, pseudo-hyoscyamine, known as Mandragorine. It is sedative, anaesthetic, poisonous, narcotic and cholagogue. *Root-bark* and *leaves* are local anaesthetics and applied to painful swellings It resembles belladonna in action, but weaker Like datura it increases sexual excitement in both sexes

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1547 MANGIFERA INDICA, Linn

M. montana; M. domestica.

(N.O:—Anacardiaceae)

Sans—Amva Amra, Chuta *Eng.*—Mango *Fr.* Manguier *Ger.*—Mangobaum *Hind & Ben.*—Am *Sind*—Amb *Guj*—Ambo *Mah*—Amba *Bom*—Thayet *Tel.*—Mamidi *Tam. & Malay*—Mampalam. *Mal*—Mavu. *Can*—Mavina-hannu;

Mavu Kon —Ambo *Pers* —Amba, Naghzak *Arab* —Ambaj Sinh —Mangga, Sunda

Habitat —This tree is indigenous to India and cultivated in many varieties almost everywhere in the plains and gardens

Varieties —For information in detail, readers are invited to read 'Book of the Mango' Bulletin No 103 of 1920 of Dept of Agriculture, Bombay

Parts Used —Fruit, kernel leaves, flowers, bark and gum

Constituents —Dried unripe peeled fruit contains water 21 p c, watery extract 61 5 p c, cellulose 5 p c, insoluble ash 1 5 p c, and soluble ash 1 9 p c Soluble ash contains potash, free tartaric citric and malic acids Ripe fruit contains yellow colouring matter, chlorophyl product soluble in ether, bisulphide of carbon and benzol and a trace of gallic acid with citric acid and gum Bark contains tannin, the kernel inside the stone or seed contains gallic acid and tannin, fat sugar, gum, ash and a large amount of starch Pulp of the ripe fruit contains a trace of gallic acid with citric acid and gum Gum of the tree contains besides moisture and ash 71 p c, of sugars—galactose and pentoses Mango is a good source of Vitamins (particularly the anti scorbutic Vitamin C)

Analyses of Mangoes of variety —

TABLE I

	Ordinary Mango Fruit (ripe)	*Pairi* Mango Fruit (ripe)	*Alphonso* Mango Fruit (ripe)
	On Pulp		
Moisture	81.3 p c	79.30 p c	80 50 p c
*Reducing sugars	14 46 ,	9 00 ,	3 66 ,,
*Non-reducing sugars	33 78 ,,	52 69 ,	47 07 ,,
*Total sugars	58.22 ,,	61 67 ,,	50 67 ,,
Acidity—in terms of sulphuric acid	0.20 ,,	0.34 ,,	—

* calculated on dry matter

Results of analysis of two samples (of Pairi and Alphonso) which have been analysed for other ingredients, also such as ether extract, albuminoids, carbohydrates, etc, are given below —

TABLE II

	Mangoes (Pairi)	Mangoes (Alphonso)
On Pulp	Per cent	Per cent
Moisture	84 00	79 00
Ether Extract	0 27	0 32
Woody fibre	0 34	0 46
Carbohydrates	14 04	20 77
*Albuminoids	0 87	0 94
Ash	0 48	0 57
Sugars (total)	10 08	14 63
* containing Nitrogen	0 13	0 15

Only one sample has been analysed for its Potash, Phosphoric acid, etc, and the result thereof is quoted below —

TABLE III

	On Pulp	Per cent
Moisture		83 00
Potash		0 15
Phosphoric acid		0 05
Lime		0 12
Magnesia		0 10

(From —Bombay Govt Agricultural Dept Bulletin)

Action —Fruit is laxative, diuretic, diaphoretic, astringent and refrigerant, the ripe one is slightly laxative and diuretic, nourishing and invigorating Unripe fruit is acid, astringent, stomachic and antiscorbutic Bark is astringent and tonic Bitter gum resin from the bark is astringent Kernel is astringent and anthelmintic *Am-chur* so popular among Indian troops is a valuable antiscorbutic

Preparations.—*Sherbats*, Custards, Preserves, Confections, Pickles, Curries, *Chutneys*, *Amchur* etc. of the fruit, Fluid extract and Infusion of the bark, Powder and Decoction of

gia leucorrhoea, bleeding piles, round worms, etc, powdered seed or kernel is given in doses of about 20 to 30 grains with or without honey "Kernel of the fruit is sometimes used as food by the poor —(Bom Govt Agri Dept Bulletin) In dysentery with slime the *kernel ground down with curds* forms a nice remedy In the diarrhoea of pregnant women, *kernel* is fried and given for eating *Juice of the kernel* is sniffed to stop nasal bleeding Decoction of the kernel either along or in combination with *bela* and ginger is prescribed in diarrhoea —(Sarangadhara) Dose is 1 to 1½ drs In chronic dysentery the *kernel* combined with a little opium and some stimulant aromatic drugs is very useful *Juice of the fruit* dried in the sun so as to form thin cakes is used as a relish and as an appetising diet, t is used in the form of *chutney* *Amchur* or *Ambose* so popular in India as an article of diet consists of green mangoes skinned, stoned cut into pieces and dried in the sun, owing to its acidity (citric acid) half an ounce of it is equivalent to an ounce of good lime juice so it is very useful in scurvy Sweet mango pickle, freely eaten with the diet, is an excellent form of administering an antiscorbutic like *Am-chur* *A fluid extract* or the infusion of the bark is used in menorrhagia, leucorrhoea, bleeding piles and in cases of haemorrhage from the lungs, also in nasal catarrh and for lumbrici A cold *infusion* (1 in 8) of the powdered barks of Mangifera Indica, Eugenia jambolana and Terminalia arjuna taken in equal parts is prescribed in doses of 1 to 2 ounces in diarrhoea and in bleeding from internal organs A *decoction* of the same ingredients is also useful in these diseases in doses of 1 to 1½ drachms mixed with conjee water, or the *juice of the fresh bark* is administered with white of egg and a little opium Juice of the bark 4 tolas mixed with 1 tola of lime water given for seven days is a sovereign remedy in acute gonorrhoea A fluid extract of the bark or rind (1 in 12) is very beneficial in doses of one teaspoonful every hour or two mixed with two ounces of water in cases of haemorrhage from the lungs, the uterus or intestines (haemoptysis and melaena) A decoction (1 in 20) made of the barks of Mangifera Indica, Spondias mangifera and Eugenia jambolana and re-boiled with the addition of rice (1 in

20 of the decoction) so as to form an emulsion is given daily to cure chronic dysentery Leaf juice is useful in bleeding dysentery A mixture consisting of two tolas of the juice, one tola each of honey and milk and ½ tola of ghee is a nice remedy. Milky fluid obtained from the leaf or bark is a useful application to cracks of the foot etc A decoction of *the leaves* with a little honey added is given in aphonia or loss of voice *Mid-ribs* of the leaves *calcined* are used to remove warts on the eyelids Tender *leaves dried* and made into a powder are useful in diabetes *Smoke* of the burning leaves is said to have a curative effect in some affections of the throat, in hiccup, etc *Ashes* of the leaves are a popular remedy for burns and scalds *Dried flowers* in decoction or powder are useful in diarrhoea, chronic dysentery and gleet Powder is used for fumigation against mosquitoes *Gum* of the tree is applied with benefit to cracked feet *Gum-resin from the bark* is used in catarrhs and mixed with lime juice it is applied to scabies and other cutaneous affections The best varieties are the '*Alphonso*' or '*Hapus*' and the '*Payari*'

1548 MANGIFERA SYLVATICA

(N O —Anacardiaceae)

(*Sans*—Koshagru *Mah*—Koshamba) is found in Konkan *Oil from the seeds* is insecticide or vermicide *Fruit* (ripe) is stimulant appetiser, nutritive or strength-giving *Oil* from the seeds is given in hot water as cathartic It is applied to leprous sores and ulcers generally as parasiticide *Bark*-juice with *Samudraphal* ground into it, forms a useful *lep* or application to bruises, abrasions etc

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1549 MANIHOT UTILISSIMA, Pohl

(N O—Euphorbiaceae)

Baz—Cassarva, *Tam*—Maravuli Contains cyanogenetic glucose Juice is poisonous

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1550 MANISURIS GRANULARIS, Linn

(N O —Gramineae)

(*Sans.*—Phalangini, *Hind*—Trinpali, *Ajmer*—Kangni, *Udaipur*—Dhaturaghas *Chanda*—Aginaligadi *Berar*—Ratop) is cultivated throughout the hotter parts of India In Bihar it is prescribed internally in conjunction with a little sweet oil in cases of enlarged spleen and liver —(Ainslie)

1551 MARANTA ARUNDINACEA, Linn.

(N O —Scitaminaceae)

(*Eng*—West Indian Arrowroot, *Hind*—Tikkor, *Ben & Bom.*—Ararut, *Mah*—Tavkil *Tam*—Kuamau *Mal*—Kuva *Can*—Kuvehuttu *Kon*—Aararoot, *Burma*—Pen bava) is cultivated in Eastern Bengal, the United Provinces, Konkan and in Madras *Arrowroot* obtained from the rasped tubers of this plant is the most easily digested and a pure form of starch, and is chiefly used as a diet in the form of *Conjee* for invalids and children The thin skin which covers the tubers contains bitter principles which would injure the starch in point of flavour, and in the most careful mode of preparation of *arrowroot* great care is taken to remove this skin by peeling *Conjee* should be prepared fresh when required It is nutrient and demulcent Arrowroot obtained in the bazaars is frequently adulterated with potato starch, which may be detected by the microscope, the granules of potato starch being larger

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1552. MARANTA GALANGA

See Alpinia galanga

1553 MARLEA TOMENTOSA, Endl.

(N O —Cornaceae)

Ben—Marlea There is an alkaloid.

1554 MARRUBIUM VULGARE, Linn.

M hamalalium, M Germanicum

(N O —Labiatae).

(*Eng* —White hore-hound, East Indian Peppermint *Ind.* & *Baz* —Farasiyun, Hastushat el-kalb (dog's herb) indigenous to western temperate Himalayas, Kashmir etc *Herb* contains a volatile essential oil, a bitter glucoside called "Marubien", resin, tannin and fat It is used in infusion (1 in 20) in one to two ounce doses or *juice* or *succus* 1 to 2 drs, as stimulant, expectorant, resolvent, anthelmintic and alterative, in coughs, chronic bronchitis, dyspepsia, jaundice, phthisis, amenorrhoea, chronic rheumatism, hepatitis, cachexia etc

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1555 MARSDENIA ROYLEI, Wight

(N O —Asclepiadaceae)

Hind —Murkula *Punj* —Kurang This drug is cooling and alterative, and is used in gonorrhoea

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1556 MARSDENIA TINCTORIA, R.Br ,

Ben —Riong, *Nepal* —Kalilara
There is an alkaloid in this drug

1557 MARSILEA GRANDIFOLIA, Linn

(N O —Marsileaceae).

Action —Acrid, cooling, astringent and hypnotic

1558. MARTNIA DIANDRA, Glox

(N O —Pedaliaceae).

(*Eng* —Tiger's Claw, Devil's Claw *Guj* —Vichchida. *Hind.*—Bichu *Ben* —Baghnoki, Bagnakha *Gwalior.*—Bichua. *Mah* —Vinchhu *Tel* —Garuda-mukku *Tam* —Thelkodukuk-

kai) is met with in Konkan A paste of the nut is used as a local sedative and is said to have a curative effect when applied to bites of venomous insects, such as scorpions etc

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1559 MATRICARIA CHAMOMILLA, Linn, M Suaveolens.

(N O —Compositae).

(*Eng*—Camomile, *Punj*, *Hind.* & *Ben*—Babunphul, *Bom* & *Punj*—Babuna) are met with in the upper Gangetic plains Constituents —Camomile flowers contain blue essential volatile oils, more particularly azulene and glucoside and a resin Action —The disinfectant, antiseptic properties and powerfully antiphlogistic action causes constriction of the capillaries dilated through the inflammatory process The glucoside influences the vegetative nerve-endings and paralyses the smooth musculature, including that of uterus and intestine, thereby relieving the spasms inhibiting the expulsion of intestinal gases This explains the antispasmodic and carminative action of camomile Intravenous injections lower the blood-pressure Steinmetzer states that camomile doubles the amount of biliary secretion Also diuretic and stimulant In Persian works, flowers are described as stimulant, attenuant and discutient, and their odour induces sleep—(Dr Madaus's Book)

Uses—*Camomile tea* applied to the genitals has a powerful stimulating effect *Camomile* oil is used externally in rheumatism in Gujerat Flowers form a perfect substitute for the European Camomile "This strongly aromatic plant is not eaten by grazing cattle The deodorant properties of camomile are so marked that meat or other articles of food can be freed from putrid smells by repeated washing with, or immersion in a camomile infusion Camomile is described in the medicinal writings of all times Used principally as a nervine irritability, hypersensitiveness, e g, in neuralgias, rheumatism, toothache, during teething, in false labour pains, dysmenorrhea, metrorrhagia, cramp in the leg, icterus, flatulent colic.

Also prescribed in powder form in itching, moist eczemata, impetigo capitis, open wounds, fistulas"—(Dr Madans's Book) Odour of flowers drives noxious insects For further uses, etc, see Anthemis nobilis

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1560 MATTHIOLA INCANA, R Br

(N O —Cruciferae)

(*Punj, Ben & Sind*—Todri safed) cultivated in the gardens of Northern India Seeds are three kinds white, red and yellow They are stimulant, expectorant and aphrodisiac—(Stewart), used in infusion in cancer Mixed with wine, seeds are given as an antidote to poisonous bites—(Dr Emerson)

1561 MECONOPSIS ACULEATA, Royle & M Nipalensis

(N O —Papaveraceae)

(*Simla*—Kanta) both Himalayan species have had powerful narcotic properties attributed to them, especially to the roots But the drug is still open for investigation

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1562 MECONOPSIS NIPALENSIS, DC

Root is officinal in Kashmir, and it is a narcotic

1563 MECONOPSIS ROBUSTA, Hk F & T

1564 MECONOPSIS SIMPLICIFOLIA, Hk f & T

1565 MECONOPSIS WALLICHII, Hook

This drug is a narcotic

Bom Govt Agriculture Dept Bulletin

1566 MEDICAGO SATIVA.

Eng—Lucerne or Alfalfa, Guinea grass *Mah*—Vilayati-gavat, *Hind*—Lasunghas, *Can*—Vilayatihullu

Habitat —This leguminous plant has entered India from the north-west viz Baluchistan, Afghanistan, Kashmir & other countries approached from the north-west In India the military contonments have been the great centres of lucerne growing in Western India In South Sind, Deccan & Gujarat also

Varieties —There are said to be three varieties usually grown in India, (1) the Kandhahar or Quetta,, (2) the Persian or Arabian, (3) the Meerut The first two varieties are cultivated in Western India

Composition —The early cut lucerne contains the highest per cent of proteids and fat, and the lowest per cent, of fibre The former decrease regularly while the latter increases rapidly from early bloom to full maturity

Leaves are much richer in proteids, fat and nitrogen free extract than stems, and they contain much less fibre On the average, of all cuttings, leaves contain 1½ times as much proteids as stems 5 times as much fat, 35 per cent more nitrogen free extract, and stems contain 2½ times as much fibre as leaves

Uses —The Persian or Arabian variety is preferred to Kandahar variety, for fodder purposes Young lucerne if eaten directly from the field, and without a considerable supply of dry fodder taken at the same time, is liable to cause tympanitis or hoven in cattle or sheep, though not in horses The danger is, however, very remote with cut lucerne, especially if it is allowed to stand and wither slightly before being fed to the animals About 10 pounds per day can then be fed to a horse or a cow-with very great advantage The leaves are the most nutritious part of the plant, and lucerne is the most nutritious green fodder Yet lucerne is supposed by some to reduce the milk flow

1567. MELALEUCA LEUCADENDRON, Linn.,

M. cajuputy or M. minor.

(N O—Myrtaceae).

(*Eng*—Cajuput Tree *Hind.*—Kayaputi *Ben*—Cajuputti, Kajaputi *Bom*—Kayakuti *Tel*—Kaiyappudai *Tam*—Kajapute, Kayapute *Malay*—Cajuputi, Kayaputia) is indigenous to the islands of the Indian Archipelago and Australia, but cultivated in India The thin greenish essential oil known as 'Cajuput oil' distilled from the leaves is imported from Java, Manilla and other islands The *oil* contains bihidrate of Cajuputine or Cajuputol about 2/3 and several terpenes, also acetic, butyric and valerianic ethers of turpeneol *Cajuputol* is obtained from the crude oil by distillation *Kajaputika-tel*, as the crude oil is called, is of a pale, bluish green colour, pungent odour and bitter aromatic taste The green colour is attributed to chlorophyl or to copper present in it The *oil* is a powerful stimulant, sudorific, carminative, diuretic and antiseptic It is given in two to five minim doses in flatulence and colic, choleraic diarrhoea, "but is apt to produce inflammation of the kidney—(Chopra), hysteria, hiccup, nervous vomiting, dyspnoea, dysmenorrhoea, neuralgia, rheumatism, and low fevers it is used in the form of a *spirit* in doses of half to two fluid drachms *Externally* it is parasiticide and anthelmintic, rubefacient and counterirritant to the skin It is always mixed with stimulant liniments such as croton (of which it forms an ingredient) It is applied to rheumatic pains in the joints or muscles in paralysis and neuralgia With olive oil it is dropped into the ear in deafness and earache It is a domestic remedy for all muscular pains and in the chronic forms of pityriasis, psoriasis and eczema Following makes a good and useful liniment—Cajuput oil, half a drachm, castor oil one drachm, olive oil 4½ drachms If a stronger stimulant for rheumatism is required use this—Soap liniment, samphor liniment, and cajuput oil, of each an ounce, mix and rub well in.

1568 MELANORRHOEA USITATA, Wall

(N O —Anacardiaceae).

(*Eng* —Black Varnish tree *Burm* —Thitsi *Manipur* —Khen *Tel* —Soothan) is a forest tree allied to the Dipterocarpus species, found at Prome and neighbouring districts in Burma This tree is the source of an oleo-resin known as the black varnish used to some extent as a medicine It contains about 85 p c of urushic acid *Oleoresin* is used in Burma in combination with honey as an anthelmintic in skin diseases. If it be too much handled it causes erysipelas like swellings among some, which are cured by applying an infusion of teak-wood

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1569 MELASTOMA MALABATHRICUM, Linn

(N O —Melastomaceae)

Tam —Nakkukaruppan Juice of leaves and root is used in indigestion flowers as a nervous sedative, and in piles and haemorrhage

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1570 MELIA AZADIRACHTA, Linn

See Azadirachta Indica

(N O —Meliaceae)

Sans —Ravipriya Vembaka Vranashodhakari Nimba Arishta Pichumanthah *Eng* —Neem or Margosa Tree, Indian Lilac *Fr* —Azadirae d Inde, Margousier *Ger* —Indischer Zedrach *Hind*, *Duk*, *Punj* & *Ben* —Nim or Nimb, Nimgachh *Guj* —Limbo *Mah* —Kadunimba *Bom* —Nim Balnimb *Tel* —Vepa *Tam* —Vembu Veppan *Mal* —Veppu *Can* —Bevina mara Kahibevu *Kon* —Beva rooku *Pers* —Neem. *Sinh* —Kohumba *Burm* —Tamabin Kamakha *Malay* —Dawoon Nambu Bayppy

Habitat —Indigenous to and cultivated nearly all over India and in Burma

Parts Used —Every part of the plant—bark, root-bark, young fruit, nut or seed flowers, leaves, gum and toddy or sap "Bark and leaves are of particular interest from medicinal point of view "[1]

Constituents —"The bark exudes a clean bright amber-coloured gum which is collected in small tears or fragments " It contains a bitter alkaloid named 'margosine" in long white needles, as a double salt of margosine and soda—a neutral, amorphous resin believed to reside in the inner bark or liber Leaves contain a small quantity of bitter substance of a similar character but much more soluble in water This substance also contained in the bark is a hydrate of the resin which it closely resembles in its properties Seeds contain about 10 to 31 p c of a yellow bitter fixed oil which is extracted by boiling or by pressure 'The oil is deep yellow in colour and has a strongly disagreeable acrid taste it has a soecific gravity of 0 9235 at 15 5°C, at about 10° to 7°C if congealed without losing its transparency, the oil contained free and volatile fatty acids After standing for about 36 hours, the freshly-expressed oil deposited a white sediment which on microscopical examination was found to be amorphous in character The colour reactions of the margosa oil were not characteristic The volatile fatty acids probably consist of a mixture of stearic and oleic acids with a small amount of lauric acid

Roy & Chatterjee (1921) analysed the oil and found the following constituents —(1) Sulphur 0 427 per cent, (2) a very bitter yellowish substance obtained from the alcoholic extract of the oil, which is supposed to be an alkaloid, (3) Resins, (4) Glucosides, indefinite, (5) Fatty acids

Roy & Chatterjee (1917-18) had also prepared an acid named 'margosic acid' and its salts from the neem oil (The process is described in Chopra's "Indigenous Drugs of India") [3] The salts are nearly white in colour and are soluble in water They are extremely bitter to taste

Watson and his co-workers (1923) consider that the objectionable odour of the neem oil is chiefly due to organic sulphur compounds which are slightly volatile On prolonged

steam distillation of the oil a volatile sulphur compound slowly distils over and collects on the condensed water A bitter principle, about 200 times as bitter as the original oil, was separated by these workers The ultimate analysis of the bitter substance showed that it consists of two different portions—an amorphous and a crystalline substance The crystalline substance has been termed 'margosopicrin"

Dutt and his co workers (1930), however, consider that the odorous element in the oil consists of an evil-smelling essential oil which remains in a state of solution in the oil itself and cannot be easily separated on distillation

Sen & Banerjee (1931) have shown that the bitterness of the oil is due to the presence of the sodium salt of an acid and partly to the presence of the free acid which are held in solution in the oil The acid contains sulphur in its molecule and is unsaturated'[4]

The toddy or sap contains glucose sucrose, gums and colouring matter, proteids and ash, containing potassium, iron, aluminium, calcium and carbon dioxide Neem oil contains margosic acid, glycerides of fatty acids (soluble 3 5 p c , insoluble 89 1 p c), butyric acid and a trace of valeric acid detected as volatile acids, a small quantity of neutral resin, two other acid resins and a small quantity of an alkaloidal substance Cake left after expression of oil was found to contain a neutral principle, organic matter 83 to 84 p c , moisture, and ash 6 to 9 p c containing nitrogen and phosphoric anhydride

Action —Root-bark and young fruit are astringent, tonic and antiperiodic Bark is bitter, tonic, astringent, antiperiodic and also vermifuge Fruit is purgative, emollient and anthelmintic Leaves are discutient, leaf juice is anthelmintic Oil from nuts and leaves is local stimulant, insecticide and antiseptic Flowers are stimulant, tonic and stomachic Gum from the bark is a stimulant and demulcent tonic Toddy is refrigerant, nutrient and alterative tonic The drug also possesses antispiro- -etal and emmenagogue properties.

"Chatterjee & Roy state on clinical evidence that the Margosate• are powerful against protozoa (bacteria in the body),

a solution of 1 in 10,000 killing the flagellate Prowazekia in five minutes The results obtained by these workers are as follows,—

Drug Used	Dilution which suffices to kill in 5 minutes
Quinine sulphate	1 in 100,000
Emetine	1 in 10,000
Tartar emetic	1 in 500
Sodium margosate (BCPW)	1 in 10,000

Parmoecium caudatum was killed instantaneously with 1 in 2,000 solution The sodium salt of the acid was also tested on microfilariae and it killed these organisms in 35 seconds in a concentration of 1 in 200 These workers considered that, along with their strong parasitotropic properties, the margosates posses very low organotropic properties The carbolic acid co-efficient of the soluble salts is only 2 and, therefore, the anti-bacterial or bactericidal properties of margosates are not very marked in vitro " 5

Action & Uses in Ayurveda & Siddha —Tikta rasam, katu vipakam, seetha veeryam, pitta kapha haram, lagu, grahi, in sramam, trishna, kasam, jwaram, aruchi, krimi, vranam, chardhi, kushtam, premeham *Leaves* In krimi, pitam, visham, arochakam, kushtam *Fruits* —Bedhanam, snigdam, ushna veeryam, lagu, in kushtam, gulmam, arsas, krimi, premeham, and in chronic fevers —(Therapeutic Notes)

Action & Uses in Unani —Cold 1°, Dry 2°, munzij, resolvent, blood purifier, soundavi diseases *Leaves* —Expel wind, heal ulcers in the urinary passages, emmenagogue, skin diseases *Fruit* —Astringent, leprosy, bronchitis —(Therapeutic Notes)

Preparations —Powders (of the bark, root-bark and young fruits), dose is 1 to 2 drachms Decoctions (1 in 15) of the bark, root-bark and of the leaves, dose is 2 to 4 ounces as anti-periodic every 2 hours previous to expected attach and 1 to 2 ounces as tonic Fluid Extract or Tincture of the root-bark (1 in 5), dose is 1 to 3 drachms Infusion of the flowers

(1 in6) dose is 1 to 3 ounces Mucilage of the gum dose is 1 to 3 ounces Poultice of the leaves, cataplasma with rice flour or linseed meal added, oil of the kernel of the nuts or seeds and that of the bruised leaves boiled with cocoanut oil till the juice is wholly absorbed in the oil, for external use only

Uses —This tree when planted is advantageous to health as a prophylactic against malaria The bitter tonic, astringent and antiperiodic virtues of its bark have been confirmed even by European practitioners and writers not only the old writers like Bartholemo, Sonnerrat etc, but also later investigators and doctors as White Cornish, Windown, Forbes etc, have tested and found it as effective in the treatment of intermittent fever as cinchona and arsenic It has been further tried and tested recently in malarial fevers by Drs Bhola Nath, Chitale, Parry, Mandal, Woolley and Rai Bahadur Ghosh, all of whom have found the drug to possess decided anti-malarial properties —(Calcutta Report on Indigenous Drugs) *Bark* is used in the form of powder or *fluid extract* or decoction in cases of intermittent and other paroxysmal fevers to relieve thirst, nausea and vomiting in fever, general debility, convalescence after fevers, loss of appetite and skin diseases, with the addition of a little coriander and ginger powder or bruised cloves or cinnamon powder, it is said to be superior to quinine A decoction of *the bark* with the addition of a little black pepper and chiretta is a popular remedy used in fevers A decoction made of 1 drachm of the bark and 2 drachms of long pepper is used for rheumatism, lumbago etc A decoction made of this bark and Babula bark in equal parts is useful in leucorrhoea A tincture of the bark and a decoction of the rootbark were tried in malarial fevers and found useful —(Report on Indigenous Drugs, Madras) The oil, known as "Margosa oil" in some places, "named 'Nimbadi Thailam' given in 10 drops doses with fresh milk once a day, in combination with other Ayurvedic remedies has been effective in early stages of leprosy's *Oil* may be used like carbolic oil as a dressing for foul ulcers, as a *liniment* to rheumatic affections and to the head in headache It is a favourite application in tetanus, leprosy, urticaria, eczema.

erysipelas, scrofula and skin diseases, like ringworm, scabies, pemphigus, etc, and in mange in dogs, it should be rubbed well for 10 minutes or more at a time "Neem oil tried by Caius & Mhaskar in doses of 1 to 4 drachms, was found ineffective in expelling intestinal parasites The maximum dose of the oil produced occasional diarrhoea, nausea and general discomfort [7] Sodium and Potassium margosates derived from the margosic acid of the oil are valuable for disinfecting many forms of skin affections For leprosy it may either be used alone or combined with chaulmoogra oil or gurjun balsam Injections of margosates and the local application of the acid are found to be more valuable in leprosy and syphilis than the oil "Chatterjee gave sodium margosate in solution, in doses varying from 0 01 gm to 0 325 gm subcutaneously, intramuscularly and intravenously in the primary, secondary and tertiary stages of syphilis In the primary and secondary stages, the initial lesion and secondary manifestations disappeared under its influence much more readily than in untreated cases In the late secondary and tertiary stages, the skin lesions gummata etc soon subsided The results, however, were not so satisfactory as those obtained from administration of the arsenicals, mercurials, bismuth and iodides "[8] As insecticide it is applied for the destruction of lice and as an alterative and antiperiodic in 5 to 10 minim doses it is given once or twice daily, in chronic malaria, syphilis, leprosy, etc, requiring alterative remedies As anthelmintic it is given in doses of ½ to 1 drachm A compound medicated oil consisting of 40 parts of *neem* oil, 1 part each of *haritala*, *manasila*, bhilama, cardamoms, aloe-root, sandalwood, root of Valeriana hardwickii, and *Chameli* and 100 parts of water, all boiled together and made into oil in the usual way, used as an application to suppurating scrofulous glands *Fruit* is used in leprosy, intestinal worms, piles and urinary diseases *Kernel* of the fruit 1 drachm mixed with 2 drachms of *gool* and made into a pill, is given daily for 7 consecutive days to cure piles *Seeds* are used for killing pediculi and the *powdered kernel* for washing the hair *Dry seeds* possess the same properties as the oil when bruised and mixed with water or some other fluid and applied to itch etc *Leaves* heated over boiling water

or in the form of pulp or paste (ointment and liniment) or poultice or ground with honey into a *Lep* form antiseptic applications to unhealthy pustules, indolent glandular swellings, boils, ulcers and skin diseases In hot decoction or infusion with the addition of *Katuki* and chiretta, they are invaluable in febrile cases, and *externally* the decoction is a valuable antiseptic, and healing lotion like a weak solution of carbolic acid, and an anodyne fomentation to unhealthy ulcers, swollen glands, bruises and sprains Following decoctions are used in different types of fevers —(1) Take of *Nimba thwak* 1 part, *Guduchi* 1|8 parts, *Yashtimadhu* 1|8 part, *Triphala* 1|16 part, *Gudam* 1 part, and water 16 parts Boil down to eight parts. Filter the decoction, give one ounce three times a day in *Sadharana jwara* (2) Take of *Nimba* 1 part, *Vasa* ½ part, *Yashtimadhu* 1|8 part, *Thrikatu* 1|16 part, *Triphala* 1|16 part, *Gudam* 1 part, and water 16 parts Boil down to eight parts Give one ounce three times a day, in *Kapha jwara* (3) Take of 1 part each of these —*Nimba, Guduchi, Katukarohini, Vasa, Kantakari, Gudam*, and 16 parts water Boil down to eight parts Give one ounce three times a day, in *Dwandaja* or *Sannipata Jwara* *Leaves* eaten daily act as prophylactic to scorpion-sting and snake-poison They are used to diagnose cases of snake-poisoning, they do not taste bitter to those who are poisoned, if given for eating A pill made of —Leaves 1 tola in weight, camphor and asafoetida 2 grains each, given mixed with 3 drachms of jaggery at bed-time is said to act as prophylactic against epidemics Cakes made of 21 leaves with cow's ghee and *moong dal* are eaten for 21 days with cow's ghee, during which period common salt is prohibited and *saindhava* is used instead in small quantities *Leaf-juice* is given in worms, jaundice and in skin diseases 'Caius & Mhaskar (1923) administered leaf-juice in one dose of 4 drachms preceded and followed by purgation, but had proved ineffective in expelling intestinal parasites "[10] With sweet oil it is given in intestinal worms, with honey in jaundice; with chebulic myrabolan in chronic skin diseases like prurigo, boils, eczema, urticaria etc. *Leaves* prevent the ravages of white ants *Paste* of the leaves is used externally in cases of small-pox. Leaves are spread on the bed of the small-pox

patient and fans made of them are used for fanning him. *Pills* of 5 grains, made of the fresh tender young leaves quith liquorice powder and a few drops of water given thrice daily were found marvellously successful in small-pox cases—(Dr Pulney Andy) A *poultice* of leaves mixed with sesamum seeds is very useful in unhealthy ulcertaions—(Chakradatta) A *decoction* of the leaves also is administered with great benefit in intermittent fevers complicated with congestion of the liver "A soup made of *neem* leaves is administered in convalescence after diarrhoea and in *'Vayu'* variety of *'Arsa'* (piles)"[11] *Gum* is useful in catarrhal and other affections *Flowers in infusion* are given in atonic dyspepsia and general debility Infusion has a marked action on the liver turning stools into brilliant yellow after its use "*Dried flowers* are also used as a tonic after fever"[12] *Toddy* or the *fermented* sap of the tree is valuable in consumption, atonic dyspepsia, general debility, chronic leprosy and other skin diseases *Tender twigs* of the tree are used as tooth-brushes, which will keep the system healthy and the breath and mouth clean and sweet Under the name of *Pancha-nimba gutica* or *Pancha-amrita*, a medicine is prepared which contains the flowers, fruits, leaves, bark and root of the tree 15 parts each to 1 part each of powdered iron oxide, Chebulic myrobalans, seeds of Cassia tora, *Triphala*, fruit of Semecarpus anacardium, Embelia ribes, sugar, emblic seed, Curcuma longa, long pepper, black pepper, dry ginger, seeds of Psoralia corylifolia, pods of Cassia fistula and Tribulus terrestris all powdered, mixed together and made into a paste in the juice of Eclipta erecta, and then mixed with the decoction (1 in 8) of the bark of Acacia catechu This is given in doses of 4 drachms in leprosy and white patches Another preparation called *Pancha tikta ghrita* which is made by boiling together 80 tolas each of *Neem* bark, leaves of Momordica dioica, Solanum jacquini, *Gulancha* and bark of Adhatoda vasika, in 64 seers of water till it is reduced to quarter, and strained and then adding four seers of clarified butter and a seer of the three myrobalans in the form of a paste and the whole prepared into a *ghrita* in the usual way, is recommended to be given in doses of three to six drachms, "or one teaspoonful with a little hot milk internally twice

daily" [13] in chronic skin diseases —(Chakradatta)

1571 MELIA AZEDARACH, Linn M sempervirens (N O —Meliaceae).

Sans—Mahanimba, Himadruma, Parvatanimba vraksha *Eng*—Persian Lilac, Common Bead tree *Fr*—Azedarak commun Cyrovenne *Ger*—Gemeiner Zedrrach *Punj*—Drek *Hind*—Bakayan Mahanimb *Ben*—Ghora nim *Mah* & *Bom*—Vilayati nim *Tel*—Konda vepa, Turukavepa *Tam*—Malaivembu *Malay*—Mullayvempu *Arab*—Hab-ul ban *Pers*—Tak *Can*—Turaka bevu, Huchha bevu, Chikka bevu, Bettada bevu *Kon*—Phirangi nimb

Habitat—This tree is found wild in Persia and the Western Himalayas cultivated in some parts of India

Parts Used—Root bark, fruit or berry, seeds, flowers, leaves, oil and gum

Constituents—Active principle is a light yellow non crystalline, bitter, resinous substance without alkaloidal properties, sugar is present and tannin occurs in the outer portion of bark Activity resides in the liber or inner bark

Action—Bark is cathartic and emetic, flowers and leaves are emmenagogue and resolvent Root-bark is bitter, emetic and anthelmintic in large doses narcotic Leaves are anthelmintic, antilithic diuretic, and emmenagogue, their decoction is astringent and stomachic

Uses—*Root bark* is used in decoction (1 in 10), as an ananthelmintic for children in ½ ounce doses every third hour or morning and evening for some days successively then followed by a cathartic *Leaf juice* may also, as anthelmintic be administered internally *Flowers* and *leaves* are applied as a *poultice* to relieve nervous headaches A *decoction of the leaves* is employed in hysteria Leaves and bark are used internally

(1) & (2)—Chopra's "ID of I. p 340 (3) p 341 (4) & (5) p 342, (7) (8) & (10) p 343 (12) p 341, (6) (9), (11) & (13)—Andhra Medical Journal

and externally in leprosy, scrofula and other skin diseases, while a poultice of the flowers is believed to have vermicide properties and valuable in eruptive skin diseases *Decoction of the root-bark* (1 in 10) is used as a bitter tonic in doses of ½ to 1 ounce A *syrup* containing vanilla to disguise its disagreeable taste is also prepared from the bark In large doses the bark, leaves and fruits or berries especially fresh are all poisonous, producing narcotism which is followed by death, 6 to 8 fresh berries have caused death But they used in leprosy and scrofula *Dried berries* immersed in whisky have been employed against ascarides, tape worm etc, and *pulp* of the berries stewed in lard is useful in scald head A *poultice of the flowers* is used to kill lice and to cure eruptions of the scalp *Seeds* are used in rheumatism *Oil* is used similarly to that of neem *Gum* is a remedy for splenic enlargement

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1572. MELIA DUBIA, Cav.

(*Sans*—Arangaka *Hind & Bom*—Kadukhajur *Tam*—Mallay-vembu) Action—anthelmintic Contains a glucoside Used in skin diseases

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1573 MELIA SUPERBA, M. robusta,

(N O—Meliaceae).

(*Bom., Ben & Hind*—Kadu-khajur, Kala khajur) *Fruit* is bitter, astringent and carminative Its *pulp* is given for relief of colic and other bowel complaints, dose is half fruit It has a bitter nauseous taste and resembles a date in size and shape, its colour is black

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1574 MELICA CILIATA, Duthie

(N O—Gramineae)

Contains HCN

1575. MELILOTUS ALBA, Lam or M. Indica.

(N.O:—Papilionaceae).

Mah.—Senji, common leguminous weed in the Punjab, frequently sown in North India and Sind as a fodder crop. It occurs either as a white-flowered plant (M.alba) or a yellow-flowered plant (M. Indica). Action:—Astringent and narcotic. Constituents:—Coumarin. Uses:—Both varieties are of considerable value when fed green to milch cattle, but if allowed to ripen they are liable to cause colic.—(Chopra's "I.D. of I." p. 506, and Bombay Govt. Agri: Dept. Bulletin).

1576. MELILOTUS OFFICINALIS, Willd.

(*Hind.*—Aspurk; *Ben.*—Banpiring). Action:—Astringent. Constituents—Coumarin; glucoside. Useful in swellings and bowel complaints.

1577. MELILOTUS PARVIFLORA, Desf.

(*Sans.*—Banamethika. *Hind. & Ben.*—Ban-methi. *Bom.*—Zir). Seeds are used in bowel complaints.

1578. MELISSA PARVIFLORA, Benth.

(N.O:—Labiatae)

(*Pers.*—Budrunjboya) found in temperate Himalayas from Garhwal to Sikkim and Khassia mountains, and is used in the Punjab as stomachic, also in liver and heart diseases and weakness of sight. *Leaves* are drunk with wine and applied outwardly against the stings of venomous insects and bites of mad dogs. A *decoction* of leaves is used as a gargle to relieve toothache. It is said to be good for those who find it difficult to breathe without holding their necks upright.

1579 MELOCHIA CORCHORIFOLIA, Linn

(N O —Sterculiacea)

Stems and leaves boiled in oil is a remedy for bites of water snakes

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1580 MELODINUS MONOGYNUS Roxb

(N O —Apocynaceae)

Ben —Sadulkou This is a fish poison

1581 MEMECYLON AMPLEXICAULE, Roxb

(N O —Melastomaceae)

Tam.—Kaikkathetti Decoction of flowers and shoots is used in skin diseases Root is ecbolic

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1582 MEMECYLON ANGUSTIFOLIUM, Wight

(*Sans* —Kakajembu *Tam* —Attunjarei) Bark is tonic and cooling

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1583 MEMECYLON EDULE, Roxb , M tinctorium

(*Sans* —Anjani *Eng* —Iron wood tree *Bom* —Lokhandi *Mah* —Limba *Ben* —Anjana *Can* —Limbatoli *Mal* —Kashoa *Tel* —Allichettu *Tam* —Kayampuvuchedi, Caseychedi Kashamaram. *Sinh* —Wari kaha Serookaya *Kon.*—Kalo kudo) is found in the eastern and western Peninsula and in Ceylon *Leaves* contain a yellow glucoside besides chlorophyl, resins colouring matter gum starch malic acid, crude fibre and inorganic matter containing silica They are used as cooling and astringent their *infusion* (1 in 20) is used as a collyrium in conjunctivitis, and given *internally* in leucorrhoea and gonorrhoea *Root* in *decoction* (1 in 10) is beneficial in dosees of ½ to 1½ ounces in menorrhagia and gonorrhoea —(Drury) Bark with equal proportions of cocoanut

kernel, *ajwan* seeds, yellow zedoary and black pepper, all in powder, and tied up in a cloth forms a nice fomentation or applied as a *Lep* to bruises—(Dymock).

1584 MENISPERMUM CORDIFOLIUM—

See Tinospora cordifolia.

1585 MENISPERMUM FENESTRATUM—

See Cosciniuum fenestratum

1586 MENISPERMUM HIRSUTAM—

See Cocculus villosus

1587. MENTHA ARVENSIS, Linn

Var.—M. piperascens (Japanese) and M canadensis (Japanese), N O—Labiatae, is a fragrant herb (*Eng*—Mint, Marsh Mint *Hind. Ben Pers Bom Tel & Tam*—Pudinah *Arab*—Naanai-hindi *Mal*—Puttiyana *Can*—Chetni marugu *Burm*—Bhudina) is a native of the temperate northern and western Himalayas and Kashmir, cultivated in gardens in Konkan An essential oil is obtained by steam distillation from the leaves, flowering tops and stems, similar to peppermint oil of B.P and a stearoptin known as menthol or peppermint, camphor is also obtained by keeping for sometime "Reasearches carried out at the Calcutta School of Tropical Medicine, show that this essential oil compares very favourably with the oil obtained from M. piperita, in odour, taste and other physical characters The amount of essential oil obtained from the whole dried plant from Kashmir was 0 18 to 0.2 per cent It is likely that specimens of fresh herb will give a higher percentage of oil than that obtained from the dry herb extracted ot the School, as it is stated by some authorities that the drying of the herb before

oistillation results in a loss of 50 per cent of the oil It has also been found by the U S A Dept of Agriculture researches, that if the leaves are collected during the budding and flowering stages, the yield of oil on distillation is much higher than obtained otherwise"[1] *Herbs of mint* are much esteemed in India as aromatic, carminative, stimulant, antispasmodic, stomachic and emmenagogue They are used in *chutneys* A *decoction* or vapour of its tea is largely used with lemon-grass as a febrifuge in fevers It is also given in hiccup Oil and menthol have the same properties The latter is an invaluable anti-neuralgic applied externally in alcoholic solution or in the form of the popular "menthol cone"

1588 MENTHA PIPERITA, Linn

Var—M officinalis & M vulgaris (English, European & American), M incana, M. hirsuta, M. canadensis, M sativa, M aquatica, are various species belonging to the genus Labiatae *(Eng*—Peppermint *Hind*—Paparaminta, Gamathi phudina (M incana), Basarai phudina (M sativa), met with in Northern India, Kashmir etc, and can be easily grown as a garden plant in temperate climates such as gardens in Nilgiris etc Leaves contain a volatile oil, menthol, resin, tannin and gum Volatile oil, i e, Peppermint Oil (Oleum menthae piperitae B.P) obtained by distillation, is a colourless viscid liquid, becoming brown on exposure, of a peculiar pungent camphoraceous odour and hot taste "The English peppermint oil is admittedly superior to any other kind" (Chopra) It contains chiefly a crystalline stearoptin known as menthol or mint camphor and a liquid turpene, also glacial acetic acid and carbon bisulphide, the dose is ½ to 2 minims It is antiseptic, deodorant, stimulant and carminative, generally used as an external application in congestive headaches, rheumatism, neuralgia etc, and is largely used in pharmaceutical preparations to disguise the taste of evil-smelling and unpleasant drugs, and as a flavouring in confections and dentifrices Stearoptin is obtained by cooling the

(1) Chopra s "I.D of I' pp.189/190

oil *Leaves* and their volatile oil are aromatic, stimulant, carminative and anti spasmodic. *Leaves in infusion* (1 in 10) or their oil or as *spirit* in doses of 5 to 20 minims or *aqua* in doses of ½ to 2 ounces, are used in cases of vomiting, gastric colic, cholera diarrhoea, flatulence etc It is also given in dysmenorrhoea together with tea in weak digestion, in hiccup and palpitation of the heart It is given with purgatives as a corrective and preventive of griping *Locally* the oil is a powerful anodyne anaesthetic, antiseptic and germicide useful in herpes zoster, pruritus, etc, in the form of a lotion In phthisis it is used as an antiseptic inhalation and as a paint in diphtheria It relieves toothache caused by caries

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1589 MENTHA AQUATICA, Linn

This contains an essential oil

1590 MENTHA SATIVA, Linn

Contains an essential oil

1591 MENTHA SYLVESTRIS, Linn & M viridis, Linn, or M crispa, are species

(*Eng*—Spearmint, Wild mint *Hind Ben & Bom*—Pahadi pudina *Arab*—Sudanaj *Pers*—Nagbo, Shah sufian, Pudang *Fr*—Mente-Sauvage) growing in temperate Himalayas, Kashmir and Persia Leaves and flowering tops contain a volatile essential oil composed of thymol (similar in composition to peppermint but differing from it in odour and flavour), resin gum and tannin Dose of the oil is from ½ to 3 minims Infusion of leaves and tops (1 in 10), dose is ½ to 2 ounces Spirit of the oil (1 in 10) dose is 10 to 30 minims, and Aqua made from the oil (1 in 500 of water) dose is ½ to 2 ozs, are the preparations used in medicine for their carminative, stomachic and stimulant properties given in hiccup, bilious vomiting flatulence, colicky pains cholera, etc A

chutney is made of the aromatic leaves which is eaten to remove the bad taste in the mouth in febrile conditions, i e ,— leaves of spearmint, dry date, black pepper, rock salt, raisins and cumin in equal parts are rubbed into a *chutney* with lime juice In colic the *mint juice* with a little black pepper powder and honey is given Juice mixed with honey relieves pain in the ears, applied to the temples it relieves pain in the head, it is very healing if applied to bruises and sores *Oil* is a local anaesthetic and is used to allay the pain of superficial neuralgias and herpes zoster It is also a powerful antiseptic. It relieves toothache, when applied to the hollow of the decayed tooth. Its odour is said to keep off mosquitoes Like volatile oils generally the oils of peppermint and spearmint are said to reduce the number of white corpuscles by diminishing the activity of the intestinal absorbents

N B—"In these days large quantities of menthol are being produced synthetically This process is easily carried out by reducing ketones such as menthone, pulegone and piperitone is contained in eucalyptus oil and to a certain extent in the dementholised oil produced in Japan and can be easily converted into menthone, which in its turn can be changed by catalytic hydrogenation into menthol. The product by this method is what has been appearing during the past several years on the market as synthetic menthol.

Pulegone is the principal ingredient of pennyroyal oil (Mentha pulegium) and will be found to a noticeable degree in the Japanese peppermint berb Like piperitone, this can be changed into menthone Citronellal, much of which is found in citronella oil (from citronella grass, Cymbopogon nardus) produced in Java and Ceylon, can also be used in the preparation of menthol

According to Schimmel & Co 's reports, synthetic menthol produced in their laboratories is laevo-rotatory with a melting point of 35°C and in appearance and odour it is very similar to the natural menthol. - Tests have further shown that the synthetic product is slightly more active physiologically but less toxic than the natural product. Its antiseptic properties

are similar to many of the following drugs, e.g., acriflavine, scarlet red, gentian violet etc. As matters stand at present it is not possible to forecast the possibilities of the natural menthol industry. The rate at which the synthetic article is being produced and boomed in the market augurs very unfavourably for the natural product".—Lt. Col. Chopra in "I.D of I" (p. 192).

1592. MENYANTHES TRIFOLIATA, Linn.

(N.O:—Gentianaceae)

Contains glucoside, menyanthin, meliatin. This is tonic and resembles Gentian in its properties

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1593.—MERIANDRA BENGALENSIS, Benth.

(N.O:—Labiatae).

Hind. & Bom.—Kafur-ka-pat. *Tel.*—Shima-karpuram-aku. This is tonic, carminative, astringent and antiseptic.

1594.—MERIANDRA STROBILIFERA, Benth.

Synonyms in Indian languages and properties are similar to M. Bengalensis

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1595. MESUA FERREA, Linn.

M. Roxburghii; M. coromandalina.

(N. O:—Guttiferae).

Sans.—Nagkesara; Nagpushpa; Champeryah. *Eng.*—Cobra's Saffron. *Fr.*—Mesua Naghas. *Hind. & Tel.*—Nagakesara, Gajapushpam. *Ben.*—Nagesar. *Mah. & Kon.*—Nagchampe. *Tel.*—Nagashap-pu. *Tam.*—Vellutta-champakam; Cheru-Nagapu; Sirunagappoo *Mal.*—Nagachampakam; Vella Cam.—Nagasampige. *Burm.*—Kengan; Gungen. *Arab.*—Narae-kaisar.

Habitat —Common on the Eastern Himalayas, East Bengal and Assam, Eastern Ghats and Western Ghats upto about 5000 feet, Burma and the Andamans, it is cultivated in gardens

Parts Used —Flower-buds, flowers, fruit, seed, root, bark and oil

Constituents —Young fruit contains an oleo-resin from which an essential oil is obtained Seeds contain a fixed oil. Hard pericarp contains tannin Resin is in tears, it dissolves in benzol Essential oil is very fragrant, pale yellow and of the odour of flowers "The drug also contains two bitter principles"[1]

Preparations —Syrup (1 in 10), dose is ½ to 1 drachm Decoction of root (1 in 10), dose is 2 to 4 drachms, Ointment and Oil

Action —Dried blossoms, root and bark are bitter, aromatic and sudorific, bark is mildly astringent, unripe fruits are aromatic, acrid and purgative Oleo-resin exuding from the bark, root etc, is aromatic and demulcent Pericarp of the fruit is astringent "Blossoms are astringent and stomachic"[2] Dried flowers are astringent and stomachic, also stimulant and carminative

Action & Uses in Ayurveda & Siddha —Kashayarasam, ushna veeryam, kapha pitta-haram, lagu, ruksham, trishna, in chardhi, kandu, amapachanam, swedam, visarpam, kushtam, visham etc —(Therapeutic Notes)

Action & Uses in Unani —Hot 2°, Dry 2° Tonic for heart, expels winds, antispasmodic, diuretic, emmenagogue —(Therapeutic Notes)

Uses —*Leaves* are used in the form of poultice which is applied to head in severe colds *Bark* and *root* in *decoction* or *infusion* or *tincture* is a bitter tonic, "and are useful in gastritis and bronchitis."[3] *Fixed oil* expressed from the seeds is used as an application for cutaneous affections, such as sores,

(1), (2) & (3) Chopra's "I.D of I" p 507

scabies, wounds etc, and as an embrocation in rheumatism *Dried flowers* are much used as a fragrant adjunct to decoctions and oils *Dried flowers powdered* and mixed with ghee, or a *paste* made of flowers with addition of butter and sugar, are given in bleeding piles as well as dysentery with mucus They are also useful in thirst irritability of the stomach, excessive perspiration cough with much expectoration, dyspepsia etc *Leaves* and *flowers* are used in scorpion-stings A syrup of the flower-buds (1 in 10) is given for the cure of dysentery *Powdered flowers* mixed with old clarified butter that has been washed a hundred times in water are said to be an effectual application in burning of the feet —(Chakradatta) The same is applied with much benefit to bleeding piles

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1596 METROXYLON RUMPHII

See Sagus laevus

1597 MEYNIA SPINOSA

See Vangueria spinosa

1598 MEZONEURUM SUMATRANUM, W A

(N O —Leguminosae)

There is an alkaloid

1599 MICHELIA CATHCARTII

Is a species allied to M Champaca found in Sikkim

1600 MICHELIA CHAMPACA Linn

M murantiaca

(N O —Magnoliaceae)

Sans —Champaka Kusuma Suvarna *Eng* —Golden or Yellow Champa *Fr* —[illegible] *Ger* —Wohlriechende Mi

chelie *Hind & Ben*—Champa *Mah*—Sonchampa, Champa *Punj*—Chamoti *Guj*—Rae Champac, Pilo champa *Nepal*—Oulia Champ *Tel*—Sampagni puvvu Champakamu, Sampangi *Tam*—Shampang, Shenbagam *Mal*—Champakam *Can*—Sampige *Kon*—Champay *Sinh* Sappu

Habitat—A tall evergreen tree growing wild in Nepal, Bengal, Assam and Burma and commonly cultivated for its yellow, sweetly-scented flowers

Parts Used—Bark root, root bark leaves, flowers, fruit and oil

Constituents—Bark contains a volatile essential oil, fixed oil, resin, tannin, mucilage, starch and sugar

Action—Deobstruent, alterative, bitter, stomachic, emmenagogue, febrifuge and demulcent Bark is bitter, tonic, astringent, antiperiodic and alterative Root is bitter, demulcent and purgative Flowers are used as stimulant, tonic, purgative and carminative, also as demulcent and diuretic Root-bark is emmenagogue and purgative Leaf-juice and seeds are vermifuge

Uses—An *infusion* or *decoction of flowers* has been recommended in cases of dyspepsia nausea and fevers in doses of half to two ounces, it is also useful in preventing scalding in gonorrhoea and renal diseases Of the flowers an otto somewhat resembling that of the *ilang* is prepared Flowers beaten up with or macerated in sweet oil form excellent application in cephalalgia, ophthalmia and to foetid discharges from the nostrils, also in sub-acute rheumatism and in vertigo and gout *Oil of the seeds* rubbed over the abdomen relieves flatulence *Bark* in powder in doses of 10 to 30 grains or as decoction in two to three ounce doses is given with much benefit in low intermittent fevers A *decoction of the bark* (1 in 20) was tried and found very beneficial in ½ to 1 ounce doses in mild cases of chronic gastritis—(Indigenous Drugs Report, Madras) Bark is an excellent substitute for guaiacum and is used in chronic rheumatism *Dried root and*

root-bark mixed with curdled milk makes a useful application to abscesses *Fruits* are edible and their *seeds* are used to destroy vermin *Juice of the leaves* is given with honey to relieve colic *Young leaves* contused and macerated in water and instilled into the eyes clear the vision Leaves are applied to indolent swellings *Leaves* annointed with ghee and sprinkled over with cumin seed powder are placed round the head to relieve puerperal mania, delirium and maniacal excitement The drug is used in scorpion-sting

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1601 MICHELIA EXCELSA

Is a lofty aromatic tree growing in the Himalayas and possessing the same properties as M champaca

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1602 MICHELIA KISOPA

Is also growing in the Himalayas with a grey bark and having the same properties as M champaca

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1603 MICHELIA NILAGIRICA, Zen.

Eng—Hill champa, *Hind*—Pila champa, *Tam*—Sempagam, *Sinh*—Walu Sapu, is the species growing on the higher mountains of the Western Peninsula and Ceylon It contains a volatile essential and a fixed oil, acrid resin, tannin, sugar, starch, calcium oxalate, a bitter substance, etc *Bark in infusion* and *decoction* is used as febrifuge like that of M champaca

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1604 MICHELIA RHEEDI

Is a variety of M champaca found in Southern India Its flowers boiled in oil are used in headache and in the affections of the eye—See M champaca for further uses

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1605. MICROMERIA CAPITELLATA, Benth.

(N. O.—Labiatae)—aromatic & carminative.

See Mentha piperata

1606. MICRORHYNCHUS NUDICAULIS, Less

(N. O —Compositae).

1607 MILLETTIA ATROPURPUREA, Benth

(N. O —Papilionaceae).

This contains saponin and glucoside This is a fish-poison

1608 MILLETTIA PACHYCARPA, Benth.

See M atropurpurea

Contains saponin, and is a fish-poison.

1609. MIMOSA AMARA, or Albizzia amara, Boivin

(N. O —Mimosaceae)

Sans—Krishna sirish *Guj*—Moto sarsio *Bom & Mah*—Lulai, Lalisurangi. *Tel*—Nallarenga, Shekran *Can*—Bilkambi *Coorg*—Kadsige *Madras*—Thuringi *Mal*—Dosu lay, found in Western Peninsula

Constituents—Saponin *Seeds* are astringent, given in piles, diarrhoea, gonorrhoea, etc *Oil* extracted from seeds cures white leprosy *Flowers* are cooling, and applied to boils, ulcers, eruptions, inflammations and swellings *Leaves* are regarded as useful in ophthalmia—(Baden Powell)

1610 MIMOSA ARABICA

See Acacia Arabica

1611. MIMOSA CATECHU

(*Fr.*—Cachoutier)—See Acacia catechu.

1612. MIMOSA CINEREA or Dichrostachys cinerea.

(*Sans.*—Vıravrıksha. *Hind.*—Vurtulı. *Merwar.*—Kanrat. *Rajput.*—Kheri. *Mah. & Gond.*—Segumkati. *Tam.*—Vadatalla. *Tel.*—Veturu) is found in U. P. and Western Peninsula. Young shoots are bruised and applied to ophthalmia.

1613. MIMOSA ENTADE

See Entada scandens.

1614. MIMOSA FARNESIANA

See Acacia farnesiana.

1615. MIMOSA KALKORA or Albizzia julibrissin.

(*Ben.*—Kalkora. *Punj.*—Sirin. *Hind.*—Lalsiris. *Eng.*—Sirissa tree. *Kon.*—Sirás) is found throughout the Himalayas from Hazara to Sikkim. For uses see Mimosa sirissa.

1616. MIMOSA LUCIDA, Roxb.

See Pithecolobium bigeminum (*Hind., Bom., Mah. & Kon.*—Kachlora) grows in the forests of the Himalayas from the Ganges eastward and in South India.

Constituents:—There is an alkaloid. A decoction of the leaves is a medicine for leprosy; it is also used as a stimulant to promote the growth of hair.—(Atkinson). This is a fish and heart poison.

1617. MIMOSA PANICULATA

(*Tam.*—Eendu).

Action (Siddha).—Expectorant, stimulant, *karpu, ushna-*

veeryam Specially used by Siddha physicians in digestive disorders of children, fever and convulsions

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1618 MIMOSA PUDICA, Linn

(N O —Mimosaceae)

Sans—Lajjalu Ajalikalika, Namaskari, Varaha kranta *Eng*—Sensitive Plant Humble Plant *Fr*—Sensitive commune, Herbepudique ou Vive mimuese *Ger*—Shaamhafte Sinnplauze, Fuhl-planze *Hind*—Lajalu *Gwalior*—Lajwanthi *Ben*—Lajak, Lajjabati *Bom*—Lajjabati *Tel*—Munuguda-maramu, Muttavapulagamu-chettu *Tam*—Totalvadi, Thotalpadi, Thottal shurungi, Thottasiringi, Thottalvadi *Mal*—Thottamvati, Thendarmani *Mah & Kon*—Lajri *Can*—Nachikay-gida

Habitat—This sensitive shrub, a native of Brazil, has long been naturalized and is plentiful in the hotter regions of India, grows wild as a weed in certain parts of the West Coast of India, in Mysore and Coorg

Parts used—Root and leaves

Constituents—Root contains tannin 10 p c and ash 5 5 p c

Action—Resolvent, alterative and carminative, root is aphrodisiac Juice is antiseptic, alterative and blood purifier

Uses—Root in the form of decoction (1 in 10) is given in doses of 2 to 6 drachms, in gravel and other similar urinary complaints and in diseases arising from corrupt blood and bile *Infusion of leaves* is also used in ½ to 1 ounce doses *Leaves* and root in powdered form are given 2 drachms in milk in cases of piles and fistula *Juice* is applied *externally* in fistulous sores, piles and scorpion sting *Leaves* rubbed into a paste are applied to hydrocele and glandular swellings, and their juice with an equal quantity of horse's urine is made into an anjan which is used to remove films of the cornea by setting up an artificial inflammation Juice of the leaves is used to impregnate cotton wool for dressing in any form of sinus

Leaves are employed as a bath in the pains of the hip and kidneys.

1619. MIMOSA RUBICAULIS, Lam. or M. Mutabilis.

(*Punj.*—Rál. *Sans.*—Rala-arlu. *Hind.*—Kingly; Kacheyta; Shiah-kanta. *Bom.*—Huziru. *Sind.*—Hajeru. *Nepal.*—Aradi. *Ben.*—Shinkanta. *Tel.*—Sarjjasasamu; Chandra. *Tam.*—Bida) is the exudation of the tree called Shorea robusta of the Western Himalayas, Kumaon. *Leaves* of the tree in *infusion* are prescribed for piles in the U.P.—(Atkinson). *Powdered root* is given for vomiting and the *bruised leaves* are applied to burns.—(Stewart). Smoke arising from burning the gum is disinfectant.

1620. MIMOSA SAPONARIA

See Acacia concinna.

1621. MIMOSA SIRISSA

See Acacia speciosa.

1622. MIMOSA SUMA, Roxb., or Acacia suma.

(*Sans.*—Samee; Samse. *Hind.*—Chhikkur. *Ben.*—Laingach. *Mah.*—Sami. *Can.*—Bani. *Uriya.*—Sumi) is a kind of thorny plant found almost everywhere in India. There are two varieties—large and small. The small is known as *Samur* and is said to have all the virtues of the Sami plant, viz.—bitter, acid, astringent, refrigerant and useful in cough, phthisis, leprosy, epistaxis, diarrhoea and piles.

1623. MIMUSOPS ELENGI, Linn.

(N. O.—Sapotaceae).

Sans.—Sinhakesara; Bakula. *Port.*—Pomme d'Adami. *Fr.*—Mimusope Elengi. *Ger.*—Affengesict. *Hind.*—Mulsari;

Bakul *U.P*—Maulsari *Punj*—Maulsari *Uriya.*—Baulo *Malay*—Elengi *Ben*—Bakul *Mah*—Ranjanasal, Bakul. *Bom*—Borsali, Tamdu *C P*—Gholsari *Guj*—Bolsari *Tel*—Pogada *Tam*—Mogidam, Vakulam, Maghizham, Magadam *Mal*—Mukura *Can*—Ranje, Pagade-mara *Kon*—Vovalıruku *Burm*—Khaya *Sinh*—Munemal

Habitat—This large ornamental tree is cultivated in gardens for its fragrant flowers It is found wild in Deccan and forests of South India and Burma

Parts Used—Bark, flowers, fruit and oil of seeds

Constituents—Barl contains tannin, some caoutchouc, wax, colouring matter, starch and ash Flowers contain a volatile oil Seeds contain a fixed fatty oil (This oil is distilled and is available in Tanjore) Pulp of the fruit contains a large proportion of sugar and saponin

Action—Flowers, fruit and bark are astringent. Bark is also tonic, astringent and febrifuge Unripe fruit is very astringent Water distilled from the volatile oil of the fragrant flowers is stimulant Seeds are purgative

Uses—*Fruit* and *flowers* together with other astringents are used to prepare a *lotion* for wounds and ulcers. *Powder of dried flowers* produces copious discharge from the nose, it is sniffed to relieve headache *Seeds bruised* into a *paste* and mixed with oil or ghee are made to form *suppositories* in cases of obstinate constipation especially in children *Unripe fruit* is a useful masticatory and therefore recommended to be chewed for fixing loose teeth *Bark in infusion* or *decoction* is similarly useful as gargle in salivation in diseases of the gums and teeth, and to strengthen them also used in discharges from the mucous membranes of the bladder and urethra It is useful in fevers and as a general tonic Following *compound powder* made of the bark is recommended to be used as tooth powder in cases of spongy gums—Take of the bark of Mimusops elengi, and Pistacia lentiscus each 1 tola, *Sung Jirahat* 5 tolas, Pellitory root and *Murmukhi* each 6 *mashas*, small cardamoms and pods of Punica granatum,

each 3 *mashas* and white catechu 1 tola, pawder and mix together, and use.—(Aksir-ul-Imraz). *Bark* increases fertility in women. *Pulp of the ripe fruit* is eaten as diet in canvalescence after diarrhaea, and is used in snake-bite; it is also applied to relieve headache. *Ripe fruit* promotes delivery; *flawers* yield an ail which is used in perfumery.

1624. MIMUSOPS HEXANDRA, Roxb. or M. Indica, Roxb.

(N. O:—Sapotaceae).

Sans.—Rajadani *Hind.*—Kshiri; Khirni. *Ben.*—Khirkhejur. *Mah.*—Rayan. *Gwaliar.*—Khirnee. *Bam.*—Rajan. *Guj.*—Ranjana. *Tam.*—Palai; Palla. *Tel.*—Pola; Palla) is found in the Konkan of Bombay Presidency and North India. Bark of this tree is found ta contain tannin, resin, wax, starch, colouring matter and mineral matters. Seeds contain a fixed oil. Fruits contain sugar, caoutchouc, pectin tannin and colouring matter. Oil from the seeds is demulcent and emollient. A *decoction of the bark* (1 in 10) is astringent and used in 1/3 to 1 ounce doses for the same diseases as that of M. elengi. "The bright yellaw berries (fruits) called "*rayan*" are sweet, nutritiaus, tonic, alterative and restorative, but somewhat heating and indigestible if largely eaten. Tha *Kalis* (fishermen) af Narthern Gujarat (Bombay Presidency) live almast entirely upon these berries during the fruiting-season. When dried, the berries will keep good far a cansiderable time."—(Bambay Gavt. Agri: Dept. Bulletin). *Milky juice* made inta a *paste with* the leaves of Cassia fistula and seeds of Galophylium inophyllum is applied ta bails.

1625. MIMUSOPS KAUKI, Linn.

(*Hind. & Bom.*—Khirni). Tonic, febrifuge and anthelmintic. Used in ophthalmia and infantile diarrhoea.

1626. *MIRABILIS JALAPA*, Linn.

(*N. O.*—Nyctaginaceae).

(*Sans.*—Sandhya-raga; Krishna-keli. *Eng.*—Four-o'clock flower. *Hind.* & *Bom.*—Gulabbas. *Tel.*—Chandra-kantha. *Tam.*—Andimalligai; Andimandarai; Pattarashu. *Mal.*—Anthimalari. *Can.*—Madhyanha malligay. *Kon.*—Akasa-mugri. *Pers.*—Gul-i-abbasa) is generally found cultivated in gardens. Roots contain a small quantity of an alkaloid 'trigonelline'; dried root is nutrient. *Tuber* possesses purgative properties similar to Jalap. Tuber is used as a poultice on carbuncles. *Root* is a mild purgative. Powdered and fried in ghee with spices it is given in milk as a nourishing and strengthening medicine. Rubbed with water it is applied as lep in contusions. *Leaves* bruised and heated are applied as a stimulating *poultice* to boils, buboes and other abscesses to hasten the suppurative process. *Fresh leaf-juice* is very soothing and allays the heat and itching when applied to the body in urticaria. It also cures wounds and bruises. *Seeds* are used to adulterate black pepper.

1627. MODECCA PALMATA, Lam.

(*N. O.*—Passifloreae).

Bom.—Undal. This plant is poisonous.

1628. MODECCA WIGHTIANA, Wall.

1629. MODERA CANNI

See Hugonia mystax.

1630. MOGORIUM SAMBAC

See Jasminium sambac.

1631. MOLINIA COERULEA, Moench.

(N. O:—Gramineae).

1632 MOLLUGO CERVIANA, Ser.

(N. O:—Ficoidaceae).

(*Sans.*—Phanya, Grishmasundara Parpataka *Hind.*—Taph-jhad *Ben.*—Jalpapra, Ghimashak; Gimasag. *Bom.*—Kharas, Pada *Tel. & Tam.*—Parpadagum. *Mal Can & Kon.*—Parpataka) found in all parts of India. The plant contains a bitter principle bitter resin, gum and ash 68 p c, containing alkaline nitrates It is stomachic, aperient, uterine stimulant, antiseptic and and febrifuge An *infusion of the plant* is given to promote lochial discharge Roots have an aromatic smell; oil in which the roots are boiled is used as application in gouty and rheumatic complaints *Flowers* and *tender shoots*, in *infusion* or decoction, have a diaphoretic effect and are useful in fevers "A decoction made of the following for preparing drinking water during chronic gonorrhoea is made·—Parpatakam 1 oz, *Vetti-ver* or *Vattiveru;* Andropogon muricatus 1 oz., *Samba* (Hemidesmus indicus) 1 oz, and *Gousban* or *Gouzban* (Echium, Sp of) 1 oz. Boil a teaspoonful to a seer of water and allow it to cool and this can be drunk as freely as required, instead of any other water." (Andhra Medical Journal).

1633. MOLLUGO HIRTA, Thunb.

(N. O:—Ficoidaceae).

Punj & Bom.—Gandibuti; *Tam.*—Sirooseroo-padi. This is applied to itches and skin diseases.

1634. MOLLUGO LOTOIDES, O Kze.

This is extremely common in clayey soil and tank beds

1635. *MOLLUGO PENTAPHYLLA*, Linn

(Bom—Zaharasa) is a small spreading common weed of waste places in the plains, leaves are bitter, stomachic and aperient They are given in infusion to promote digestion, also to promote menses and suppressed lochia *Leaves* warmed and besmeared with oil are applied over the ear to relieve earache

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1636 MOLLUGO SPERGULA, Linn.

(Sans—Grishma-sundaiaka *Hind & Ben*—Jima *Tam.* —Toora-ellay). Stomachic, aperient and antiseptic Used in skin diseases

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1637. *MOLLUGO STRICTA*, Linn

(Bom—Zharas, *Tam*—Vellicha-tarasi) This is stomachic, aperient, antiseptic and emmenagogue

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1638 *MOMORDICA BALSAMINA*

See *M charantia*

1639 MOMORDICA CHARANTIA, Linn.

M muricata, M balsamina

(N O—Cucurbitaceae)

Sans—Karavella, Sushavi *Eng*—Bitter gourd *Fr.*—Momordique charantia *Ger*—Gurkenahnlicher Balsamapfel *Smd*—Karelo *Hind*—Karela, Kareli *Ben*—Uchchhe, Karala, kerula *Guj*—Karela *Mah*—Karla *Bom*—Kurela-jangro *Tel*—Kakara *Tam*—Pavakka-chedi, Pagal *Mal.* —Paval, Kaipavalli *Can*—Hagala-kayi *Kon.*—Karathay. *Arab*—Quisaul-barri

HABITAT—This climbing plant is cultivated in gardens everywhere in India, for its fruit.

Varieties—There are two varieties, one with a small roundish or ovoid fruit (uchche) and the otrer longer and more cucumber-like (*Kerula* in Bengali)

Parts Used—Fruits, seeds and leaves

Constituents—A bitter glucoside soluble in water, insoluble in ether, a yellow acid, resin and ash 6 p c Fresh vegetable contains 88 75 p c moisture, and the completely dried material contains Ether extract 2 93 p c, Albuminoids 1 62 (cont'g Nitrogen 0 26 p c), soluble carbohydrates 85 41 p c, woody fibre 1 51 p c, and Ash 8 53 (cont'g Sand 0 17) p c respectively"—(Bombay Govt Agri Dept Bulletin)

Action—Fruit is tonic, stomachic, stimulant, emetic, antibilious, laxative and alterative Fruit-pulp, leaf-juice and seeds are anthelmintic (in lumbrici) Leaves act as galactagogue Root is astringent

Uses—*Fruit* is wholesome, "but very bitter and has to be steeped in salt water, then well boiled and squeezed, and therefore, the removal of the upper skin, as also scraping away ridges and tubercles where bitterness is concentrated makes the fruit more palatable "eaten as a vegetable—(Bombay Govt Agri Bulletin) *Fruit* is useful in gout, rheumatism and sub-acute cases of the spleen and liver It is supposed to purify blood and dissipate melancholia and gross humours Leaf-juice ½ seer is given in bilious affections as emetic and purgative alone or combined with aromatics The antidote is ghee and rice *Fruit* and *leaves* are both administered internally in leprosy, piles, jaudice, etc Leaves act as galactagogue *Leaf-juice* in which black pepper is ground is applied round the orbit for night-blindness Leaf-juice is rubbed to soles in the burning of the feet Leaf-juice ½ tola with a little turmeric powder added is given for the nausea of children, as it acts as emetic and thus cleanses the stomach In the liver complaints of children a mixture of the juice of *Karvella* leaves, that of leaves of Adansonia digitata, that of ripe betel leaves, and that of the fresh bark of Eugenia jam-

bolana in which sweet flag root is rubbed is given for 7 days. *Root* is applied externally as *paste* to piles *Whole* plant powdered is used for dusting over leprous and other intractable ulcers and in healing wounds and mixed with cinnamon long pepper rice and chaulmugra oil forms a good ointment in psora scabies malignant ulcers and other skin diseases A spoonful of *expressed juice of the fruit* together with chalk or with sugar is used in aphthae it is also useful as an emmenagogue in dysmenorrhoea Externally it is applied to the scalp in pustular eruptions, to burns boils etc The plant is used in snake bite also

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1640 MOMORDICA COCHINCHINENSIS Spreng

(*Sans*—Karkataka *Hind & Ben*—Kakrol *Tam*—Adavi kakara) Stomachic and stimulant, given in cough.

1641 MOMORDICA CYMBALARIA, Fenzl

(*Bom*—Kadavanchi) is an abortifacient—See Luffa tuberosa

1642 MOMORDICA DIOICA, Roxb

(N O—Cucurbitaceae)

Sans—Vahassa Vahisa *Hind*—Dhar karela Golkankra *Punj*—Kirara *Guj*—Kantolan, Kartola Kamkoli *Mah & Bom*—Kurtoli *Ben*—Kankol *Tel*—Karkotaki *Tam* Aegarvalli Pallephagil Palupaghel kalung *Mal*—Vempaval Erumapuse *Can*—Madhagala kayi Karchi balli Kartikai *Kon*—Phagil

Habitat—This climbing creeper is generally met with in Bengal and in the forests of Southern India

Uses—*Fruits* are generally used as vegetable after two bolings, they are very wholesome and grateful when cooked and eaten with food *Juice of the fruit* is a domestic remedy for the inflammation caused by contact with the urine of the house lizard *Powder* or *infusion* of the dried fruits when introduced into the nostrils produces a powderful errhine effect and provokes a copious discharge from the mucous membrane *Root of the male creeper* is applied in the form of *paste* to scorpion sting and to ulcers caused by snake bites Mucilaginous *tubers* (especially those of the female plant, which are larger than those of the male) are used in the form of *electuary* in doses of 1 to 2 drs in cases of bleeding piles and similar bowel affections It also acts as an expectorant Dose is two drachms or more twice daily *Plant* or *juice of the leaves*, mixed with cocoanut, pepper, red sandalwood etc, to form an *ointment*, and applied to the head relieves headache *Powder of the root* applied to the skin renders it soft and supple and lessens perspiration

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1643 MOMORDICA MIXTA

(*Ben*—Golkakra) is a species found in Bengal with red prickly fruits, the yellow insipid pulp of which is used as a vegetable food

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1644 MOMORDICA MONODELPHA

See Cephalandra Indica

1645 MOMORDICA UMBELLATA, Roxb.

See Zehneria umbellata

1646 MONIERA CUNEIFOLIA, Michx.

(N O—Scrophulariaceae)

Is a marsh weed

1647. MONITA BARBERIOIDES

See Azima tetracantha

1648 MONOCHORIA HASTAEFOLIA, Presl

(N. O —Pontederiaceae)

Sans—Neelotpalam *Tam.*—Karink-uvalam *Alterative*, tonic and cooling *Used in insanity Juice of leaves is used in* boils

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1649. MORCHELLA ESCULENTA, Pers

(Punj—Kana-kach) Aphrodisiac and narcotic

1650 MORINA PERSICA, Linn

(N. O —*Dipsaceae*).

Hind—Bekh akhwar

1651 MORINDA CITRIFOLIA, Linn.,

or M. tinctoria or M bracteata

a little mustard are a remedy for infantile diarrhoea, with aromatics the decoction is given in dysentery Leaves applied to wounds and ulcers have a healing effect *Expressed juice of leaves* is applied to relieve pain in gout Unripe berries charred and mixed with salt are applied successfully to spongy gums *Juice* of mulberry made into a *syrup* and used as a gargle relieves sore-throat *Juice* contains malic and citric acids, glucose, pectin and gum *Ripe fruit* is a mild laxative It contains a large quantity of sugar

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1652 MORINDA CONCANENSIS Nimmo

(*Bom* —Motvah), is used as a substitute for horse-radish

1653 MORINDA TINCTORIA, Roxb

—See M citrifolia

1654 MORINDA UMBELLATA, Linn or M scandens

Is a species found on the hills of East Bengal, Western Peninsula, South Konkan, Nilgiris and Travancore (*Tam.*— Noona-maram *Tel* —Moolughoodu *Bom* —Aal *Can* — Maddi chekhi) There is a glucoside *Leaves* in conjunction with certain aromatics are used in *decoction* in cases of diarrhoea and dysentery in doses of half a teacupful twice daily

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1655 MORINGA CONCANENSIS

(N. O —Moringaceae)

Is the red flowered species (*Sind* —Mooah *Rajput* —Sain Jnah) met with in Rajputana and Sind Its roots like those of M pterygosperma has a pungent flavour and is used as a substitute for horse radish —Murray)

1656 MORINGA OLEIFERA, Lam or M. Pterygosperma, Gaertn, or Guilandina moringa or Hyperanthera moringa.

(N O:—Moringaceae).

Sans.—Sobhanjana, Dvishigru, Murungi, *'Sweta-maricha'* (white pepper—seeds), Sigru *Eng.*—Horse-radish, Drum-stick *Fr.*—Moringa a grainestripteres *Hind.*—Sahinjan, Soanjna shevga, Shajnah, Segve *Duk*—Munge-ka-jhad *Punj*—Sanjna, Sohanjna *Ben.*—Sojna *Guj*—Suragavo, Sekto *Mah.*—Shegat, Murungamul, Munagacha-jhad; Shevga *Bom*—Sujna, Sanga *Uriya.*—Munigha, Sajina *U.P.*—Sahajna *Tam*—Murungai *Mal*—Murina, Murunna *Tel.*—Munaga, Mulaga *Can*—Nugge *Kon*—Mashinga-jhad *Sinh.*—Murunga *Burm.*—Dandalonbin *Malay*—Kaylor, Ramoongie *Sind*—Singuin (pods), Swanjera

Habitat—A beautiful tree (plant) wild in the sub-Himalayan range and commonly cultivated in India and Burma

Parts Used—Bark, root, fruit, flowers, leaves, seeds and gum

Constituents—Bark contains a white crystalline alkaloid (occurring in the spirituous extract), 2 resins (one soluble and the other insoluble in ammonia), an inorganic acid, mucilage (gum) and ash 8 p c Root yields an essential oil very pungent and offensive in odour The husked seeds yield "on simple pressure a clear, limpid, almost colourless, rather thick at ordinary temperature"[1] fixed oil 36 6 p c, known as *Ben* or *Ben* or *Moringa* oil It contains 60 p c. of liquid oil and 40 p c of white solid fat European grated horse-radish contains sulphur "The gum is insoluble in water"[2] "The amount of bases present in the alkaloid are very small and its practical utility in therapeutics is doubtful unless the quantity of active principles is increased by suitable cultivation"—(Chopra)[3] Following are the constituents of *Ben* oil—Myristic acid 7.3%, Palmitic acid 4 2%, Oleic acid (9 10 type) 65 8%, Stearic acid 10 8%, Behenic acid 8 9%; and Lignoceric acid 3 0%. The *unsaponifiable matter*, occurring to the extent of 3 7% in the oil, consisted of 9% of phytosterol The oil is found to be a good source of a Behenic acid in nature, Behenic acid was

synthesised from n-eicosanic acid, and also by the hydrogenation of methyl erucate and finally hydrolysing the resulting methyl behenate —(V C Parekh, Indian Institute of Science, Bangalore) The oil has a specific gravity of 0 912 to 0 915 at 60°F and is almost devoid of odour and flavour, saponifies slowly and does not turn rancid. Perfumers esteem the oil for its great power of absorbing and retaining even the most fugitive odours Chemical Composition —"The oil, on preliminary extraction with solvents have the following extractives —petroleum ether 0 71 p c, sulphuric ether 6 47 p c, chloroform 0 68 p c., and absolute alcohol 2 17 p c The alcoholic extract gave strong reactions for alkaloids An assay of the bark showed the presence of 0 105 p c of total vegetable bases the hydrochloride was obtained in colourless glistening plates, M.P 254 2° The platinic chloride crystalhsed in yellow rectangular plates with M.P 221°, the picrate crystallised in yellow wooly needles M.P. 195° The free base remained liquid at room temperature and could not be crystallised The hydrochloride of the second base, soluble in hot chloroform has not been obtained crystalline, but it had a strong physiological action —" (Chopra)[4]

Action —Antispasmodic, stimulant, expectorant, and diuretic Fresh root is acrid and vesicant, (has the taste of horseradish), internally stimulant, diuretic and antilithic Gum is bland and mucilaginous Seeds are acrid and stimulant Bark is emmenagogue and even abortifacient Flowers are stimulant, tonic and diuretic and useful to increase the flow of bile. Mahomedan writers describe the flowers as hot and dry The plant is a cardiac and circulatory tonic and antiseptic

Pharmacological Action —"The pharmacological action of the vegetable bases isolated from M pterygosperma worked out by Chopra & De —"The crystalline base has little or no physiological action, whereas the amorphous base shows a marked activity and closely resembles adrenaline and ephedrine in its effects This base thus belongs to the sympathomimetic group of bases. It acts on the sympathetic nerve endings all over the body producing a rise of blood pressure, acceleration of heart beat and constriction of the blood vessels Its

effect on the heart is mainly through the sympathetic though the myocardium may also be slightly stimulated It also inhibits the tone and movements of the involuntary muscle of the gastro-intestinal tract and the bronchioles The effects sympathetic stimulation were also found in the action of this base on other organs It produces slight diuresis on intravenous injection in animals, dilates pupils and is detoxicated by the liver Very large doses depress the vasomotor nerve-endings This base differs from adrenaline in that it produces little or no rise of blood pressure after ergotoxine, whereas adrenaline produces a fall under similar conditions The sympathomimetic base isolated from M pterygosperma is, however, very much weaker in its action than adrenaline or ephedrine "[5]

Action & Uses in Ayurveda and Siddha —Mathura katu, kashaya, rasam, ushna veeryam, katu-vipakam,[1] *Bark* — Emmenagogue *Seeds* —Aphrodisiac, *Flowers* —*leaves and root* —Anthelmintic, giddiness, nausea, pitta diseases, astthi jwaram, T B —(Therapeutic Notes)

Action & Uses in Unani —Murakab ul khuva —laxative, anti spasmodic, leaves external—laryngitis —(Therapeutic Notes)

Uses —Leaves, flowers, immature capsules and root are eaten as vegetables in curries Grated horse-radish (European) eaten at frequent intervals during the day and also at meals will banish the distressing cough that lingers after influenza As it contains sulphur, it is recommended for rheumatism, ascites and venomous bites, applied as a poultice for neuralgia of the face *Root* of the drumstick tree resembles in odour and appearance that of horse-radish of Europe, for which it is said to be a perfect substitute A *compound spirit* made in the usual way of equal parts of Moringa root and orange peel with a little nutmeg bruised is a nice carminative and strong stimulant found useful "in fainting fits, giddiness, nervous debility, spasmodic affections of the bowels, hysteria and flatulence "[6] *Root* is applied externally as *plaster* or poultice to inflammatory swellings *Oil of the seeds* with or without the addition of ground-nut oil in equal parts is used as an application to relieve the pain of gout and acute rheumatism A *paste* made

of equal parts of the seeds, rock salt, mustard seeds and patchak root, with goat's urine and dried is used as a *snuff* for rousing comatose or drowsy patients—(Bhavprakash), or the same made in cow's urine is used as a stimulant application to the neck and calves for the same purpose A *paste* made of equal parts of mustard, seeds of horse-radish, hemp seeds and barley mixed with sour butter-milk is a useful application to scrofulous glands of the neck **Gum** is mixed with sesamum oil and is dropped into the ears in otalgia Gum rubbed with milk and made into a *paste* is applied to the temples in headache It is also applied to buboes and to the painful bones in syphilis It may be used as a *tent* or pessary to dilate the Os Uteri as it is very tough and swells rapidly when moistened It is said to produce abortion A gum, from cuts made in the trunk, is used in the Punjab in rheumatism and as an astringent"[7] Internally a decoction or *infusion* of the root (1 in 20) with the addition of mustard seed bruised is useful in doses of 1 to 2 ounces in ascites due to diseases of the liver and spleen It may also be used in 2 ounce doses as a vehicle for the administration of nitre 10 grs per dose for dropsy, gout and calculi "In soreness of the mouth and throat, and pain in the gum due to dental caries"[8] (hoarseness and relaxed sore-throat), Hakims prescribe a *decoction of the root* (or the above infusion) as a gargle "It has also been found useful as an abortifacient, rubifacient and counter-irritant in rheumatic cases and enlargement of the liver in children"[9] *Juice of the root* is prescribed with milk as a diuretic, antilithic and digestive, for use like the decoction, in hiccup, asthma, gout, lumbago, rheumatism, enlarged spleen or liver, internal and deep-seated inflammations and calculous affections. *Fresh root* of the young tree in doses of 20 grains is given in intermittent fevers, in paralytic affections, in epilepsy and hysteria, and as a valuable rubefacient externally in palsy, chronic rheumatism "dropsy, enlargement of the spleen, dyspepsia and also in bites of rabid animals. Sometimes the fresh root is mixed with mustard seeds and green ginger for external use as a counter-irritant and blistering agent"[10] *Essential* oil obtained from the root is more pungent and offensive than mustard or garlic and is used externally as a rubefacient Mustard poultices act more

speedily or energetically when expressed juice of the fresh or scraped root is added to them In cases of difficult or delayed labour, *expressed juice of the fresh root* is applied to the parts under the belief that it expedites delivery Decoction of the root-bark is also recommended and used for the same diseases as those for which the juice or the decoction of the root is useful *Fresh expressed juice of the root-bark* "like the gum is used to relieve otalgia when poured into the ears, and also into the hollow of the tooth in cases of dental caries,'[11] and is also given in those cases with the addition of honey or rock-salt Externally, root-bark in decoction is used to foment the inflamed parts and to relieve spasms or as poultice or plaster it is applied to the part A decoction of the root-bark and the leaves of Rumex vesicarius is given with the nddition of long pepper, black pepper and rock salt in powder, in cases of ascites and enlarged spleen *In enlarged spleen, liver* "and calculus affections",[12] a decoction of the root bark with the addition of plumbago root, rock salt and long pepper or of the ashes of Butea frondosa or of *Yavakshara* is recommended —(Chakradatta) In Bengal half-ounce doses of the bark are said to be used to procure abortion The pods (fruits) made into a soup are prescribed by Hakims as a diet in sub-acute cases of enlarged liver and spleen',[13] "articular pains, tetanus debility of nerves, paralysis, pustules, patches leprosy etc '[14] Young, unripe pods, known as drum sticks, are a favourite ingredient in curries, and they act as a preventive against intestinal worms Seeds of the pods ground with water and instilled into the nostrils cure headaches due to cold and excess of *Kafa* They are given in cases of ascites resulting from enlargement of the liver and spleen 'Young leaves are used as food "[15] *Leaves* ground into a *paste* with a few pods of garlic, a bit turmeric, salt and pepper are given internally in scurvy, catarrhal affections, and in cases of dog bite are applied externally over the bite In 5 to 6 days the wound will heal the inflammation and the febrile symptoms subsiding *Leaf juice* is dropped into the eyes in fainting fits due to nervous debility,

spasmodic affections of the bowels, hysteria, flatulence etc, mixed with honey it is applied as anjan to the eyelids in eye diseases A quarter seer of leaf juice mixed with one tola of *Saindhava* is given in excessive urinary secretions In cases of headache the juice of leaves with black pepper rubbed into it is applied warm to the aching parts Leaf-juice in doses of 4 tolas is given as an emetic *Poultice of the leaves* is useful in reducing glandular swellings It always produces a blister *Flowers* or *leaves* soaked in vinegar are used with food or they are made into curries which are very wholesome "Flowers are sometimes boiled with milk and the preparation is used as an aphrodisiac Mahomedan writers consider the flowers useful in cold humours and swellings '[16]

1357 MORUS ALBA Linn or M Indica, Linn

M parviflora

(N O —Urticaceae)

Sans—Toola Tooda *Eng*—White Mulberry *Hind-Pers-Ben & Mah*—Tut *Duk*—Tutri *Guj*—Shetu *Bom*—Tula ambor *Tam*—Kambilipuch *Can*—Tuti Hippal verali

Habitat—Found wild on the temperate Himalayas and cultivated in Kashmir, the Punjab Baluchistan Upper Sind, Bengal and Burma

Constituents—Sugar pectin citrates malates etc

Action—Bark is purgative and anthelmintic

Uses—The long thin greenish fruit is acidulous and pleasant to eat when fresh It was held in great esteem by Baluchi warriors who carried it in their pouches and swallowed a mouthful when entering into action to give them stomach for the fight The fruit is dried and sold in the bazars It is also made into a preserve or *syrup* (1 in 3) which is a useful refrigerant in fevers and as an expectorant in coughs

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(1) (2) (6) (7) (13) (15) & (16) Chopra s "I D of I p 345 (3) r 347 (4) & (5) p 346 (8) (9) (10) (11) (12) & (14) p 344

and sore-throat in doses of 1 to 2 drachms Also used as a gargle to relieve sore-throat, it is also slightly laxative A drink made of its juice is cooling and refreshing in doses of 2 to 6 drachms, and a cure for dry throat and thirst *Leaves* are also eaten by cattle *Paste* made of the *leaves* of this plant and leaves of Margosa 2 tolas each and white onion one tola is recommended for external use in bed sores —(Mufid ul Ajsam)

1658 MORUS INDICA—See M alba

(*Sans* —Shalmali *Hind -Ben -& Bom* —Tut *Tam* —Kambili puch) Bark is anthelmintic and purgative

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1659 MORUS NIGRA

(*Eng* —Mulberry *Hind* —Shetuta *Guj -& Bom* —Shetura *Arab & Pers* —Tuta) is another garden variety, fruits of which are of a dark purple colour, sold in the Karachi bazar, are used just like those of M alba

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1660 MUCUNA CAPITATA, DC

(N O —Papilionaceae)

There is an alkaloid

1661 MUCUNA GIGANTEA, DC or Carpopogon gigenteum

(*Mal* —Kakuvalli is another species found on the Malabar coast Ceylon etc Its bark in powder mixed with dry ginger is used for rubbing over painful rheumatic joints.

1662. MUCUNA MONOSPERMA, DC or Carpopogon monospermum.

(*Eng* —Negro Bean *Bom* —Mati ikunile Sonegaravi *Tam*—Thelu kodi *Tel*—Pedda-enuga Doddi goonda *Kan*—

Vodle khatkutli) is found on the East Himalayas, Khassia, Assam, Chittagong and the hills of the West Coast *Seed* is used as an expectorant in cough and asthma, and externally it is applied as a sedative —(Peters).

1663 MUCUNA PRURIENS; Bak M prurita

or Carpopogon pruriens
or Dolichos pruriens.

(N O —Papilionaceae)

Sans—Atmagupta, Vanari, Kapikachchhu *Eng.*—Cowhage or Cowitch Plant *Hind*—Kavach, Kiwach *Ben*—Alkushi *Gwalior*—Konch *Guj*—Kivanch *Duk*—Kanch Koorie *Bom & Mah*—Kuhili *Tel*—Pilliadagu *Tam.*—Poonaikkali *Can*—Naasuganni, Nayisonagu-balli *Mal*—Nayikuruma; Chorivalli *Kon*—Khavalyavali, Majram, Khatkutli, Khajarkulli *Pers*—Hub-ul-kulai

Habitat—An annual climbing shrub common in the tropics and found cultivated in some parts for the sake of its golden-brown velvety legumes, which are cooked and eaten as a vegetable

Parts Used—Seeds, root and legumes

Constituents—Resin, tannin and fat and a trace of manganese Seeds are found to contain a free fatty acid and its glyceride probably oleic acid, an acid-resin and albumen

Action—Seeds are astringent, anthelmintic, nervine tonic and aphrodisiac Root also is a nerve tonic and diuretic Hairs covering the seed pods are vermifuge, locally stimulant and mild vesicant

Preparations—Powder and Confection (1 in 2) of the hairs of the pods, dose of the Confection is 1 to 3 drachms, and that of the powder is 1 to 3 grains A decoction and infusion of the root A compound powder, Pill, & Electuary of the seeds

Uses—*Pods* are covered with stiff hairs which produce an intense irritation of the skin if incautiously handled. *A vinous*

white, dry ginger, Long pepper, root of Long pepper, Mastiche, Cinnamomum cassia, and Cloves Mix and make a pill mass Used in colic, dyspepsia, worms etc *Root* is useful in diseases of the nervous system, such as facial paralysis, hemiplegia, etc A strong *infusion of the root* sweetened with honey is given in cholera morbus Root is also useful for delirium in fevers, and when powdered and made into a *paste* it is applied in dropsy, a piece of the root being also applied to the wrist and ankle Root is also made into an *ointment* which is used for elephantiasis *Seed* is said to absorb scorpion poison when applied to the part stung

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1664 MUKIA SCABRELLA ARN or Bryonia Scabrilla

Action —Diuretic and stomachic

(*San* —Musumusikkayi Ahilaykhan *Hind* —Aganaki *Bom* —Chirati *Tam* —Musu musukkai *Tel* —Pottibudamu *Mal* —Mukkalpiram (Cucurbitaceae) This drug is an ingredient of some compound preparations prescribed for chronic diseases with cough as a predominant symptom probably on account of its expectorant properties

Munduiea suberosa Benth —(No —Leguminosae) This is a fish poison

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1665 MURICIA COCHIN CHINENSIS

(N O —Cucurbitaceae)

(*Sans* —Karkataka *Hind* —Kakrol *Ben* —Golkakra) is met with in Bengal, Deccan and Kanara *Seeds* deprived of the husks contain a greenish oil 43 7 p c and a bitter glucoside Oil possessess very powerful siccative properties *Seeds* deprived of their shells are fried and eaten either alone or with other food They are considered good for cough and pains in the chest. *Powdered* they form an ingredient of the hot stuff known as *Jhal* in Bengal which mixed with melted butter is given to women immediately after parturition and daily for a few days afterwards. *Seeds* and *leaves* are considered ape-

rient and useful in hepatic and splenic obstructions and externally in unhealthy ulcerations, lumbago, procidentia uteri-et-ani, fractures and luxation of the bones. A *plaster* made of the roots promotes the growth of the hair and prevents its falling off.

1666. MURRAYA EXOTICA Linn. or Chesia paniculata.

(N.O:—Rutaceae).

(*Sans.*—Ekangi. *Eng.*—Honey bush; Cosmetic box; China box. *Ben.*—Kamini. *Hind.*—Bibzar koonti. *Mah.*—Utkara; Kounti. *Bom.*—Chula-juti. *Tel.*—Naga golunga. *Kon.*—Pandhri. *Burm.*—Thanetkha; May-kay) found on the Himalayas, Bengal and Ceylon. Flowers contain a glucoside named "Murrayin". *Infusion* (1 in 10) of the flowers and leaves is given in doses of ½ to 1 ounce It is tonic and stomachic like Murraya koenigii. It is aromatic, refrigerant, digestive and beneficial in rheumatic fever, cough, giddiness, hysteria, thirst and burning of the skin.—(Kaviraj N. N. Sen Gupta)

1667. MURRAYA EXOTICA, Linn.

(N.O:—Rutaceae).

1668. MURRAYA KOENIGII, Spreng.—

See Bergaris Koenigii.

Tam.—Karuveppilai. *Tel.*—Karepaku.

1669. MUSA PARADISIACA, Linn.—See M. sapientum

(N.O:—Scitaminaceae)

1670 MUSA SAPIENTUM, Kuntze or M. paradisiaca.

(N O —Scitaminaceae)

Sans —Vana Laxmi, Kadali, Rambha, (unripe) Mochaka *Eng* —Plantain or Banana *Fr* —Bananier, Plantanier *Ger* —Gemeiner Pisang *Hind -Mah -& Guj* —Kela *Sind.*—Kewiro *Duk* —Maoz *Ben* —Kala *Tel* —Kadalamu, Aritl, *Tam* —Kadali, Vizhaip pazham, Valei *Mal* —Vala *Can.*—Bale-hannu *Kon* —Keli *Sinh* —Kehalgana, Kadali, Rambha *Burm* —Napiya bin Ya-thi-lan *Java* —Godang *Arab -& Pers* —Mong, Mouz *Malay* —Vasha

Habitat —This is cultivated universally in many varieties throughout India for its nutritious and delicious fruit

Varieties —(1) Red plantain—"Tambdi Kel", "Raj kel", Ram kel , (2) Bengali guji, Cavandishi, Hirvi, Basrai, Guji, (3) Motheli, (4) Rajeli, (5) Sonkela or Safed Elchi, Sahasrafali Yalakkibali Sugandhibali (6) Ban kel, Ambel (M Paradisiaca), (7) Lal Elchi, Karanjali, Sonkel of Poona, (8) Mhaskel, Basrai, (9) Govekari (10) Pattemadarangabali, (11) Yellaybali or Lokhandi of Poona

The varieties may be classified as early and late as follows—*Early* —Basrai Sonkel Mhaskel & Bankel *Late* —Lalvelchi Lal or Red Safedvelchi, Mutheli and Rajeli —(Bombay Govt Agri Dept Bulletin)

Parts Used —Fruit, leaves and stems

Constituents —Plant contains about 37 p,c, of dry matter Growing parts of the plant contain much tannic and gallic acids Sound ripe fruit contains 22 p c of sugar 16 p c, being crystallizable After it has become quite ripe there is a proportionate diminution in crystallizable sugar and increase in inverted sugar An over-ripe fruit contained only 2 8 p c of crystallizable and 11 84 p c of uncrystallizable sugar, being a total of 11 64 p c or 2 3 of the original quantity Besides sugar it contains starch, albuminoids 4 8 p c, fats up to 1 p c, non-nitrogenous extractives 6 to 13 p c, and ash containing phosphoric anhydride, lime, alkalies, iron, chlorine etc "There are large quantities of C vitamins and a certain amoun of B vita-

mins in it But there is a conflict of evidence over the existence of A Vitamins Banana is rich in vitamins capable of preventing and curing diseases due to A vitamin deficiency, and that to a less extent, or at any rate more slowly, the vitamins in the banana promote growth "—(Dr Eva Sopp in the "Medical Review" March 1925) Ash of the husk of ripe fruit contains carbonates of potash and soda, chloride of potassium, alkaline phosphates with a little sulphate, lime, silica, earthy phosphates etc Ashes produced by burning the plant contain potash salts Green plantain contains a large amount of tannin It contains nearly as much starch as the potato, but it is inferior in nutritive value Composition of the juice of the flower-stem of the plantain is potash, soda, lime, magnesia, alumina (with a trace of ferric oxide), chlorine, sulphuric anhydride, phosphoric anhydride, silica and carbon anhydride Juice of the tender roots contains much of tannin

'Some of the well known types of the Deccan such as 'Sonkeli' 'Welchi', 'Mutheli' etc, and of the Karnatic such as the 'Raswal' contain large amount of sugars Some varieties such as the 'Partoli', 'Bichurbali', 'Dwarf', 'Sahasrafani', etc, give a very high percentage of sugars, with a high proportion of non reducing sugars The analysis of these varieties is given below —

	Partoli	Bichurbali	Dwarf	Sahasrafani
	per cent	per cent.	per cent.	per cent.
Skin	11 30	18 10	17 16	10 10
Edible matter		81 90	82 82	89.90
On edible matter —				
Moisture	64 00	68 00	64 00	66 66
Reducing sugars	9 74	3 86	7 08	9.26
Non red sugars	12 90	17 81	18.30	12 74
Total sugars	22 64	21 67	26 18	22 00

The following table will show the variation of sugar contents in the above varieties —

Skin	10 10 to 18 10 p e.
Edible matter	81 90 to 89 90 „
On edible matter —	
Moisture	64 00 to 68 00 p e –
Reducing sugars	3 86 to 9 74 ,
Non-reducing sugars	12 74 to 18 30 „
Total sugars	21 67 to 26 18 „

Varieties known as 'Pattamodarung-bali', Latundan-bali', 'Anne-bali' etc, contain low percentage of sugars The percentage of both reducing and non-reducing sugars is low in these cases — 'Bombay Govt Agri Dept Bulletin)

"Banana is a good source of calories, being richer in solids and lower in water-content than other fresh fruits, and is a good source of quick energy, owing to its high content of easily assimilable sugars The low content of protein in the fresh pulp makes it an excellent means of increasing caloric value in diets without increasing protein intake The carbohydrates of banana are not only readily absorbed, but appear to be particularly well tolerated by the diabetic, the sprue victim, and the infant afflicted with celiac disease, and to be corrective of these two last conditions Banana contributes to the diet significant amounts of following minerals,—calcium, magnesium, phosphorous, sulphur, iron and copper" —(Bombay Govt Agri Dept Bulletin)

Action —Ripe plantain is emollient, demulcent and nutrient Unripe one is cooling and astringent and in the dried state it is antiscorbutic Fully ripe fruit is laxative, when taken in the early mornings Flowers ("mocha") are astringent Root is antibilious and anthelmintic, and a valuable alterative Juice of the plant is styptic Banana appears to have the ability to stimulate the intestinal growth of the gram-positive aciduric types and to combat the development of the colon forms Its value as a regulator of gastro-intestinal function may be in part due to these properties Banana increases the alkalinity of the blood and thus corrects acidosis due to acid diets, it has red blood regenerating potency through its ability to stimulate the production of hemoglobin" —(Bombay Govt Agri Dept Bulletin).

Uses—*Plantain* or *Banana* is a highly nourishing food Plantain ripens best upon the stem, *if ripened apart from the stem it is not so wholesome. Unripe fruit* is useful as a valuable article of diet, and used as a vegetable especially for those suffering from haemoptysis and diabetes, and in the dried state, or preserved with sugar it is antiscorbutic, it is also useful in diarrhoea *Ripe fruit* is also used as a vegetable *Flour* made of *green plantains* dried in the sun, is used as *chappatis* in cases of dyspepsia with flatulence and acidity A slight *gruel* made of banana flour mixed with milk is a nice and easily digestible article of diet in cases of gastritis, combined with milk the banana produces an almost completely balanced ration, providing both antiscorbutic and other vitamins, and at the same time makes an excellent modifier for the milk by supplying necessary sugar In Mauritius, the West Indies and South America, the banana is dried in the sun, is reduced to powder and this powder is given as a light nourishing food to infants and invalids The ripe fruit, denuded of its rind, is often cut longitudinal slices and dried in the sun and kept in well-covered jars, to be used at dessert An excellent jelly is made varying in consistency according as it is wished for immediate use or to be preserved for a length of time *Banana dessert*, banana in *syrup*, banana *toast*, dried *bananas*, baked *bananas* etc., are the various forms in which this valuable fruit is used for eating Ripe fruit is beneficial to anaemic persons on account of the iron contained in it, and is a valuable food in chronic dysentery and diarrhoea, mixed with half its weight of tamarinds and a little of common salt *Juice of the fruit* is sometimes made into a fermented liquor, which is given in atonic dyspepsia A plantain well washed may be given mixed with four ounces of milk, three times daily in cases of sprue, diarrhoea and scurvy Raw plantains are also made into a soup for the same purpose When used for children, sugar or sugar-candy, instead of salt, may be used *Syrup* of bananas is popular in America for producing a refreshing beverage and as an effectual remedy in relieving bronchitis *Ashes* produced by burning the plant contain potash salts and are therefore useful in acidity, heartburn and colic *Young tender leaves* form a cool dressing for inflamed and blistered surfaces, the blister removed a piece of

plantain leaf smeared with any bland oil, is applied to the denuded surface and kept in place by a bandage The dressing should be changed twice daily or oftener if required *Green tender leaves* are also useful as a substitute for oiled silk and guttapercha in denuded surfaces and are extensively used in indigenous surgical practice, and in the water dressing of wounds and ulcers to retain the moisture, provided the piece used is sufficiently large to cover or envelop the whole part, and is kept in its place by bandages etc *Older* and *greener leaves* make an excellent *eye-shade* in eye diseases *Leaves* are also used in making country cigarettes or "beedie" *Root* in powder is used in anaemia and cachexia *Juice of the tender roots* is used with mucilage for checking haemorrhages from the genital and air passages "*Juice of stem* is used in otalgia and haemoptysis'[1] *Root* juice in which burnt borax and nitre are dissolved is given in retention of urine, mixed with ghee and sugar it is given in gonorrhoea Banana root is useful in the treatment of bronchocele and strumous affections Its cold *infusion* neutralises the intoxication of a drunkard or a person under the full effects of spirituous drinks *Fluid extract of the root* is prepared and given from 10 to 20 minims "*Flower-spike* which is called '*kel-fal*' or plantain flower is used as a vegetable, and the *juice of the inner part of the stem*, which is felled as soon as the fruit is cut, is used in preparing wafer biscuits or *papads*' *Juice of the flowers* mixed with curds is administered in dysmenorrhoea and menorrhagia *Cooked flowers* are used in diabetes *Flowers* and *inner portion of the young stem* are eaten as a vegetable A soup made of *flowers* is given in convalescence after diarrhoea *Juice of the bark and leaf* is given to children suffering from an overdose of opium One ounce with one ounce of ghee is a brisk purgative A *mucilage* prepared *from the seeds* has been found of great service in the catarrhal and mild inflammatory form of diarrhoea The plant is useful in bite of boa constrictor[1] A compound preparation known as *Kadalyadi ghrita* is recommended for diabetes in Baidhiyasarsangraha It is prepared as follows —Take of plantain flowers 12½ seers, watery juice of the root stock of the plantain tree 64 seers boil them together till reduced to one fourth and strain To the strained

decoction add four seers of prepared clarified butter and the following substances in the form of a paste, viz unripe plantains, cloves, cardamoms, red sandalwood, wood of Pinus longifolia *Jatamansi* root, the three myrobalans, Raphanus sativus, and the fruit of Faronia elephantum in esual parts, one seer in all, and prepare a *ghrita* in the usual way This medicine is generally given along with some preparation of tin or other metallic medicine in diabetes The dose is about 2 tolas *Leaves* and *ashes* make an excellent manure

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1671 MUSSAENDRA FRONDOSA, Linn , M flavescens,

(N O —Rubiaceae)

(*Sans* —Shrivatte, Nagvalli, Sribati *Hind* —Bebina, Bedina *Mah* —Bhutakesi *Bom* —Sawad, Bhooteasse, Bhutakesa *Mal* —Vallil, Vellila *Tam* —Vellallay, Vella-ellay *Can* —Belloti gida *Kon* —Belloti, Karabphul, Sarvadi) Plant growing abundantly on the Malabar Coast Root contains a bitter principle—Saponin—a glucoside, resin, sugar, mucilage and colouring matter It is alterative, diuretic and demulcent Half a tola is given rubbed with cow's urine in white leprosy *Root* rubbed in water is applied as a *paste* to relieve the burning of sore-eyes, and the *juice of the leaves* and *fruit* is applied in cases of weakness of eyesight *Infusion* or *weak decoction* of the dried shoots is given to children to relieve cough due to cold and catarrh In cases of jaundice two tolas of the white calycine leaves are given in milk The drug is useful in cough asthma, ague and flatulence

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1672 MYRICA INTEGRIFOLIA Roxy

(N O —Myricaceae)

Sylhet —Sophee, is a very common native bush or tree in the mountainous parts of Bengal and the eastern Peninsula

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(1) & (3) Chopra s "I.D of I" p 509
(2) Bombay Govt Agri Dept Bulletin

of India, and especially in Sylhet Fruit is eaten both pickled and raw—(Hooker)

1673. MYRICA NAGI, Thunb, or M. sapida; M. cerifera.

(N O:—Myricaceae).

(*Sans*—Katphala, Kaidaryama, Kumbli *Eng*—Box Myrtle Bay-berry *Hind Sind. Ben. Mah & Bom*—Kaiphal, Kayaphul *Punj*—Kaphal, Kaipha! *Guj*—Kari-phal *Tel.*—Kaidaryamu *Tam*—Marudam-pattai *Mal. & Malay*—Marutamtoli *Can*—Kirishivani *Pers*—Kandula, Darshishaan *Nepali*—Kobusi *Khasia*—Ding Solir *Arab*—Azuri) is an evergreen plant of the sub-tropical Himalayas, N W F Provinces, Simla District, Sylhet and southwards to Singapore, found also in the Khasia mountains and the hills of Burma. This is a very ocmmonly cultivated tree in China and Japan

Parts Used—Bark, flowers, seeds, arillus and fruits

Constituents—Bark contains tannin, saccharine matter and salts The ground bark yields a colouring principle named "Myricetin"

Action—It is aromatic and astringent, heating and stimulant according to Ayurveda Hakims opine that the bark is resolvent, astringent, carminative and tonic

Uses—A decoction of *the bark* mixed with ginger and cinnamon is valuable in asthma, diarrhoea connected with phthisis, fevers, lung affections, chronic bronchitis (catarrhal conditions of the lungs), typhoid, dysentery and diuresis

Dose—Usual dose for internal administration of decoction is about 60 grains An oil prepared *from the bark* is dropped into the ears in earache Bark is eminently useful in scrofulous and aphthous affections, chronic bronchitis, catarrhal fever, cough and affections of the throat It enters into the composition of numerous formulae for these diseases, in which it is combined with other stimulants and alteratives, t is also useful in chronic with other stimulants and alteratives, it is also useful in chronic gonorrhoea and gleet, with

atony of the digestive apparatus A *poultice* made by bruising the bark and simmering it in water and stirring in Indian meal till it obtains the proper consistence cures scrofulous ulcers —(Tukina) *Powder of the bark* is recommended as a *snuff* in catarrh with headache, and combined with ginger as a stimulant application in cholera With cinnamon it is prescribed for chronic cough, asthma, fever, piles etc With vinegar it is applied to strengthen the gums Bark is chewed to relieve toothaches *Powder* or the *lotion of bark* is applied to putrid sores *Pessaries* made of the *bark* are used to promote the menses *A compound powder* of the *bark* known as *Katphaladi Churna*, consisting of the bark of Myrica sapida, tuber of Cyperus rotundus, root of Picrorrhiza kurroa, Curcuma zedoaria, Rhus succedania and the root of Aplotaxis auriculata, in equal parts, is given in doses of about a drachm with the addition of ginger-juice and honey in affections of the throat, cough and asthma *"Katpha' is the bark and not, the fruit 'Dahn-el-kandul'*, an oil prepared from *flowers*, has much the same properties as the bark *A paste of the seeds* with stimulant balsams is mixed with ginger and externally used as a rubefacient application to the fore arms, calves and extremities during the collapse stage of cholera With catechu asafoetida and camphor a paste of it is applied over piles with benefit *Arillus* is used as an ingredient in numerous carminative mixtures *Fruits* which are sub-acrid, are eaten both raw and cooked by the Chinese, Japanese and Europeans *Fruits* when boiled yield a kind of wax called *myrtle wax* which is used as a healing application to ulcers

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1674 MYRICA SAPIDA—See Myrica nagi

1675 MYRICARIA ELEGANS, Royle

(N O —Tamaricaceae)

Punj—Umbu This is applied to bruises

1676. MYRIOGYNE MINUTA, Less.

See Centipeda oroicularis

Used as a snuff

1677 MYRISTICA FRAGRANS, Houtt

M officinalis, Linn. & Mart, M. aoschata; M aromatica

(N O.—Myristicaceae).

Sans—Jati-phalam, Malathi-phalam *Eng.*—Nutmeg *Fr.*—Muscadier, Musque *Ger*—Achter muscatnussbaum *Hind. Duk & Ben*—Jayphal, Jaiphal, Jaepatri *Kash*—Zafal *Bom Punj Guj & Mah*—Jayiphal, Javantri *Tel*—Jajikaya *Tam*—Jadikkay, Jathikai *Mal*—Jatika *Can*—Jajikai *Kon*—Jaiphal *Sinh.*—Jadika *Burm*—Zadi-phu *Malay.*—Bush-pala *Pers & Arab*—Sauz-bawwa, Zanza-ba-wawa

Sans—Jatipatri (arillus) *Eng*—Mace *Fr.*—Macis *Hind Can Tel Mah & Guj*—Jaepatri *Ben*—Jotri *Punj*—Jauntari *Kash*—Jowwatri *Bom.*—Jawantri *Tam. & Mal*—Jadi-pattiri *Sinh*—Vasavasi *Burm.*—Zadi-phu-apoen *Malay*—Bunga pala *Arab & Pers*—Bazabaza

Habitat—Nutmeg tree is indigenous to the Malay Peninsula and Penang It has been successfully cultivated in Madras and Southern India (Nilgiri Hills and Malabar Coast)

Seeds are the nutmegs of commerce, and the *arillus* surrounding the seed within the outer shell constitutes, when dried the product known as mace

Parts Used—Dried seed (deprived of testa), nutmeg (B P) arillus surrounding the seed, mace and wood

Constituents—Kernel (nutmeg) contains a volatile oil 2 8 p c, a fixed oil, proteids, fat, starch, mucilage and ash Mace (arillus) contains a volatile oil 8 to 17 p c (identical with that obtained from the kernel), a fixed oil, resin, fat, sugar, destrin and mucilage The fixed oil which is called "butter of nutmeg" consists of myristin and myristic acid, and a portion of the essential oil Essential oil contains myristicene

and myristicol Essential oil of mace is of a yellowish colour with the odour of mace and consists of macene

Action—Nutmeg is aromatic, stimulant and carminative, in large doses, narcotic Concrete oil is used as a rubefacient, volatile oil is stimulant, aperient and carminative Mace is carminative and aphrodisiac Mahomedan writers describe nutmeg as stimulating, intoxicating, digestive, tonic and aphrodisiac Wood is astringent "Dr Osiander describes nutmeg as an antipyretic, and Dr Paracelsus, Lonicerus and Mathiolus describe them as a gastric tonic The content of an ethereal oil, 6-10%, in combination with myristicine gives the nutmeg a tonicising action on the stomach, its effect on the mucous membrane of the urinary passages is irritative, which may account for its use as an aphrodisiac and abortifacient—(Dr Kobert) In large doses, nutmeg oil has a narcotic action and produces nausea, somnolence and headaches—(Dr Marfori-Bachem) Drs, Paracelsus, Lonicerus and Matthiolus, used nutmegs with a constipating action, also as a diuretic against gastric catarrh and cardiac fibrillation Dr Osiander found nutmegs useful against the vomiting of pregnancy" —(Dr Madaus's Book)

Action & Uses in Ayurveda & Siddha—Tikta rasam, ushnam, kapha-vata-haram, lagu, rochanam, dipanam, gradi, swaryam, in foul mouth, krimi, kasam, chardhi, swasam, sosham, hridrogam, impotency—(Therapeutic Notes)

Mace—Mathura rasam, Katu rasam, ushna veeryam, Kapha haram, lagu, ruchi varna karam, in kasam, swasam, chardhi, trishna, krimi, visham

Action & Uses in Unani—Hot 2°, Dry 3 *Nutmeg*—Stomachic, aphrodisiac, saviour of hararatha ghareezi, jaundice, solvent of rhei, vomiting, hiccup, uterine tonic, solvent of inflammation *Mace*—Hot 2°, Dry 2°. Stomachic, digestive, carminative Diarrhoea, clears uterus, aphrodisiac, consumptive fevers—(Therapeutic Notes).

Preparations—Paste, Powders, Pills, Confections, Expressed Oil and Decoction of wood

namon 4 tolas, and honey 3 tolas; all finely ground in honey. It is then converted into *Halva*. Afterwards 50 silver leaves should be mixed with this *halva*. Dose is ½ to 2 tolas twice a day with cow's milk; useful as tonic for the heart and brain and in sexual debility, incontinence of urine and general debility. An ointment composed of 2 drs. of powdered nutmeg, 1 dr. of tannic acid and 1 ounce of lard is an excellent application for itching and irritable haemorrhoids—(Dr. Shoemaker). A medicated oil made of one pulverized nutmeg and a quarter seer of sweet oil boiled together till uniformly mixed, has a magical effect in relieving the painful cramps in cholera when rubbed on the affected parts Following oil is a specific for impotency. Take a tola each of Nutmegs, Soda biboras and Arsenic sulphide, pound them in a mortar and mix two seers of extracted juice of Jasmine leaves and 12 *pooh* of Sesame oil. Boil this mixture till all the moisture is absorbed and only the oil remains; then sift it and keep in a corked phial This oil should be rubbed over the generative organs which should then be wrapped up with betel leaves This process continued for 21 days will renovate weak and inactive organs—(Kaviraj Pundit J. L Duveji) "The volatile oil derived from nutmegs enters into several important and widely used pharmacopoeial preparations like spiritus ammoniae aromaticus, tinctura valerianae ammoniata, and other aromatic oils The oil is given on sugar as a stimulant and carminative"—(Dr. Chopra's "I.D of I." p 195). *Concrete* oil of nutmeg is used in mild cases of ringworm and is added to pomades to stimulate the growth of the hair; it is also used as an ingredient in aperient pills and other preparations to prevent griping, and in ointments and plasters, soaps and perfumery. Mixed with sweet oil it makes a good liniment for chronic rheumatism, paralysis and sprains. Essential oil is administered in atonic diarrhoea and dysentery to relieve pain, ad is used in combination with other stimulating oils as a stimulant inunction and in plasters for chronic rheumatism The dose of powdered nutmeg or mace, is from 5 to 15 grains, of the oil—from 1 to 3 drops; of the spirit (1 in 10)—½ to 1 drachm Mace is useful in low

plaints. When roasted it, as well as nutmeg, is useful in choleriac diarrhoea, flatulent colic and some forms of dyspepsia, obstructions of the liver and spleen. *Infusion of nutmeg* is useful in quenching the thirst of cholera patients. A *paste* of it is used as an application to the head in headache, palsy etc, a *poultice* of it applied round the eyes strengthens the sight.

1678. MYRISTICA LURIFOLIA

Is a common wild nutmeg tree found in Madras, but its nutmeg as well as the mace lacks aroma, fragrance and the therapeutic value.

1679 MYRISTICA MALABARICA, Lamk

(N.O:—Myristicaceae).

Sans—Kamuk, Malati *Eng.*—Bombay Mace or Country or Malabar Nutmeg *Bom.*—(nut) Jangli Jaiphal; Ramphal; (mace) Rampatri *Kon.*—Kayphal *Can.*—Kanagi.

Habitat.—This tree is indigenous to the Konkans, Canara and Malabar

Parts Used—Seeds and arillus

Constituents—Seeds contain 40 p c of fat and the mace, 63 p c In each case the fat is associated with red resin. An essential oil

Action—Local stimulant and aphrodisiac.

Uses—Seeds are larger and more oblong than true nutmeg, but inferior as an internal remedy. *Concrete oil* when boiled with a small quantity of any bland oil is regarded as an excellent application to indolent and ill-conditioned ulcers; and also as an embrocation in chronic rheumatism Oil in which seeds are boiled is a useful instillation in cases of earache The arillus *Rampatri* is considered to be a nervine tonic; it is used in stopping vomiting, also as a substitute for the true mace, but is deficient in that delicate fragrance or

aroma which characterises the M fragans This drug is useful in headache also

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1680. MYROPYRUM SIMILACIFOLIUM, Blume.

(N O:—Oleaceae).

Tam—Chatura-mallikei Leaves are used as a remedy in asthma, cough, rheumatism and nervous complaints

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1681. MYRSINE AFRICANA, Linn.

(N.O —Myrsinaceae).

(*U P*—Guvaine. Chupra *Hind*—Chapra *Punj Kash.*—Bebrang *Arab*—Baibaiang) is a green shrub found in the Himalayas from Kashmir to Nepal *Fruit* is a powerful cathartic vermifuge (anthelmintic), especially for tapeworms Plant yields a *gum* which is prescribed for dysmenorrhoea It is also laxative in dropsy and colic Continued use produces high coloured urine

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1682 MYRTUS CARYOPHYLLUS.

See Caryophyllus aromaticus, Linn and Eugenia Caryophyllata.

(N O —Myrtaceae)

Sans—Lavangaha; Srisangyam, I [illegible] *Guj Bom Can. Duk & Mah*—Lavang *Hin.*—La [illegible] *Tam*—Kirambu, Lavangam *Tel.*—Karavappu *Arab*—[illegible]-phul *Pers.*—Mekhaka; Kharanfal

Habitat—India and Ceylon

Parts Used.—Fruit, dried flower-buds and oil

Constituents—A heavy volatile oil 16 to 20 p c, a camphor resin 6 p c., caryophyllin or eugenin—a crystalline sub-

stance (which is convertible into caryophyllic or eugenic acid with the aid of nitric acid), tannin (convertible into gallo-tannic acid), woody fibre, gum etc Caryophyllin "occurs in silky stellate needles" Oil distilled from cloves contains (1) eugenol 85 to 92 p c , chemically resembling phenol, (2) acetyleugenol, (3) caryophyllene, a sesquiterpene, furfural and methyl-amyl-ketone

Action —Cloves are stomachic, carminative, stimulant, aromatic, and antispasmodic, externally oil is antiseptic, local anaesthetic and rebufacient Internally it increases circulation, raises blood-heat, promotes digestion of fatty and crude food, promotes nutrition and relieves gastric and intestinal pains and spasms It stimulates the skin, salivary glands, kidneys, liver and bronchial mucous membrane It is excreted in the breath, perspiration, bile, milk and urine Cloves owe their valuable properties to the presence of a considerable quantity of the volatile oil oil of cloves

Action & Uses in Ayurveda & Siddha —Katu tikta, rasam, seetha veeryam, kapha-pitta haram, lagu chakshusyam, dipanam, pachanani, ruchyam In raktadosham, trishna, chardhi, admanam, soolam, kasam swasam, kashayam and madhu-meham —(Therapeutic Notes)

Action & Uses in Unani —Hot 3 , Dry 3° Aprodisiac, carminative, strengthens aza-i rayees and arvah, strength to brain, in cold and moist diseases, as paralysis, apoplexy, bronchitis nausea loss of appetite, hiccough —(Therapeutic Notes)

Preparations —Paste Oil, dose as ½ to 3 minims, Essence, Tea, dose 1 to 4 ounces, Infusion (1 in 40), dose ½ to 1 ounce, Powder, Decoction

Uses —Cloves (unopened flower-buds) are generally used as spice in curry foods and condiments Medicinally they are used to correct griping caused by purgatives, to relieve flatulence, various forms of gastric irritability, colic, dyspepsia, and to increase the flow of saliva Combined with other spices and rock-salt clove is given to relieve colic, indigestion and vomiting An infusion of cloves is given to ap-

pease thirst A pill called *Chatuhsama vati* made up of cloves ginger, *ajowan* and rock salt in equal parts and made into 8-grain pills is used in indigestion A pill made of cloves 4 parts, leaves of Gannabis Indica 4, long pepper 6, pellitory root 6 and honey 8 parts, is given in giddiness, dyspepsia and general debility, dose is 1 to 2 pills of 5 grains each Another pill or *powder* made up of cloves and dry ginger each 5 parts, *ajowan* and rock salt each 6 parts is useful in indigestion dose is 5 grains A mixture of equal parts of cloves and chiretta has excellent effect in debility, loss of appetite and in convalescence after fevers—(Waring) An infusion of Senna (1 in 10) to which are added cloves and ginger 3 grains each to the ounce of the infusion makes a good aromatic purgative A wineglassful of hot water to which are added 5 drachms of bruised cloves and 20 grains of bicarbonate of soda is a nice draught taken before meals for indigestion A powder called *Lavangadhi churnam*, made of Cloves dry ginger black pepper and fried borax taken in equal measure is useful in bronchitis. Dose is 20 to 60 grains gradually dissolved in the mouth and swallowed, to be taken three times a day This powder macerated in the decoction of Achyranthes aspera and the roots of Plumbago zeylanica and made into pills of 5 grains each are taken in doses of 1 to 4 pills three times a day in coughs and bronchitis. A pill called *Devakusumadi Rasa* containing Cloves, sandalwood paste, saffron and mercuric chloride, is given in doses of 1 to 4 pills of one grain each three times a day in syphilitic affections as an alterative and tonic This was recently tested in cases of secondary syphilis, in which the patients derived marked benefit from them"—(Dr Koman in Indigenous Drugs Report, Madras) Externally, oil is used as an application in rheumatic pains sciatica lumbago to the head in headaches neuralgia, and to the tooth in toothaches by stuffing the painful dental cavities with cotton wool moistened with a drop or two of clove oil Cloves heated over flame and kept in the mouth and juice swallowed improves the breath and relieves sore-throat also strengthens the gums A paste made of them and applied to the forehead and to the nose-bridge is a popular remedy in headache and coryza "The dried flower buds are the cloves of commerce

Oil distilled from the flower buds is commonly used nowadays in Western medicine It imparts a delicate aroma to the preparations and helps to disguise the taste of many obnoxious preparations It easily mixes with grease soap and spirit and is extensively made use of in the manufacture of perfumery It is largely employed in the manufacture of Vanillin clove oil is used for aromatising cigarette tobacco —(Chopra s I D of I p 86)

1683 MYRTUS COMMUNIS Linn

(N O —Myrtaceae)

(*Eng*—Myrtle *Fr*—Myrte *Ben*—Sutra sowa Velayti Mhendi Vilayati Mehndi *Hind*—Murad Barngasha *Guj*—Makali na patran *Arab*—Sutre Sowa (fruit) Ilab ul as) cultivated in many parts (in garden) of India *Ripe berries* contain an essential volatile oil (oil of myrtle) resin tannin citric acid malic acid sugar etc *Plant* is stimulant and astringent Fragrant volatile oil distilled from the leaves is an antiseptic and rubefarient It is generally employed in perfumery It is used in affections of respiratory organs and bladder and oil is a local application in rheumatic affections A *fixed oil* is obtained from berries it strengthens and promotes growth of hair *Powder of leaves* is a useful application in eczema and intertrigo and also for wounds and ulcers The fruit *myrtle berry* is carminative and given in diarrhoea and dysentery in the form of *infusion* it is also useful as injection in haemorrhages internal ulcerations deep sinuses leucorrhoea and prolapsus of the uterus It also renders the vagina narrow As an antiseptic it is used as a wash for foetid ulcers *Infusion* or decoction is useful as a mouth wash in aphthae A *syrup* made by macerating two ounces of the bruised seeds in twelve ounces of distilled water for three hours and then adding sugar and boiling for half an hour over a gentle heat is useful in diarrhoea and dysentery in doses of ½ to 1 ounce A powder made by taking two drachms of the berries 1 drachm of gum acacia and two drachms of *Kharanubasmi* and reducing them to a fine powder is also useful in diarrhoea and

chronic dysentery; dose is ½ to 1½ drachms. The drug is also used in scorpion-sting.

1684 NAGEIA PUTRANJIVA—

See Putranjiva Roxburghii.

1685—NANNORHOPS RITCHIEANA, H. Wendl.

(N.O:—Palmae).

Hind.—Mazri. Leaves are used in dysentery and diarrhoea.

1686 NAPETA MALABARICA—

See Anisomeles Malabarica.

1687 NARAVELIA ZEYLANICA

(N.O:—Ranunculaceae)

Occurs in the plains.

1688 NARCISSUS TAZETTA, Linn.

(N.O:—Amaryllidaceae).

Punj.—Nargis. Root is emetic, used to relieve headache.

1689. NARDA SPICA & NARDUS INDICUS—

See Nardostachys jatamansi.

1690—NARDOSTACHYS GRANDIFLORA

(Gross blumige Narda). Is a species found in Nepal and Kumaon possessing medicinal properties of the true Nard in less pronounced degree.—(Chakraverthy).

1691 NARDOSTACHYS JATAMANSI, DC.

(N O —Valerianaceae)

Sans—Jatamansi, Bhytajata Tapaswini *Eng*—Musk-root, Indian Spikenard *Fr*—Nard Indien *Ger*—Achte Narde *Gr*—Narde Indike *Hind*-& *Punj*—Jatamashi, Balchir *Ben*-& *Duk*—Jatamansi Bom—Balacharea *Guj*—Jatamasi *Mah*—Jatamavshi *Tel*—Jatamamshi, Jatamsi *Tam*—Jatamashi *Mal*—Jatamanchi *Can*—Jatamavashi; Jatamansi *Malay*—Jata-manchi *Kash*—Bhut-jatt, Kukilipot *Arab*—Sambul-u-'l hind *Pers*—Sunbuluttib, Sumbula theeb *Sinh*—Jaramanshi

Habitat—This herb is growing at great elevations up to 17,000 feet on the Alpine Himalayas, in Nepal, Bhutan and Sikkim (Roots met with in the bazar are really the underground stems, having the thickness of a goose-quill)

Parts Used,—Rhizome, and oil from rhizome

Constituents—A volatile essential oil 0 5 p c (oleum Jatamansi, the active principle), resin, sugar, starch, bitter extractive matter and gum

Action—Root is of somewhat bitter taste, aromatic, antispasmodic, diuretic, emmenagogue, nerve sedative, nerve stimulant, tonic, carminative, deobstruent, sedative to the spinal cord, promotes appetite and digestion.

Action & Uses in Ayurveda & Siddha—Mathura, tikta, kashaya rasam, seetha-veeryam, tridosha haram, medyam, gives strength and complexion, in impurities of blood, daham, visarpam, kushtam—(Therapeutic Notes)

Altion & Uses in Unani—Hot 1°, Dry 2°, tonic for heart, liver and brain. Removes obstructions, diuretic and emmenagogue, jaundice and stone in kidney—(Therapeutic Notes)

Preparations—Oil, dose 2 to 6 minims, Tincture or fluid extract, dose ½ to 2 drachms, Infusion, dose 1 to 2 ounces

Uses—Jatamansi roots should also be used fresh as an aromatic adjunct in the preparation of medicinal oils and in perfumery *Jatamanshi* is a good substitute for the official Valerian *Infusion* prepared from *fresh roots* is employed in

the treatment of spasmodic hysterical affections, especially palpitation of heart, nervous headache, chorea, flatulence etc, in doses of 1 to 2 ounces three times daily It is said to be useful also in menopause disturbances, hystero-epilepsy and similar nervous and convulsive ailments Dose is 10 to 20 grains in powder It may be usefully combined with a few grains of camphor and cinamon Susruta recommends following decoction in epilepsy —Take of the pulse of Phaseolus Roxburghii, Barley, Jujube fruit, seeds of Crotolaria juncea, Bdellium, Jatamanshi root, the ten drugs collectively called *dasamula* and chebulic myrobalan, equal parts and prepare a decoction in the usual way This decoction is to be administered with the addition of clarified butter and goat's urine *Volatile oil* from the rhizome can be used in these diseases It is used in very many diseases of the digestive and respiratory organs, and in jaundice It is said to be useful also in leprosy It is also employed mixed with sesamum oil for rubbing on the head as a nerve sedative It promotes growth and blackness of hair A *fluid extract* prepared with an ammoniacal menstruum or tincture (1 in 10) is suitable for administration In all cases it may be advantageously combined with camphor, ammonia and other remedies of the same class It may also be given in *infusion* (1 in 40) in doses of a wine-glassful twice or thrice daily Following are a few very useful Home Remedies —(1) Take of Jatamansi 4, Cinnamomum tamala 1, Cubeba officinalis 1, Anise seeds 1, Dry ginger 1 and sugar 2 parts Reduce the ingredients to a fine powder and mix Dose is ½ to 1½ drachms Used in flatulence, colicky pains, gastrodynia, and hysterical affections (2) Take of Jatamansi 2 drs Pistacia khinjuk ½ dr, Polyporus officinalis 1½ drs and aloes 20 grains Reduce the whole to a fine powder and mix. Dose is 15 to 20 grains Used in epilepsy, hysteria and convulsions (3) Take Jatamansi 5, Cloves 6, Cardamoms 8, Cinnamomum cassia 8, Saussurea auriculata 6 Alpinia galanga 6, Cyperus pertenuis 6, Dry ginger 6, Saffron 4, White pepper 6, Balsamodendron opobalsamum 5, Valeriana wallichi 5, Churetta 10 and Castoreum 4 parts Mix and make a decoction Dose is 1 to 1½ ozs Used as a tonic in general debility and seminal weakness (4) Take of Jatamansi, *Sulinja*, Balsamodendron opobalsamum, Vale-

riana wallichi, Aquilaria agallochum, Pistacia khinjuk, Cinnamomum and saffron each 3 *mashas*, salt, *Hanzil* 1¼ tolas, Ipomoea turpetham 1¾ tolas, *Ailua* 4 tolas and water Make pills about the size of wild plum Used in tubercular adenitis —Jauhar Hikmat) The drug is also used in scorpion-sting

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1692 NAREGAMLA ALATA, W & A,

(N O —Meliaceae)

(*Eng* —Goanese or country Ipecacuanha *Bom* —Pittpapra *Mah* —Tinpani, Pittvel, Kapur-bhendi *Goa* —Trifolio *Tam* —Nela naringu *Mal* —Nelanarakam *Can* —Nela-naringa, Nepanaringu *Kon* —Bhui naringa *Malay* —Nela-naregan) is a small woody shrub growing in Western and Southern India Root and stems divested of their leaves have emetic and expectorant properties like those of ipecacuanha, generally employed in doses of from 12 to 20 grains "Root has a pungent aromatic odour, is emetic and expectorant"—(Chopra) It is used in some doses as a remedy in acute dysentery "*Decoction* of the stem and *leaves* has been used in dysentery with success, and was as effective as ipecacuanha'—(Chopra) Root contains an alkaloid "Naregamin" an amorphous residue of a brittle consistance It forms crystalline salts with mineral acids and thus differs from emetine and also differs from it in not giving any colour with chlorinated lime and acetic acid Therefore, it is not related in any way to emetine Bark of root also contains wax, gum, asparagine, starch, but no tannin The drug has recently been tried in small doses with considerable success as an expectorant, in chronic forms of bronchitis, where there is a thick, scanty and tenacious expectoration, or mucus to be expelled, and in bronchial catarrh with asthmatic tendencies and heart difficulty Dose of fluid extract is from 5 to 20 minims as an alterative and expectorant and from 15 to 40 minims as an emetic *Juice* of the plant mixed with cocoanut oil is used in cases of psora

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1693 NARTHEX ASAFOETIDA—

See Ferula asafoetida

1694. NASTURTIUM OFFICINALE, R Br,

(N O —Cruciferae)—

See Lepidium sativum

(*Eng*—Water-cress, *Deccan.*—Lut-putiah *Kumaon*—Piriya halim) is found near hill stations of the Deccan, South India, Simla, Rohilkhand, Punjab and Ceylon It is used as a salad on account of its appetising and antiscorbutic properties Constituents—Glucoside, essential oil consists chiefly of phenyl-ethylen-ethiocarbide, As—0,012 mg in 100 g dry plant Dr Harold Sourfield writing in the "British Medical Journal" urges its greater use among town people According to him it probably contains all the Vitamins and it is likely to remedy the dietary errors caused by urbanisation Pillows stuffed with it relieves sleeplessness

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1695 NAUCLEA CADAMBA, Roxb

(N O —Rubiaceae)—

See Anthocephalus cadamba

(*Sans*—Dhara kadambo *Hind*—Haldee *Ben*—Kelikadamba *Mah*—Dharkalambu *Can*—Dharujakaur *Tel.*—Magulikarimi) is a variety of *Kadamba* found in most tropical parts of India, especially in Bengal "It is bitterish acrid, astringent, refrigerant, aphrodisiac, antibilious and beneficial in convulsions and poison"—(Kaviraj N N Sen Gupta) *Juice of its capsules* is used in Malabar in colic Its *leaves* are used for bandaging boils with thick layers of them and plaster made of them and bamboo manna are applied to suppurating boils

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1696 NAUCLEA CORDIFOLIA or Adina cordifolia or N ovalifolia

Is a native of the forests of Sylhet known as "Shal" Bark is bitter like cinchona and is used in the treatment of endemic fevers and bowel complaints

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1697. NAUCLEA OVALIFOLIA, Roxb

(*Ben*—Shal), used for bowel complaints and fever

1698. NELUMBIUM SPECIOSUM, Willd.

(N O—Nymphaeaceae)

Sans—Svetakamala, Pankaja, Shatapatra, Padma, Kamala (white) Kokonad (pink), Induvara (blue) *Eng*—Egyptian or Sacred Lotus *Fr*—Nelumbo *Ger.*—Pactige nelumbo *Hind*—Kanwal *Ben*—Swet padma, Padma, Kamal *Punj*—Kanwal *Malay*—Tamara Arab.-& *Pers*—Nilufer *Mah.-Can.-& Kon*—Kamala *Tel*—Tamara, Damara, Erra-tamara (red) *Tam.*—Tamarai (red) Shivapuu-tamarai, Ambal *Mal.*—Aravindam *Can*—Tavare *Sinh.*—Nelum *Uriya*—Padam *Sind*—Pabban

Entire plant including root, stem and flower is called *Padmini* The torus or receptacle for the seed is called *Karnikara*

Habitat—This large aquatic herb with its elegant sweet-scented flowers is generally met with in tanks and ponds throughout India

Parts Used—Flowers, filaments, anthers, stalks, seeds leaves and roots, i e, entire plant

Constituents—Rhizome and seeds contain resins, glucose, metarbin, tannin, fat and an alkaloid "nelumbine" similar to nupharine identical with that obtained from Nupharluteum

Action—Seeds are demulcent and nutritive, filaments and flowers are cooling, sedative, astringent, cholagogue, diuretic, bitter, refrigerant and expectorant Root is demulcent.

Preparations—Syrup of dried flowers, dose 1 to 3 drachms Compound decoction (1 in 10) of flowers and filaments with liquorice and sugarcandy, dose ½ to 1½ ounles Powder of seeds, dose from 10 to 30 grains Confection of seeds Paste of leaves

Uses—*Flowers, filaments* and *juice of the flower-stalks* are useful in diarrhoea, cholera and in liver complaints and

also in fevers, it is recommended also as cardiac tonic *Compound decoction* is useful in bilious fevers "The root, flowers, stalk and leaves in the form of infusion are used in fever as refrigerant and diuretic'—(Chopra) *Honey* formed in the flowers by the bees feeding upon the padma is called *padma-madhu or mokaranda* This is very useful in eye diseases *Syrup of flowers* in used in coughs, to check haemorrhage from bleeding piles and in menorrhagia and dysentery *Tubers* of the white lotus boiled in gingelly oil are rubbed on the head to cool the head and eyes *Expressed juice* is also employed instead of pieces of the tuber *Root* is mucilaginous and is given in piles *Seeds* are used as an application in leprosy and other skin affections Seeds with those of Euryale ferox* are used as an article of diet to diminish venereal desires Pistils are used with black pepper externally and internally as an antidote in snake poisoning (cobrabite) and in scorpion sting In bleeding piles the filaments of the lotus are given with honey and fresh butter or with sugar—(Bhavaprakash) Large *leaves* are used as cold bed sheets in high fever with much burning of the skin Also a *paste of the leaves* made with sandalwood is used locally for the same purpose *Leaf* stalks are used as a cooling application to the forehead in cephalalgia Lotus flowers and fresh leaves ground with sandalwood or emblic myrobalans also form a cooling application to the forehead in cephalalgia to the skin in erysipelas and to other external inflammations

Makhanna *Tam*—Mallani pidman is a water-lily plant found in ponds in Northern Central and Western India Seeds are farinaceous and when fried are known as *Dhani*, *Dhani* is a nutritive article of food and also a powerful tonic Seeds are said to be astringent, aphrodisiac, expectorant, emetic and beneficial in *Vata* and *Pitta* They are regarded as useful in checking urethral discharges, such as spermatorrhoea

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1699 NEPETA CILIARIS, Benth
(N O—Labiatae).

Punj & Bom—Zufa. Used in fever and cough

* Euryale ferox (N O Nymphaeaceae) (Sans—Makhana. Hind. & Ben.—Makhna. Bom.

1700 NEPETA ELLIPTICA, Royle.

Is used in dysentery

1701 NEPETA GLOMERULOSA, Boiss

(*Baluch*—Chingam-butai) Used in digestive troubles

1702 NEPETA RUDERALIS, Ham

(*Punj*—Bilh-lotan) Cardiac tonic, used as a gargle in sore-throat, also used in gonorrhoea

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1703 NEPHELIUM LAPPACEUM

(N O—Sapindaceae)

(*Eng*—Rambutan *Fr*—Ramboutan *Ger*—Zwillingsp-blaume) is a lofty tree cultivated in South China, East Indies and Assam for its fruit which is eaten It is ovai, somewhat flattened, reddish and covered with soft spines or hairs The edible part is an aril which is of pleasant subacid taste and is used as a refrigerant in fevers—(Chakraverthy)

1704 NEPHELIUM LITCHI, Camb

(N O—Sapindaceae)

(*Eng*—Lichi Tree, Chin Fruit tree *Ger*—Litchibaum *Hind Ben & Bom*—Lichi) is also a lofty tree indigenous to South China, but cultivated in Bengal and Assam for its fruit (Fruit is nearly globular with a thin and brittle red coloured shell) The pulp, when fresh, is white and nearly transparent, very luscious sweet and jelly-like, containing a single brownish red seed Fruits are also canned 'Leaves are used for bites of animals'—(Chopra) Pulp is given in fever to quench thirst—(Chakraverthy). It is cooling, demulcent and aphrodisiac

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1705—NEPHELIUM LONGANA, Camb

(N O—Sapindaceae).

(*Eng*—Longan-tree, Dragon's eye, *Ger*—Longanbaum *Ben*—Ansh-phal. *Bom*.—Wumb *Tam*.—Puvati) is a species

growing in South China and Assam, fruit of which is smaller than lichi, quite globular and nearly smooth, and is used like lichi, but is of a less agreeable flavour (Chakraverthy) Constituent —Saponin Action —Stomachic and anthelmintic

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1706 NEPTUNIA OLERACEA, Lour

(N O —Mimosaceae)

Hind.—Laj alu, *Ben -& Bom* —Panilazak, *Tam* —Sundaykiray Action —Refrigerant and astringent

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1707 NERIUM ANTIDYSENTERICUM

(N O —Apocynaceae)

(*Hind* —Pandrakuda *Ben* —Kurachi) is a species found in tropical India Its bark has tonic, antiperiodic and astringent properties and like Holarrhena antidysenterica is used in dysentery Seeds are used as lithontriptic, anthelmintic and aphrodisiac in dysentery, chronic pulmonary affections and lera *Pessaries* composed of the bark and seeds are supposed to favour conception and are used after delivery to give tone to the soft and lacerated parts —(Chakraverthy)

1708 NERIUM DIVARICATUM

See Tabernamontana coronaria

1709 NERIUM ODORUM, Soland

N oleander.—See also Thevatia Nerifolia

(N O.—Apocynaceae)

Sans —Karavira Svetapushpa Ashvamaraka Pratilaka Raktapushpa *Eng* —Sweet scented oleander Rosebery Spurge *Ger* —Wohlriechender *Hind.-& Ceyl* —Kaner Karabera Karber *Ben.*—Karabi Karavi *Mah.*—Kanera *Guz.*—Kamber *Tel.*—Ganneru Karaviramu Kasturupatte *Tam* —Kanaveeram, Arali Alari *Can.*—Kanagilu Paddale *Kon.*—

Dhavekaneri *Arab*—Sumula-himara, Kharazahrah *Pers*—Dephali

Habitat—This small evergreen shrub is wild in Afghanistan and Northern India and cultivated in gardens

Parts Used—Root and root-bark

Constituents—Tuber contains two bitter non-crystallizable principles "Neriodorin" (insoluble in water) and "Neriodorein" (soluble), both are powerful heart poisons, a glucoside, rosaginine, an essential oil and a crystalline body, neriene identical with digitaline, tannic acid and wax Leaves contain an alkaloid Oleandrine, a glucoside, pseudo-curarine, also neriene and neriantine

Action—All parts of the plant are poisonous Root and the root-bark are powerful diuretic and cardiac tonic like strophanthus and digitaline Oleandrine, if hypodermically injected causes the heart's beats to fall from 75 or 100 to 10 or 12, if continued for some time the heart ceases to beat and with it the respiration *The drug is a powerful resolvent and attenuant, but only for external use.* Paste of oleander roots is a poison

Uses—There are two varieties of this plant, namely the white and the red-flowered Properties of both are identical Fresh roots of the white variety known in Bengal as *Sveta Korobi*, are intensely poisonous as are also the leaves, bark and flowers *Bork* is not used internally in any form *Root* is used externally, made into paste with water and applied to haemorrhoids, in cancers and ulcerations and also in leprosy Root is used for applying or tying to the ear of the patient suffering from fevers For this purpose the root is removed on Sunday *Paste* forms a useful *Lep* in scorpion stings and snake bites, especially of that known as *Phursa* *Powder of the root* is rubbed to the head in headache *Paste of the root-bark and leaves* also is used externally in ring worm and other skin complaints *Decoction* of leaves is applied externally to reduce swellings *Leaf-juice* is given in very small doses in snake-bites and other powerful venomous bites The antidote is ghee *Flowers* of the white variety dried, mixed with equal

quantity of pure tobacco powder, and a little cardamom powder, and the whole reduced to a fine powder is used like snuff in cases of snake-bites Criminal records show that the root is used to procure abortion A medicated oil known as *Karaviradya Taila* is recommended by Chakradatta and it is prepared as follows —Take of sesamum oil 4 seers, decoction of the root of Nerium odorum 8 seers,, cow's urine 8 seers, Plumbago rosea root and Baberang seeds, each half a seer in the form of a paste, boil them together and prepare an oil in the usual way This oil is used in eczema, impetigo, and other skin diseases Root beaten into a paste with water is recommended to be applied to chancres and ulcers on the penis—(Sharangdhara) *Karavira juice* is also applied to painful syphilitic ulcers soon after they are washed Fresh juice of the young leaves is dropped into the eyes in ophthalmia with copius lachrymation —(Chakradatta)

1710 NERIUM PSIDIUM

(*Sans* —Peeta-karabira, *Ben -& Hind* —Haldikarabi) is the yellow flowered variety For further particulars, see Nerium odorum and Thevatia nerifolia

1711 NERIUM TINCTORIUM

(*Kon -Kalo-kudo*)—See Wrightia tinctoria

1712 NERIUM TOMENTOSUM, Roxb

(N O —Apocynaceae)

(*Hind , Bom , & Mah* —Kala inderjav, Dudhi, Dharuli *Ben* —Dudhkarava, Dudhi *Tel*—Tallapal, Koilamukri; Peddapala *Kon* —Atgo-kudo, Tamdo-kudo) found throughout India Bark and root-bark are believed to be useful in snake bites and scorpion stings A preparation from the bark is used in menstrual and renal complaints

1713 NEURACANTHUS SPHAEROSTACHYUS, Dalz.

(N O —Acanthaceae).

(*Bom* —Ghosuel), used in indigestion and ringworm

1714 NICANDRA PHYSALOIDES, Gaertn.

(N O —Solanaceae).

Action —Diuretic

1715 NICOTIANA TABACUM, Linn

N havanensis, N. rustica, Linn

N persica

(N O —Solanaceae)

Sans —Tamrakuta *Eng* —Tobacco *Fr* —Tabac *Ger.*— Gemeiner Tabac *Hind -& Sind* —Tambaku, Tamaku *Pers- & Mah* —Tambaku *Ben* —Tamak *Guj* —Tamakhu *Arab* — Tanbak *Malay* —Pukayila *Tel* —Pogaku *Tam* —Pugaielai *Can* —Hogesoppu Tambaku *Mal* —Pukayil *Kon* —Dhurapan Tulu —Pugere

Habitat —Tobacco plant is originally a native of America It is now quite common in India, being cultivated to a large extent in many parts of Bengal, Bombay, Madras, Travancore and Burma N rustica (Turkish tobacco) is cultivated and prepared in some parts of Upper India, Bengal and Punjab It is known as East Indian tobacco

Varieties —(1) Sumatra, (2) Yaval Nos 1 & 2 (3) Peelia, (4) Shamru, (5) Gandiu, (6) Keliu, (7) Movadia, (8) Shengiriya (9) Kalia, (10) Kari beglani, (11) Bhopali, (12) Shendisurte, are the varieties found in Bombay Presidency

Parts Used —Dried leaves and a dark-brown acrid, empyreumatic oil obtained by distillation, stalks and the herb

Constituents —The active principle of tobacco, and that which is chiefly responsible for its narcotic properties, is a liquid volatile colourless alkaloid known as Nicotine, nicotimine the isomeride of nicotine and a colourless alkaline oil,

skin shallow, makes expression faded One feels dull and slided by a poisonous dose of tobacco Prof C H Hull, after an exhaustive investigation of the physiological and psychological effects of smoking has recently indicated that smoking 'markedly increases the pulse rate and markedly increases the tremor of the hand thus confirming and extending the results of earlier observers "—(Popular Science Siftings) So an habitual smoker's pipe while stimulating his heart, interferes with the steadiness of his hand Yet, as regards the physiological effects of tobacco-smoking, considerable difference of opinion exists It is certain that it affects different people in different ways, and for young people there can be no doubt as to its harmful effects, however, it entirely depends upon the physical constitution and state of health of the individual concerned

Preparations —Powder, Poultice Paste, Smokes, *Guraku* & Pill

Uses —Tobacco is used in the form of cigars, cigarettes, *veedees* beedies and cheroots for smoking, some use it in powder as snuff and others with lime and pan for chewing, or are mixed with molasses to form 'tamak' A preparation made chiefly by North Indians for smoking is as follows —Coarsely powdered tobacco is mixed with unrefined sugar *(gur)* and aromatic and fragrant substances, sometimes with sandal-wood oil, *patchouli* leaves, otto of roses, musk and other perfumes, and made into a black-looking conserve known as *guraku.* A portion of this is placed with live charcoal in the *chilam* of the *hookah*, made commonly of a cocoanut shell or of metal, and which contains water through which the vapour is passed in smoking This practice, in some parts of India, is common with women and children as with men Smoking rapidly affects the hearing especially where there is a hereditary predisposition to deafness, or caused by frequent renewals of inflammation of the nasal or throat passages It is thus in winter chiefly that smoking even in moderation affects the hearing—(Dr Ferrant of Lyons) This result occurs not only in hard smokers but also in persons living in an atmosphere vitiated by the smoke of tobacco Those who snuff or chew tobacco are exposed to the same risks as smokers Excessive use of

tobacco causes dyspepsia, diseases of the liver, anaemia, loss of vision or blindness, throat trouble, mental fatigue and weakness, heart troubles etc Internally tobacco is rarely used on account of its poisonous properties In recent years *nicotine* the alkaloid, has been recommended for hypodermic injections in tetanus and strychnine poisoning, and the salicylate as a remedy for certain skin affections *Nicotine shlphate* has also been recommended as a veterinary anthelmintic The alkaloid Nicotine in doses of 1/20 to 1/10 up to 2 minims in two hours, is efficient in strychnine poisoning A *paste of the tobacco powder* or *snuff* made with castor oil is applied to the navel to relieve colic A decoction of tobacco has been used as a local application to relieve pain and irritation in rheumatic swellings, syphilitic nodes and skin diseases, and as a means of inducing muscular relaxation, thus aiding in the reduction of strangulated hernia (orchitis) and dislocations Bhishagratna Pundit J L. Duveji recommends a medicated oil of tobacco leaves for the cure of rheumatism It is prepared thus —A fluid extract of tobacco is first obtained by steeping ½ seer of good tobacco leaves in 2 seers of water for 12 hours and pressing well and sifting the liquid through clean cloth Then mix with it 1 seer of sesame oil ond 1 *chhatak* of aconite and boil the whole till all the moisture is absorbed leaving only the medicated oil Again sift the oil through a clean piece of cloth and keep in a corked bottle This is used for rubbing on the affected parts in all sorts of rheumatic affections—Gout, lumbago, pain and swelling in the joints, sciatica etc Tobacco has been recommended as an easy and sure remedy for snakebite in "Practical Medicine" —"About 5 tolas of tobacco should be dissolved in 10 tolas of water and the mixture strained The dregs are thrown away and the solution drunk off by the patient If the person bitten be senseless the tobacco water should be poured down the throat, or if lock-jaw has set in it should be passed through the nostril In about 5 minutes after the administration of the drug the person will commence vomiting, and as the vomiting will go on, the effect of the poison will be removed The patient will thus be brought round in about an hour It is common knowledge among country folk that no snake will pass through a tobacco field Tobacco is the

antidote for snake poisson" Tobacco *smoking* is resorted to with excellent effect in many cases of cough, whooping cough, obstinate hiccup, spasmodic laryngitis, asthma, nervous irritability and sleeplessness For spongy gums and toothache, chewing of tobacco leaf is a favourite remedy in India" —(Chopra) Tobacco snuff is useful in nasal polypi, nasal catarrh, headache, chronic giddiness and fainting In Europe, snuff is largely manufactured from the scraps and waste resulting from the preparation of mixtures and cigars The fragments are chopped very fine, placed in heaps in warm, damp cellars and then flavoured with certain substances such as liquorice, tonka beans, deer-tongue leaves and various perfumes, the nature of which are trade secrets The mass is allowed to ferment for several weeks, and then dried and finally ground to powder Tobacco *leaves* are made hot and applied to the abdomen in colic and gripes A *poultice of tobacco leaves* is applied to the spine in tetanus In orchitis the upper surface of the leaf painted with *silarasa* is applied to the painful swollen parts A *leaf stock* is introduced into the rectum of children to relieve constipation Its ashes mixed with sweet oil is a useful application to bleeding sores *Water from the hookah* is diuretic and the *black oil* which collects in the pipe stem is used on tents to heal up sinuses and is dropped into the eye to cure night blindness and purulent conjunctivitis A *paste* made with snuff, lime and the powdered bark of Calophyllum inophyllum is applied in orchitis A *pill* made of snuff, catechu, cinnamon, cardamoms and *trikatu* and honey is useful as a carminative and digestive along with betel leaves, nut, spices, aromatics etc Dose of the pill is two grains

Nigela putranjiva—See Putranjiva roxburgii

1716 NIGELLA SATIVA, Linn , N indica,

Carum carui—See Carum nigrum (N O —Umbelliferae), C bulbocastanum, C nigrum, C gracile, Cuminum nigrum

(N O —Ranunculaceae)

Sans —Krishna jiraka, Upakunchika, Aranyajeeraka *Eng* —Sinali Fennel or Black Cumin *Fr* —Cumin noir *Ger* —

Schwarzer kummel *Hind*—Kala-jira, Kulanji *Ben*—Mugrela, Kala-jira *Gwalior*—Kali-jeeri *Kash*—Tukm-i-gandna *Afg*—Siyah-daru *Bom*—Kelanji, Kalenjire *Guj*—Kadujeeroo *Mah*—Krishnajira *Arab*—Kamune-asvad, Sh-ouniz *Pers*—Siyahdanah *Tel*—Nallajilakara *Tam*—Karunjiragam Karunshirogam *Mal*—Karinchirakam *Can*—Karijirigay *Kon.*—Karijiry *Burma*—Satmung, Samon-ne *Sinh*—Kaluduroo *Gr*—Melanthion

Habitat—This plant is cultivated in some parts of India

Parts Used—Dried fruit and seeds

Constituents—Seeds contain a yellowish volatile oil 1.5 p c, and a fixed oil 37 5 p c, essential oil, albumen, sugar, mucilage, organic acids, metarbin, toxic glucoside, melanthin resembling helleborin, ash 5 p c, moisture and arabic acid Volatile oil is the active constituent It consists of (1) Carvone 45 to 60 p c, an unsaturated ketone, (2) terpene or d-limonene also called carvene and (3) Cymene

Action—Seeds are aromatic, diuretic, diaphoretic, antibilious, stomachic, stimulant and carminative, digestive, also anthelmintic and emmenagogue Locally, oil is anaesthetic

Uses—Seeds are used as a condiment in curries, and with other aromatic substances and bitters Seeds about half a drachm are given with butter-milk to cure obstinate hiccup, are employed as a corrective of purgatives and other medicines in doses of half to one drachm in the form of tincture (1 in 10), and are also useful indigestion, loss of appetite, fever, diarrhoea, dropsy, puerperal diseases, etc They have a decided action as a galactagogue, a *decoction of the* seeds is given to recently-delivered females in combination with a few other medicines, it also stimulates uterine contraction In doses of 10 to 20 grs, they are useful in amenorrhoea and dysmenorrhoea and in large doses cause abortions Seeds form a very useful remedy in worms With sweet oil the decoction forms a useful application in skin diseases Brayed in water its application removes swellings from hands and feet Seeds have also antibilious property and are administered internally in intermittent fevers and to arrest vomiting after they are roasted

and mixed with treacle, dose is 2 drachms Seeds fried, bruised, tied in muslin bag and smelt relieve cold and catarrh of the nose by constant inhalation In intermittent fever seeds slightly roasted are recommended to be given in two-drachm doses with the addition of an equal quantity of treacle —(Chakradatta) In loss of appetite and distaste for food a *confection* made of nigella seeds, cumin seeds, black pepper, raisins, tamarind pulp, pomegranate juice and sanchal salt with treacle and honey is very useful (Chakradatta), dose is 1 drachm In the afterpains of puerperal women, Chakradatta recommends administration of nigella seeds with the addition of long-pepper, sanchal salt and wine *Seeds* are also used in scorpion-sting. In puerperal diseases such as fever, loss of appetite and disordered secretions after delivery, following preparation called *Pancha jiraka paka* is used —Take of nigella seeds, cumin seeds, aniseeds, *ajowan*, seeds of Carum sativum, Anethum sowa, *methi*, coriander, ginger, long-pepper, long-pepper root plumbago root, *habusha* (an aromatic substance), dried pulp of the fruit Ziziphus jujuba, root of Aplotaxis auriculata and Kamala powder each one tola, treacle 100 tolas, milk one seer, clarified butter 4 tolas Boil them together and prepare a confection Dose is about a drachm every morning—(Bhavaprakash) A confection known as *Jawarish-ai-Kammon* is composed of the following —Nigella sativa 15 tolas, White pepper and black pepper each 3½ tolas, Cinnamon bark 1½ tolas, leaves of Ruta graveolens 4½ tolas, Ginger conserve 12 tolas myrobolans conserve 18 tolas, Confection of roses 30 tolas, and sugar 30 tolas Dose is 1½ tolas, three times a day, used in diarrhoea, indigestion, dyspepsia and sour belching, it removes foul-breath and watering from the mouth For obesity, following powder is recommended in Ilaj-ul-Gurba —Take of *Lakh Mugsul* 7 *mashas*, Nigella seeds 12 *mashas* and *Ajowan* 12 mashas Mix and make a powder Dose is 3 *mashas* (about half a drachm) Karabadin Kadri recommends the following decoction for dyspnoea —Take of Nigella seeds, dry ginger, *bansa*, root of Aplotaxis auriculata and *Dhamaya*, each 3 *mashas* and make a decoction and mix sugarcandy The above is to be taken at intervals of 3 to 4 hours A favourite external application used in eczema and pityriasis is composed of

bruised seeds 2 ounces, Psoralia corylifolia seeds 2 ounces, bdellium 2 ounces, coscini radix 2 ounces, sulphur 1 ounce and cocoanut oil 2 pints.

1717. NIMA QUASSIOIDES—See Picrasma quassioides.

1718. NISTA TETRAPETALA—See Samadera indica.

1719. NOTHOPEGIA COLEBROOKIANA, Bl.

N. heyneara, Gamble,

(N.O:—Anacardiaceae).

are trees commonly found on the Western Ghats, Anaimalais and Tinnevelly in the ghats.

1720. NOTONIA GRANDIFLORA, DC.

(N.O:—Compositae).

Bom.—Wander-roti. This drug is a prophylaxis against hydrophobia.

1721. NYCTANTHES ARBOR-TRISTIS, Linn.

(N.O:—Oleaceae).

(*Sans.*—Parijata; Sephalika; Rajanikasa. *Eng.*—Night Jasmine; Weeping Nyctanthes. *Hind.-& Gwalior.*—Har; Harsinghar; Siharu. *Ben.*—Seoli; Singhar; Sephalika. *Punj.*—Kuri; Laduri. *Mah.*—Partaka; Khurasli; Parijataka. *Tel.*—Pagadamalle; Shwetasurasa. *Tam.*—Manjapu; Pavala–Malligai. *Can.*—Parijata. *Mal.*—Manpumaram. *Kon.*—Pardik) is a small tree with its fragrant flowers found wild in the forests of Central India and Sub-Himalayan rigions; it is commonly cultivated in gardens in many parts of India. Flowers contain an essential oil similar to that of jasmine and which is utilised in perfumery. Leaves contain an alkaloidal principle named Nyctanthine; they also contain an astringent principle, a resinous substance, colouring matter, sugar and a trace of an oily

substance "Action —Cholagogue, anthelmintic and laxative" (Chopra) Fresh *leaf* juice is a mild cholagogue and a safe purgative for infants It is given with honey in chronic and bilious fevers Some preparation of iron is also given along with it As anthelmintic it is given with honey mixed with common salt In the form of *infusion* in doses of 2 ounces it is useful in fever and rheumatism as diaphoretic and diuretic A *decoction of the leaves* prepared over a gentle fire is a specific for obstinate sciatica —(Chakradatta) "*Leaves* are used as an antidote to reptile venoms" —(Chopra) Six or seven *young leaves* rubbed up with water and a little fresh ginger are administered in obstinate fevers of the intermittent type *Powdered seeds* are employed as a paste to cure scurvy, affections of the scalp etc About 5 grains of the *bark* are eaten with betelnut and leaf to promote expectoration of thick phlegm —(Dymock)

1722 NYCTANTHES SAMBAC

See Jasminum sambac

1723 NYMPHAEA ALBA, Linn or N versicolor, odoratta, Castalia alba

(N O —Nymphaeceae)

(*Sans* —Kumuda *Eng* —White Waterlily, *Kash* —Brimposh, *Bom.*—Pandharen kamal) is a European species introduced into Kashmir In Bengal it is found with white or pink petals or mixed, in shallow autumn flood waters — Constituent —An alkaloid nupharine Action —Demulcent, used in diarrhoea —See Nymphae lotus

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1724 NYMPHAEA CYANEA

(*Eng* —East Indian blue water lily) is found in shallow ponds, especially in Bengal where the flowers are used as astringent and refrigerant —(Chakraverthy)

1725 NYMPHAEA EDULIS or N esculenta

(*Ben*—Sota sunndı) ıs a species of water-lilies found ın Bengal and East Indies where ıts starchy root, capsule and seeds are used as food and also medicınally—(Chakravarthy)

1726 NYMPHAEA LOTUS, Linn, N rubra, N stellata, Willd.

(*Sans*—Nılotpala, Raktotpal, Hallaka, Kumuda *Eng*—Water-Lily *Hind*—Nılofar, Chota Kanval, Krıshna-kamal. *Ben*—Saluka, Rakta-kamal, (N stellata ıs Nıl-sapla), Nal. *Guj*—Nılopal *Mah & Bom*—Krıshna-kamal, Lal kamal, (In Bombay N stellata ıs called "Uplıa-kamal") *Tel*—Allı-kada, Tellakaluva *Tam*—Vellambal Indıravacham, Allı-tamaraı, (In Tamıl N stellata ıs "Nalla Kalava") *Mal*—Vellanpal, Neerampal *Can*—Bıle-Naıdılay, Bıle-Tavaray *Kon*—Dhuve Salaka *Uriya*—Rangkaın *Duk*—Allıpuhl *Smh*—Olu-et-olu) exist ın three varıetıes—white, red and blue, and ıs bound to grow ın tanks and marshes throughout the warmer parts of Indıa Root contaıns gallıc and tannıc acıds starch, gum etc It ıs demulcent, dıuretıc and nutrıent Flowers of N stellata are called *Utpala* and the whole plant ıs called *Utpalını Flowers* are said to be "refrıgerant and allevıatıve of cough, bıle, vomıtıng, gıddıness, worms and burnıng of the skın"—(N N Sen Gupta) A *syrup of the flowers* (1½ ozs ıf fresh or ½ oz ıf dried) made wıth 1 ounce of sugar and 5 ounces of water ıs useful ın doses of 2 to 3 drs, ın remıttent and other hıgh fevers, heat apoplexy and ınflam-matory dıseases of the braın Flowers of N stellata are used ın coughs and dysurıa Medıcınal uses of these plants are the same as those of the correspondıng parts of Nelumbıum speciosum already descrıbed *Filaments* of these plants are astrıngent, coolıng and useful ın burnıng of the body, bleedıng *piles* and *menorrhagıa* In *menorrhagıa* the filaments of N stellata are gıven wıth the addıtıon of Sanchal salt, Nıgella seeds, Lıquorıce powder, curdled mılk and honey—(Chakra-datta) Roots and seeds are edıble, the latter formıng the dıet known as *Dhapar-kokı* Small *seeds of N lotus* called *bheta* are fried ın heated sand and used as a lıght, easıly

digestible food. *Seeds of N. stellata* are used in diabetes. *Tubers of the red variety* when boiled form a very beneficial diet in cases of piles. *Root-stock* is eaten after boiling and mixing it with milk and sugar. Its *powder* is given in dyspepsia, diarrhoea and piles. A *decoction of flowers* is given as a cardiac tonic, in palpitation. A compound decoction called *Utpaladi Sritam* is recommended in Bhavaprakash; it is made up of the filaments of N. lotus, N. stellata and N. rubra, of the white variety of Nelumbium speciosum and Liquorice root, equal parts in all two tolas. This decoction is useful in thirst, burning of the body, fainting, vomiting, haemorrhage from the internal organs and bleeding from the womb during gestation. Uses of N. stellata are similar to N. lotus.

1727. NYMPHAEA MALABARICA

Is a species of water-lillies found in Malabar where the flowers are used in coughs and gastrorrhagia.

1728. NYMPHAEA NELUMBO

See Nelumbium speciosum.

1729. NYMPHAEA PUBESCENS, Willd.

(*Tam.*—Alli; Ambal. *Tel.*—Kaluva. *Ben.*—Shalook; Rakta-kambal) is a species indigenous to tropical Africa, Bengal, East Indies and Java, where a decoction of its root (which is edible) is employed in dysuria and haemorrhoids, and the leaves in the form of a salve in ophthalmia—(Chakravarthy).

1730. NYMPHAEA STELLATA

See Euryale ferox, foot-note on page 845.

1731. OCHROCARPOS LONGIFOLIUS, Benth. & Hook.

(N.O:—Guttiferae).

(*Sans.*—Punnaga. *Eng.*—Alexandrian Laurel. *Hind.* & *Ben.*—Nagkeshar. *Guj.*—Retinagakesara; Goriundi. *Bom.* &

Mah —Tamra Nagkesara, Suringi, (fruit) Undana *Tel* —Surapoona *Tam* —Naggesur-pu, Nagap-pu *Can* —Gardundi *Kon* —Suraing *Pers* —Naramushka) is met with in the forests of Westcoast of India from Kanara to Konkan *Fruit* is edible Dried *flower buds* are stimulant, aromatic, stomachic, bitter and astringent They are used as fragrant adjuncts to decoctions and medicated oils They are used like cinnamon, cardamoms etc , in great thirst, irritability of the stomach and excessive perspiration and also given in dysentery with benefit A *paste* made of them is used to fill up the cavities of caried teeth to relieve toothache Flowers are useful in some forms of dyspepsia and in haemorrhoids The drug is also used in scorpion-sting —See also Mesua ferrea

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1732. OCIMUM ALBUM

(N O —Labiatae)

(Sans —Sukla tulasi, Ajaka, Gambheram, Gandha panirajaka *Bom & Mah* —Ran-tulasi *Tel* —Kukka-tulasi *Tam* —Ganjankorai *Mal* —Kattarama tulasi *Can* —Nayi tulasi *Kon* —Ran tulasi) is *a species indigenous* of *Southern India* The plant is aromatic, carminative, diaphoretic and stimulant During fever when the extremities are cold, *leaves* made into *a paste* are applied to the finger and toe-nails The same preparation is used to cure parasitical diseases of the skin, such *as ringworm etc* • *Leaf juice* is given to children in cold, catarrh and bronchitis in doses of ½ to 2 drachms

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1733 OCIMUM BASILICUM, Linn

O anisatum or Basilicum citratum

(N O —Labiatae)

Sans —Bisi a Tulasi, Varavara, Manjariki, (seeds Rehan) *Eng* —Sweet Basil *Fr.*—Basilic Cultive *Ger* —Basilienkraut *Hind* —Babui, Tulsi, Sabzah *Kash* —Hazbo *Punj* —Baburi *Uriya* —Dhala-tulasi. *Santal* —Bharbari *Malay* —Tiru nitru *Sind* —Sabajhi *Arab* —Shahasfaram . *Pers* —Pharanjamuskh, Firanj mushk *Duk Bom & Mah.*—Sabza

Ben.—Babui-tulsi. *Tel.*—Kukkatulasi; Bhu-tulasi; Vebudi-patri. *Tam.*—Tirunirupachai; Karandai; Tirnut-patchi. *Mal.*—Ram-tulasi; Tirunitri. *Can. & Kon.*—Kam Kasturi. *Burm.*—Kala pingain.

Habitat—This small annnual shrub or herb, indigenous to Persia and Sind, is cultivated in gardens in India.

Parts Used—Herb and seeds

Constituents—Leaves contain a yellowish green essential oil which if kept for a time crystallizes and is then known as Basil-camphor Essential oil contains a new terpene. Seeds contain a large amount of mucilage

Action—Diaphoretic, carminative and stimulant. Seeds are mucilaginous, demulcent, aphrodisiac and diuretic. Leaves are fragrant and aromatic. Juice of the plant is anthelmintic. Root is febtifuge Antidote to snake-poison. Whole plant is aromatic, leaves and leafy tops have a pungent taste and clove-like odour

Uses—Leaves are used for flavouring purposes. *Seeds* are useful in catarrh, chronic diarrhoea, dysentery, gonorrhoea, nephritis, cystitis and internal piles, they also relieve the after pains of parturition, they are used as an aphrodisiac in doses of from 1 to 3 drachms, a teaspoonful of seeds steeped in a glass of water swell into a mucilaginous jelly and with some sugar forms an excellent drink in the above-named diseases Following compound powder of seeds is recommended for dysentery in Jauhar Hikmat—Take of seeds of Ocimum pilosum 5 tolas, seeds of *Murd* 3½ tolas, Plantago psyllium, *Simeg* (Arabic), Armenian Bolos, Poppy Seeds, each 3 ½ tolas, Portulaca oleraceae, *Tukhm Khimaz*, and *Nishashta* each 1½ tolas Mix and make a powder Dose is 8 to 12 *mashas*. Juice of the leaves is dropped into the ear in earache and dullness of hearing Mixed with a little ginger and black pepper the leaf-juice is given during the cold stages of ague. *Leaves* dried and powdered and used like snuff dislodge maggots from the nose. A 12 per cent decoction of the plant used as irrigation in nasal myosis produces anaesthesia and acts as a parasiticide and antiseptic, so that the larvae which cause the disease are rendered inactive and expelled. It has long been in use in

Bengal with like effect for a similar affection known as *Pinash*.—(K L. Day) Following is recommended for asthma by Bhishagratna J L Duveji Take in equal parts each of long Zedoary, stem of the Lily, *Gulancha*, cinnamon, Basil leaves, cardamom, Cyperus rotundus, long pepper, Costus specious, Phyllanthus niruri, dried ginger, Bhimseni camphor and black eagle-wood, and pound them in a mortar and sift through a clean piece of cloth and mix double the quantity of sugar. Dose is ½ a tola to be taken morning and evening

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1734 OCIMUM CANUM, Sims

(*Sans*—Gramya, Thiksnamanu *Eng*—*Rosary*, Tulasi. *Hind & Ben.*—Kala tulshi *Santal*—Bharbhari *Tel*—Thulasi, Kuppatulasi *Tam*—Kukka-tulasi, Gunjamkorai, Nai tulasi. *Mal*—Kattu Ram tulasi *Ben*—Tulsi *Can*—Nayitulasi a species closely related to O basilicum, is met with on the the plans and lower hills of India This is also used in skin diseases Its uses are like those of O album

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1735 OCIMUM CARYOPHYLLATUM, Roxb

(*Sans*—Marubaka *Hind*—Gola tulasi *Ben*—Gandha-tulasi) is a species found in Bengal It has two varieties—white and black, the former is used for medicinal purposes "It is bitterish acrid, stimulant, light, palatable, generative of digestive fire, fragrant, bilious, and alleviative of wind, phlegm (*Vata, Kafa*), worms, leprosy, *sula* pains, flatulence, loss of appetite, scorpion stings and diseases of skin"—(Kaviraj N. N Sen Gupta) Constituent—Essential Oil Action—Stimulant, stomachic, carminative and anthelmintic

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1736 OCIMUM GRANDIFLORUM

See O longiflorum and Orthosiphon stamineus

1737 OCIMUM GRATISSIMUM, Linn, O. Frutescens or Citratum zeylanicum

(*Eng*—Shrubby Basil *Fr*—Basilic de-Ceylon *Sans.*—Ajeka, Vantulasi *Hind. Ben Bom & Duk*—Ramtulasi. *Gwalior.*—Bantulasi *Hind*—Banjari *Guj & Mah*—Ajavala.

Tel—Nimma-tulasi *Mal*—Kattei-tulluva *Tam*—Elumicham tulasi *Arab*—Faranjmushk *Pers*—Raihane Qaranfulli, seeds-Balanki-khurd) a species indigenous to Ceylon and South Sea Islands, is also met with in Nepal, Bengal, Chittagong and Deccan It is styptic, stimulant, demulcent, diuretic and carminative, it is generally combined with expectorants in cough mixtures *Infusion* of the *seeds* is used in doses of ½ to 1 ounce in urinary disorders, such as gonorrhoea, scanty and scalding urine etc *Leaf-juice* is also given in such cases in rice water Locally, leaf-juice mixed with *guli-armani* is used as an application to swollen hands or feet, as well as in skin diseases In stomach ache the *leaf*-juice, and for vomiting of infants and children the *seeds ground* in honey are given *Baths* and *fumigations* of the plant are used in rheumatism Aromatic roots are used like balm Constituents—'Essential oil, thymol, eugenol, methyl chavicol"—(Chopra)

1738 OCIMUM LONGIFOLIUM or LONGIFLORUM?

Haml, or O grandiflorum,—

See Orthosiphon stamineus,

is a species found in Assam and Southern India *Leaves* are made into a tea and used in the treatment of diseases of the kidneys and bladder and other urinary organs

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1739 OCIMUM MINIMUM

(*Sans*—Maruvaka *Eng*—Bush basil *Fr.*—Petite basilic) is a species 'found all over India and its *flowers* and leaves are aromatic, and are used for seasoning (flavouring purposes) '—(Chakravarthy)

1740 OCIMUM PILOSUM, Wild,

O hispidum or O basilicum indicum

(*Sans*—Khara Pushpa *Eng*—Green Basil *Fr*—Basilic couvant de poils. *Hind*—Babestul *Arab*—Habak *Pers*—Tukham-i-rihana *Bom*—Tukamerian) is found throughout India *Seeds* are mucilaginous, demulcent and nutrient

given in gonorrhoea, strangury, spermatorrhoea and kidney diseases; also in dysentery and cough and to relieve pains of parturition. Jelly is given in spermatorrhoea.

1741. OCIMUM SANCTUM, Linn.

O. hirsutam; O. tomentosum; O. viride.

(N.O:—Labiatae).

Sans.—Vishnu-priya; Tulasi; Divya; Bharati; Krishnamul. *Eng.*—Holy Basil; Mosquito Plant of South Africa. *Fr.*—Basilic Saint. *Hind.*—Kala-tulasi; Baranda. *Ben.*—Krishna-tulasi; Jiyal; Jiuli. *Sans. Bom. Tel. Tam. Kon. & Guj.*—Tulasi. *Mah.*—Chojharr; Tulasi. *Tel.*—Krushna tulasi; Gaggera-chettu; Oddhi; Gumpina. *Mal.*—Shiva-tulasi. *Can.*—Kari-tulasi. *Duk.*—Tulasbi. *Sinh.*—Maduru-tulla. *Burm.*—Lun. *Malay.*—Krishna-tulsi.

Habitat—This small herb is found throughout India and cultivated near Hindu houses and temples.

Parts Used.—Leaves; seeds and root.

Constituents—Essential oil. For the rest see O. basilicum.

Action.—Demulcent, expectorant, and antiperiodic. Root is febrifuge; seeds are mucilaginous and demulcent. Dried plant is stomachic and expectorant. Leaves are anti-catarrhal, expectorant, fragrant and aromatic.

Uses.—The plant drives away mosquitoes. It is useful in a variety of diseases. *Leaves* ground with water are applied on bad boils. *Infusion of the leaves* is given in malaria and as a stomachic in gastric diseases of children and in hepatic affections. *Leaf-juice* is often used as an adjunct to metallic preparations which are rubbed with it into a thin *paste* and then licked up. Persons affected with bad skin diseases, such as itches, ringworm, leprosy, bad blood, etc., should drink the *juice of basil leaves* and also apply the same by itself or preferably mixed with juice of lemon (lime-juice) as a *paste* for radical cure. *Dried plant in decoction* (1 in 10) is a domestic remedy for croup, catarrh, bronchitis, and diarrhoea. Com-

pound *decoction* of the leaves of O sanctum roots of Solanum jacquini and of Clerodendron siphonanthus, *gulancha* and ginger in equal parts and in all two tolas is recommended by Chakradatta in cough and affections of the chest *Decoction of the leaves* with the addition of a little cardamom powder and about a tola of salep powder, makes a nourishing and aphrodisiac drink *Dried leaves* are used as *snuff* in myiosis and ozoena *Expressed leaf-juice* serves as a *rasayana* if taken twice half a tola weight or one *chattack* every morning increases the complexion and charm of the person, and if used while any epidemic such as influenza, malaria, cholera etc, rage, is a prophylactic *Leaf-juice* poured into the ear is a first-rate remedy for earache It also cures chronic fever, haemorrhage, dysentery and dyspepsia Mixed with a little ginger, leaf-juice is given for colic in children, and one tola of it mixed with quarter tola of black pepper is given in catarrhal fever and in the cold stages of intermittent fever *Fresh juice* checks vomiting and destroys intestinal worms With honey, ginger and onion juice it forms a good expectorant remedy, useful in cough, bronchitis and children's fever Leaves given sweetened with honey to children in chronic cough, are good expectorant Following pill is recommended in vomiting — Take of leaves of Ocimum sanctum, seeds of Zizyphus jujuba and sugar-candy, each 3 *mashas*, and black pepper 1 *masha* and pure water sufficient quantity, and make pills of this about the size of wild plums Holy basil is useful in anchylostoma as it contains thymol, and the juice of the fresh leaves and the flower tops and the slender roots are used as an antidote in snake-poisoning A man who has lost consciousness being struck with thunder or by being seriously poisoned by snake-bite should be fed with the juice (2, 3 or 4 days) of its leaves Thus there will again be electric current in the system and both the sorts of afflictions will be cured thereby Repetition of doses after some time is necessary In case of snake-bite, of a very bad kind, even if the patient is totally unconscious and dead like, feed half a tola of the juice internally if possible, otherwise, apply all over the body, fill the navel, ears, eyes, mouth with it and sufficiently Repeat the process and the patient will be cured, If basil root is held

in the arm, there is no fear of thunders If a garland prepared of small beads of the wood of basil plant trunk is worn in the neck, then electric current is generated and some diseases are cured thereby No sudden attack of any germs is possible It also induces religious tendency and longevity If basil root is taken, 4 annas weight, at eve, increases the vital fluid and will bestow retentive virtue Nerve weakness may be cured by it Weak men may take half-anna weight of root-powder with ghee daily in the evening, which will bring electric current into play *Powder* of the *root* rubbed slightly on a scorpin bite will give relief from pain For ozoena an *oil* prepared with a paste of the leaves of O sanctum, roots of Solanum jacquinii, Baliospermum montanum, Acorus calamus, Moringa pterygosperma, long pepper, black pepper and ginger is recommended for application by Chakradatta *Root in* decoction is used in febrile affections In the Konkan a decoction of *the leaves* with the flowers of Careya arborea and black pepper is given in remittent fever—(Dymock) Following two powders are popular Home Remedies—(1) Take the seeds of Ocimum sanctum, Cocculus cordi folius, dry ginger, root of Solanum jacquinii, all equal parts Mix and make a powder Dose is ½ drachm Used in cough and other affections of the chest (2) Take the seeds of O sanctum 5, Poppy capsules 4, Tribulus terrestris 5, Cowhage seeds 3, and Curculigo orchioides 4 and sugar 6 parts Mix and make a powder, dose is 20 grains, used in seminal debility *Seeds* rubbed with cow's milk are given for vomiting and diarrhoea, especially among children for an infant of one year, 2-3 grains of the seed is the dose, given 3 to 4 times a day This plant belongs to the 'Surasadi" group of drugs most of which are well-known vermifuges, e g—O nigrum, O album, O grattissimum, Origanum marjorana, Artemesia indica, Embelia ribes etc

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1742 ODINA WODIER, Roxb., or Rhus odina

(N O—Anacardiaceae.)

(*Sans*—Jingini, Ajashringi, Netrashuddhi *Hind*—Jingan, Kashmal *Ben*—Jiol *Duk*—Besharam *Bom*—Shimpti

Jinyan. *Guj.*—Shembat.. *Mah. & Kon.*—Muya. *Can.*—Shimtee; Poonu. *Mal.*—Udimaram. *Tam.*—Udayan; Odiyamaram; Anicarra. *Tel.*—Oddimanu) met with generally in hotter parts of India. Bark contains tannin and ash contains considerable quantity of potassium carbonate. *Decoction* of the *bark* (1 in 10) is given as astringent in doses of ½ to 1 ounce, in cases of atonic dyspepsia and general debility, particularly if combined with tincture of gentian, calumba etc. It is also used as a gargle in aphthous conditions of the mouth, and also for tooth ache and as a lotion for skin eruptions. *Fresh juice* of the *bark* is a valuable application to sore eyes and obstinate ulcers. *Bark* powdered and mixed with neem oil is an application for chronic ulcers and skin diseases as impetigo etc. Powdered bark is used as a *paste* for leprous ulcers. *Gum* of the tree made into an *ointment* with cocoanut milk or into a *liniment* with brandy is a good application to sprains and bruises Internally, gum is given in asthma and as a cordial to women during lactation. *Leaves* boiled in oil are also applied to sprains and bruises, to local swellings and pains of the body. For rheumatism a *paste of the leaves* mixed with black-pepper is a useful application. Juice of the green branches in 4 ounce doses, mixed with two ounces of tamarind is given as an emetic in cases of coma or insensibility produced by opium or other narcotic.

1743. OLAX NANA, Wall.—

(N.O:—Olacaceae).

Santh.—Merom met.

1744 OLAX SCANDENS, Roxb.

(*Hind.*—Dheniani *Ben.*—Koko-aru. *Bom.*—Harduli. *Madras*—Kurpodur). Bark is used in anaemia.

1745. OLDENLANDIA BIFLORA, Roxb.

(N.O:—Rubiaceae)—

See O. corymbosa.

1746. OLDENLANDIA CORYMBOSA, Linn. or O. biflora, Roxb., O. herbacea, (N.O:—Rubiaceae).

(*Sans.*—Kshetra-parpata. *Eng.*—Two-flowered Indian Madder. *Hind.*—Daman-paper. *Ben.*—Khetpara. *Nepal.*—Piriengo. *Sinh.*—Wal-pat-paadagam. *Mah.*—Parpat. *Goa.*—Kazuri; Popata. *Can.*—Kallasabatrasige. *Tam.*—Parpadagam. *Tel.*—Verrinelavemu) common as a weed throughout India. This herb contains an alkaloid and a large proportion of alkaline salts such as sodium, potassium and calcium, mostly as chlorides. A decoction of the whole plant, root, stem and leaf is used in liver complaints, and as an alterative in low forms of fever, i.e., remittent fever with gastric irritability and nervous depression, and also in chronic malaria as a good febrifuge.

1747. OLDENLANDIA DIFFUSA, Roxb.

Decoction is used in biliousness, impure blood, fever and gonorrhoea.

1748. OLDENLANDIA GLANDULIFERA, Wall.

(*Punj.*—Gulili). This is astringent and antiperiodic; contains a glucoside.

1749. OLDENLANDIA HEYNEI, Hk. f.

(*Tam.*—Nonganam-pillu). This is a specific for snake-bite. Leaves are used in asthma, rheumatism and fever.

1750. OLDENLANDIA UMBELLATA, Linn.

(*Tam.*—Chayaver), *is an annual weed.*—*See Hedyotis* umbellata.

1751. OLEA CUSPIDATA, Wall.

(N.O:—Oleaceae).

Hind.—Kau. *Bom.*—Khau. Oil from fruit is rubefacient. Leaves and bark are astringent and atiperiodic.

1752 OLEA DIOCA, Roxb

(*Ben*—Attajan, *Bom*—Parjamb, *Tam*—Koli). Bark is a febrifuge

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1753 OLEA EUROPAEA, Linn.

(N O—Oleaceae)

Eng—Olives

Habitat—Olive is a small-growing evergreen tree, native, in all probability of parts of Southern Europe and Asia Minor and cultivated largely on the shores of the Mediterranean, also in California, Australia, and other parts of the world

Constituents—Fruits when just ripe, contain the largest amount of oil In addition to the oil contained the fruit or pericarp, the seeds also contain a certain proportion of oil

Characteristics—Pure olive will keep for a long time but when it is exposed to the air, if any water is present, fungi quickly develop and the oil turns rancid The finest oil has a golden colour, tastes and smells slightly of the fruit, and is clear and limpid Oil of a second quality is also designed "table oil" The oil subsequently obtained, known as 'ordinary" or "common" oil, is thicker than the better quality oils, and has a yellowish or greenish tinge

Uses—Pickling olives are unripe fruits of olea europea, deprived of a portion of their bitterness by soaking in water to which lime and wood ashes are sometimes added, and then bottled in salt and water flavoured with aromatics Olives are chiefly grown for their excellent oil Olive oil taken by first pressure is a light one, pure and clean, known as "Virgin oil', and taken by a second pressure, is also suitable for edible purposes

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1754 OLIBANUS THURIFERA—

See Boswella glabra

1755 —ONOSMA BRACTEATUM, Wall

(N O —Boraginaceae)

(Hind & Ben—Gaozaban *Kash*—Kazabun *Pers*—(flowers) Guligaozabana) is found in Western Himalayas, Kashmir Kumaon etc It is esteemed as tonic, diuretic, demulcent and alterative, and is much prescribed as a tonic in decoction (1 oz of *'gaozaban'* in a pint of water), in rheumatism, syphilis, leprosy, hypochondriasis and kidney diseases It is a good refrigerant and demulcent, relieving excessive thirst and restlessness in febrile excitement, i e, during fever It also relieves functional palpitation of the heart, irritation of the stomach and bladder and strangury It is used in the form of an infusion prepared with either cold or hot water in the proportion of 1 in 20 Dose —2 to 4 ounces frequently or *ad libitum*—(Moideen Sheriff) It is a good substitute for sarsaparilla

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1756 ONOSMA ECHIOIDES, Linn

Is another species (*Hind*—Ratanjot *Nepal*—Newar, Maharangi *Punj*—Laljan, Koame) found in Kashmir and Kumaon *Bruised root* is used as an application to eruptions *Leaves* possess alterative properties and the *flowers* are prescribed as a cordial and stimulant in rheumatism and palpitation of the heart—(Stewart)

1757. ONOSMA HOOKERI, Clarke,

Is used for colouring medicinal oil

1758 OPHELIA ANGUSTIFOLIA, Don

(N O—Gentianaceae)—

See Swertia angustifolia

1759 OPHELIA CHIRATA, DC, O ELIGAM, O MULTIFLORA—

See Swertia chirata and Gentiana kurroa

1760 OPHIORRHIZA MUNGOS, Linn,

A herb belonging to Rubiaceae (*Sans*—Nagasugandha, Sarpakshi, Patalbhedi *Eng*—Mongoose Plant *Hind*—Sarahati *Ben*—Gandhanakuli *Guj*—Mungusvel *Bom & Mah*—Nagvelli. *Tel*—Sarpashi chettu *Tam*—Keerippundu, Kiripurandan *Mal*—Avilpori *Can*—Patalagaruda *Kon*—Garda patali) is found in the mountains of Assam, Burma, the Western Peninsula and Ceylon It contains starch, amorphous alkaloid, resign and fat *Roots* are sold as a charm against snake-bite and scorpion sting, especially in Ceylon where it has a high reputation as a remedy for snake-bite although nothing trustworthy is known about it It is also used as an antidote against the bites of made dogs The drug is an agreeable bitter tonic Parts used *Leaves, root* and *bark* made into *decoction* (1 in 10) and administered in doses of half ounce as a stomachic Dr, Koman in the Indigenous Drugs Report, Madras says—'The bark of the root of this plant, I was told by a physician of the west coast possessed laxative and sedative properties He gave the following directions for its administration—Take bark of the root of this plant grind it into a paste and make bolusses of the size of the lime each Give one of these in milk early morning for three days This would keep maniacs quiet and move their bowels freely'

1761 OPHIOXYLON SERPENTINUM—

See Ranwolfia serpentina

1762 OPOPANAX CHIRONIUM, Koch

(N O—Umbelliferae)

Hind & Bom.—Juvashur, *Ben*—Jaweshi Gum resin is stimulant and antiseptic. There is an essential oil

1763 OPUNTIA DILLENII, Haw, or Cactus indicus,

(N O—Cactaceae)

(*Sans*—Vidara vishvasaraka *Eng*—Prickly pear *Hind & Ben*—Phani manasa, Nagphani or Nagphana *Duk.*—Chappalsund. *Bom*—Samar *Guj*—Thora they to; Nagneval *Mah*

—Vilaithi nevarung *Tel*—Nagajamudu *Tam.*—Naga-dali, Nagarkali, Palakai-kalli *Can*—Shivaram-kalli, Mullu-galli *Mal*—Nagtali, Palakalli *Kon*—Kantya-nivali) is a native of America introduced by the Portuguese into India, growing in Rajputana, Madras, Mysore and other places It contains malate of manganese, a fluid fatty acid, a trace of citric acid and wax, resinous matter, sugar etc Fruit contains carbohydrates 41 29 p c, fibre 32 p c, albuminoids 6 25 p c, fat 3 63 p c, water 5 67 p c and ash 10 56 p c—(David Hooper) *Fruit* is refrigerant and when baked or made into a syrup, it acts as an expectorant and cholagogue, and is a good remedy in asthma and whooping and spasmodic cough and in hepatic congestion, in teaspoonful doses three or four times a day It has the effect of increasing the secretion of bile Fruit is also used in snake-bite *Ripe fruit* when eaten has the power of dyeing the urine red and is useful in gonorrhoea as a demulcent *Juice* and *fruit* are both useful in gonorrhoea *Milky juice* is given as a purgative in doses of 10 drops, mixed with a little sugar *Leaves* made into a pulp ar used as a poultice to allay heat and inflammation in scorbutic ulcers, also applied with much benefit to the eyes in ophthalmia *Hot leaf* applied to boils will hasten suppuration

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1764 ORCHIS LATIFOLIA, Linn

(N O —Orchidaceae)

See Orchis laxiflora

1765 ORCHIS LAXIFLORA Lam —

Tuber is expectorant astringent and nutrient—See Orchis mascula—uses similar to O laxiflora

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1766 ORCHIS MASCULA Linn. O latifolia, O laxiflora Allium Macleani,

(N O —Orchidaceae)

(Eng—Salep Orchid *Hind pers & Afg*—Salap, Salab *Hind Pers & Ben*—Salabmi - *Ben*—Salep - *Bom*—

Salum. *Mah. Kon. Tel. Can. Mal. & Tam.* Salamisri) is indigenous to Persia and Afghanistan from where it is imported to Bombay and other places in India. Tubers of Eulophia campestris found in Northern India are often sold as a substitute for the true salep. A bitter variety known in India as Royal Salep *(Badshah Salab)* is derived from Allium macleani (Liliaceae). Tubers and fecula of the root are used in medicine. Tubers contain a glucoside, a bitter substance, starch 27 p.c., mucilage 48 p.c, sugar, albumen, a trace of a volatile oil and ash consisting chiefly of phosphates and chlorides of potassium and lime. The most important constituent is mucilage or starch. Salep met with in the bazars is found in several forms—palmate and in more or less ovid or rounded tubers, sometimes strung together. It yields a large quantity of mucilage to water and, on boiling even with 40 parts of water, forms a thick jelly which is highly nutritious and wholesome. It forms one of the best articles of diet for weak or convalescent persons. For this purpose, powder of salep roots is the best for use; usually cooked with milk in the proportion of one tea-spoonful to a tea-cupful of milk. It is given in all forms of wasting diseases such as phthisis, diabetes etc., and in cases of chronic diarrhoea and dysentery. *Salep* has long been esteemed in India as a great restorative and invigorator and a tonic aphrodisiac in diseases characterised by weakness or loss of sexual powers. It was recently tried in cases of nervous debility and found beneficial—(Indigenous. Drugs Report Madras). It is also much prescribed in hemiplegia and paralytic affections. Following *confection* is used in diabetes and seminal weakness:—Take of *Salabmisri* 10, Asparagus adscendens 8, Amorpophallus campanulatus 6, *Behaman-i-surkha* 6, dry ginger 6, *Todari sapheda* (white Iberis Sp.—wall flower) 4, *Todari surkha* (Red Iberis sp.—wall flower) 4, Tribulus terristris 8, Trapa bispinosa 10, Hygrophila spinosa 6, Abutilon indicum 6, Hydrocotyle asiatica 4 and Cochlospermum gossypium 8 parts. Mix and make a confection. Dose:—1 to 2 ounces. Following pills are recommended as "Prameha cure" by Bhishagratna Pundit J. L. Daveji and said to cure "20 Pramehas (general) of both sexes, nocturnal emissions,

etc., etc." Take 2 tolas each of the following:—Hy poxis orchioides (white), Asparagus racemosus, Pedalium murex, *Salaabmisri*, large cardamom, Winter Cherry and refined Silajit; pound and pestle them in a mortar to be made into 60 pills. Dose is 2 pills a day (one in the morning and one in the evening) with fresh milk. Restrictions as to diet:—Avoid chillies, acids, highly spiced food, intoxicants, night keeping and sexual pleasures.

1767. ORIGANUM MAJORANA, Linn.

O. vulgare, Linn.

(N.O:—Labiatae)

(*Eng.*—Common or Wild Marjoram. *Hind.*—Sathra. *Bom.*—Kamephatusa; Murwo. *Sans. Ind. Baz. & Mah.*—Marwa. *Pers.*—Marzan gush. *Tel.*—Maruvamu. *Tam.*—Marvu; Marrau. *Kon.*—Mijrikamvil. *Ben.*—Murru) are common herbs of the temperate Himalayas and Western Asia. The drug contains a volatile essential oil 'Oleum Marjoranae' soluble in alcohol and consisting mainly of terpene and a bitter substance. *Plant* is used in some parts of the Punjab as a pot herb like mint. It is carminative, stimulant, diaphoretic, emmenagogue and tonic. *Volatile oil* is used as an aromatic stimulant in colic, dyspepsia, flatulence, and dysmenorhoea, the dose is 2 to 5 minims. Like Oleum mentha it is used locally in rheumatism, to the abdomen in colic, to the temples in hemicrania and to the ear in earache. *Infusion* of the plant (1 in 10) is also useful for internal administration in doses of ½ to 1 ounce and externally for fomentation.

1768. ORIGANUM VULGARE, Linn.

(N.O:—Labiatae).

Hind.—Sathra; Mridu-maru-vama. Constituents:—Essential Oil. Action.—Aromatic, stimulant and tonic. Used in rheumatism, toothache and earache. (Chopra's "I.D. of I." p. 512).

1769 ORMOCARPUM SENNOIDES, DC.

(N O —Papilionaceae)

(*Tam.*—Katmorungi Root is tonic and stimulant and is used in paralysis and lumbago (Chopra's 'I.D of I" p. 312)

1770 OROXYLUM INDICUM, Vent. or Colosanthes indica or Bignonia indica,

(N O —Bignoniaceae)

(*Sans.*—Prathusimbhi Shyonaka Aralu, Sukanasa. *Hind.*—Snapatha Arlu Sauna *Ben.*—Sona, Nasona, Sondala *Mah.*—Kharasinga *Punj.*—Mulin, Miringa, Talmorang Tatpulang *Nepal.*—Karamkandu, Totilla. *Bom.*—Tetu, Sauna assar *Tel.*—Dundillum Pampana. *Tam.*—Vangamaram Pana *Mal.*—Petam, *Uriya.*—Pomponia *Santal.*—Banahalak *Assam.*—Kering C.P.—Tattunua *Burm.*—Kyoung sha *Sinh.*—Totilla), is found growing at the foot hills of tropical India and Ceylon Root bark contains a crystalline bitter glucoside substance named 'Oroxylon' or "Oroxylin in addition to an acrid principle, pectin extractive matter, crystalline fat, wax chlorophyl astringent principle and critic acid Rootbark is astringent bitter tonic, stomachic, anodyne and sudorific *Root bark* is an ingredient of the *Dasamula* of Hindu Medicine Root bark is useful in diarrhoea and dysentery in the form of *infusion* or *decoction*, (1 in 10), in doses of ½ to 1 ounce *Powder* combined with opium is a much more powerful sudorific than the compound powder of ipecacuanha *Powdered bark* in doses of 5 to 15 grs., or as an *infusion* is a diaphoretic somewhat like salicylates without any depressing effect in rheumatic affections' —(Dr Bose) A *bath* prepared with the bark is frequently employed in rheumatism According to Sarangadhara the root bark is enclosed with some leaves and a layer of clay and roasted, and juice expressed from this roasted bark is given in diarrhoea and dysentery with the addition of *mochrasa* In otorrhoea Sarangadhara recommends the use of an *oil* prepared by boiling over a gentle fire sesamum oil with a paste made of the root bark *Tender fruits* are described as [illegible] carminative and stomachic R[illegible] used in dropsy and as vulnerary

and *leaves* are reputed as emollient The *stem* is used in scorpion-stings

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1771 ORTHOSIPHON STAMINEUS, Benth

(N O —Labiatae)

Syn Ocimum grandiflorum, O longiflorum

Eng —Javatea *Malay* —Koemis Koetjing

Habitat —A wide-spread Eastern stone plant found in Assam, Southern India, Burma and Malayan Archipelago, (East Indian Islands), Philippine Islands, Nicobars, Siam, Java, Borneo and Cape Goole in North east Australia

Constituents —A glucoside orthosiphonin and an essential oil

Uses —Dr Van Itallie uses the leaves for gout and in renal disorders —(Ph J , Oct 2 1886 p 267) In Java, the leaves are made into a tea and used in the treatment of diseases of the kidneys and bladder In Holland and France, they have been successfully used in the treatment of diseases of urinary organs Under its use the urine, which for a long time, has remained turbid and thick becomes clear

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1772 ORYZA SATIVA, Linn

(N O —Gramineae)

San —Vrihi Tandula Dhanya *Eng* —Rice (husked seed), Paddy (unhusked) *Hind & Ben* —Dhan *Hind Duk & Punj* —Chaval *Ben* —Chaul, Dhan (unhusked) *Kash* —Thomul *Guj* —Chokha, Dangar (grain) Paral (straw) *Mah* —Tandul, Bhat (unhusked), Pendha (straw) *Sind* —Saryun (straw) *Straits* —Pulut *Java* —Ketan *Arab* —Arruz *Pers* —Biranj *Tel* —Pari (paddy), Biyyam *Tam* —Arshi, Nellu (paddy) *Mal* —Ari, *Can* —Akki (grain), Bhatta (paddy), Bhattada hullu (straw) *Sinh* —Hal *Burm* —Chan *Malay* —Bras

Habitat —This is a principal food crop of India, Ceylon,

Burma, China, Japan and Siam, and is spread over the tropical and sub-tropical regions of both hemispheres

Varieties —There are hundreds of varieties of rice, i e, Bhura, Hemdi, Rata, Tamsal, Ghosalvel, Kalisal, Gudhya, Tulsia Rajawel Bodka, Velchi, Varangal, Dodka, Kaud, Panwel, Waksal, Kamod, Ambemohor, Raybag, Kolamba, Garvi-Patni, and are a few of the well-known types in Bombay Presidency, Ambemohor, Kamod, Jiresal, Pankhali are a few of the scented varieties —(Bombay Govt Agri Dept Bulletin).

Parts Used —Grain, spirit and vinegar

Constituents —Rice contains more starch than any other starchy grains, but no appreciable fat, a very small quantity of proteids and a trace of mineral matter "Bombay rice straw contains 48 to 55% total celluloses, out of these 34 to 37% is *alpha* cellulose and the rest *beta* and *gamma* celluloses —" (B B Sardeshpande) In rice there is an alkaloid 'oridine' (antineuritic when impure) As—7 mg in 100 gr ash of corn —(Bombay Govt Agri Dept Bulletin) Of the total protein 5 p c present in rice globulin is 0 14, albumin 0 04 and the remainder is a protein which like the glutenin of wheat is soluble in dilute alkali Unmilled rice contains 2 to 3 p c of oil, but in the process of polishing much of this oil is removed with the aleurone layer Bran from rice mills contains a considerable amount of oil. Oil extracted from the bran is highly acid, the acid value being 34 75 p.c Approximate composition of the total fatty acids is palmitic 20, Oleic 45 and Isolinolic 35 p c Natural or unmilled rice contains three times the food value of white rice Milled rice is found to be the cause of beri-beri among Indians living on such rice Chemical composition of rice, husk, bran etc —

	Rice	Husk	Bran	Polished Rice
Moisture	12 4	3 2	9 7	10 00
Ash	0 4	13 2	10 0	6 7
Crude fibre	0 2	35 7	9.5	6 3
Carbo-hydrate	79.2	38 6	49 9	59 0
Protein	7 4	3 6	12 1	11 7
Fat	0 4	0 7	8 8	7 3.

The following is the analysis of the grain of some of the typical varieties of rice grown in the Bombay Presidency:—

Components of rice (polished and cleaned)	(polished and cleaned) Ambemohar			Jiresal & Dilmohar Konkan (Polished & cleaned)	(Polished & cleaned) Ramsal (Konkan)	(Polished & cleaned) Kolumba (Karjat)	(Polished & cleaned) Kamod Nasik
	Poona 1	Poona 2	Konkan				
	per cent.	per cent.	per cent	per cent.	per cent.	per cent.	per cent.
Moisture	7.70	11.50	11.48	11.50	10.90	8 30	7.48
Ether Extract	1.05	0.75	0.70	0.68	0.65	1.00	1.20
*Albuminoids	6.75	6 50	6.19	6.06	6.13	6.25	6.51
Soluble carbohydrates	83.72	80.65	81.18	81.36	81.97	83.79	84.06
Woody fibre	0.05	nil	nil	nil	nil	0.20	0.05
*Ash	0.73	0 60	0.47	0.40	0.35	0.46	0.70
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00
containing—							
*Nitrogen	1.08	1.04	0.99	0.97	0.98	1.00	1.098
*Sand	nil	nil	nil	nil	nil	nil	nil

The following samples are from outside Bombay, the first three of which were analysed in the Poona Laboratory:—

	Polished & cleaned. Bezwada small. per cent	Polished & cleaned Rangoon Mandla per cent.	Polished. Rangoon Nam Mill per cent	Decorticated grain. fine winter Bengal per cent	Rice cleaned. Assam per cent.
Moisture	10.35	8 22	5 98	12.46	12.66
Ether Extract	0.80	1 35	1.00	0.94	1.77
*Albuminoids	6.69	7.15	7.06	6.38	6.43
Soluble Carbohydrates	81.51	82.48	85.06	79.25	78.63
Woody Fibre	nil	nil	0.10	0.18	0.25
**Ash	0.65	0.80	0.80	0.79	0.86
	100.00	100.00	100.00	100.00	100.00
Containing					
*Nitrogen	1.07	1.14	1.13	1.02	1.03
**Sand	nil	0.10	nil	0.10	nil

(Bombay Govt. Agricultural Dept. Bulletin)

Samples of cleaned and polished rice that were analysed from time to time show the following variations —

Moisture	5 98	to	11 50	per cent	
Ether extract	0 65	to	1 77	„	„
*Albuminoids	5 18	to	7 15	„	„
Soluble carbo-hydrates	80 65	to	85 06	„	„
Woody fibre	nil	to	0 20	„	„
**Ash	0 35	to	0 80	„	„

*containing

Nitrogen	0 97	to	1 14	„	„
** „ Sand	00 00	to	0 10	„	„

Action —Nutrient, it requires some fat and albuminoids to make it a suitable diet Rice water or *Conjee* is demulcent and refrigerant

Uses —This grain affords sustenance to about two-thirds of the inhabitants of the globe "Yet, as a food-crop rice is not equal either to "jowar" or "bajri" as the grain is starchy and somewhat deficient in proteids But, nevertheless, it is indispensable where it is grown —"[1] Seed of the plant deprived of its husk is the rice of commerce, which is exported very largely from Burma, before it is husked it is called paddy "Rice cannot by itself be made into bread as it contains very little gluten But it has the great advantage of being very easily digested, and is often of great benefit to invalids who cannot readily take starchy vegetables, such as potatoes'[2] Having no laxative properties it suits those in whom there is a tendency to diarrhoea Its nutritive value, however, is comparatively small "Rice is poorer in nitrogenous substances than wheat and is much poorer in fat Consequently, among rice-feeding nations, leguminous seeds (peas & beans) are taken to supply the former, and animal and vegetable fats to remedy the latter defect Rice is also poor in salts Nonetheless, 'rice in its natural unpolished condition is one of the best of the cereals, better even perhaps than wheat because it does not contain the large quantities of gluten which,

although of great use in allowing bread to be made from wheat, is of comparatively little value as a food-stuff, since the human body appears unable to utilise the gluten to advantage. Proof of the high nutritive value of rice was afforded during the Russo-Japanese War, in which rice formed a very important part of the diet of the Japanese soldier'.—(Freeman & Chandler)"[3] *Boiling of the paddy reduces its nutritive value.* This loss is due to reduction in quantity of both the vitamins A & B owing to the boiling, steaming and subsequent drying of the paddy in the sun. Both the nutritive and the vitamin value of rice diminish greatly with the degree of polishing to which it is subjected, as also by the washing of rice whether parboiled or raw. There also cause a reduction in ash. "In commercial milling of rice, foreign substances appear to be added to improve the appearance of the grain, because the examination of a large number of samples of rice showed that polished rices contained "ash" ranging from .5 to 2.25%. This ash appears to be due to the employment of talc, French chalk, etc., in the polishing. No harm needs arise from its presence as it is removed during the process of cooking. Another way to get rid of it is to soak and wash the rice well in water before use. During the process of polishing, the outer part of the grain is removed, and is known as rice polish. It is unfortunate that custom or fashion demands a beautifully smooth, pearly white rice, because this outer portion contains the fats and other highly nutritious parts of the rice. Indeed, it is estimated that the rice polish is nearly twice as nutritious as polished rice itself. Rice polish is the most nutritious of the by-products from the milling and cleaning of rice. Possibly, in the future, fashion may not demand the removal of the most valuable part of the grain, but at present it is chiefly used as a cattle-food".[4] Percentage of phosphoric acid in raw, milled and polished rice is reduced by the washing of the rice from, on an average 0.3 to 0.14%. This loss of phorphoric acid is associated with a fall in the vitamin value of rice. It is found that highly polished grain loses the aleurone layer and embryo and is therefore more subject to attacks by bacteria. Parboiling kills the enzymes in the grain, and so further helps bacillary invasion. "The pericarp acts mechanically by preventing sur-

face bacterial invasion of the grain and is further aided by the protective layer of bacteria living under the pericarp of all fruit —" (Fowler) Water-soluble antineurotic Vitamin B is found in the germ of rice and which contains the highest amount of it in comparison with other food-stuffs Most of the vitamin and protein of rice are removed in the bran by milling and hence it is important that hand-pounded rice, which is more nutritious and of better flavour, should be substituted for milled rice If hand-pounded rice is not available, then fresh rice bran should be purchased from the mills and used along with the vegetable preparations It is essential that the bran must be fresh the mill, as it loses its nutritive vitamin value by keeping By boiling rice in a large quantity of water and straining the *conji away* (the method commonly adopted in South India, especially in South Kanara), a good deal of the natural salts of rice is lost in this way, for increasing the nutritive value of rice, this method should be discontinued Vegetables also cooked in this wrong way lose their juices and salts which are of value to the body, the earlier this defective cooking method is given up the better for health Steam-cooking, in the different types of cookers now in the market, has the advantage of economy, cleanliness and better preservation of the salts, juices and vitamins in the different food-stuffs, including rice —(Rao Bahadur Dr M Keshava Pai, O.B E., M.D). Therefore, no more water should be used in cooking rice than can be absorbed by it In addition to the loss in vitamin value the evils of the beautifully white polished rice are —excess of starch, poverty of protein, deficiency of mineral constituents and deficiency of antirachitic and anti neurotic vitamins. Such a food is prone to cause gastro-intestinal diseases evidenced by diarrhoea and pathological dilatation of the stomach and other parts of the gastro-intestinal tract, by degenerative and atrophic changes in the digestive, assimilative and neuromuscular elements of the tract Therefore *raw, home-pounded and unpolished rice* is the most nutritious. *Cured rice* is rice from which the husk along is removed, i e , it is the hand pounded rice, which is rich in vitamins and salts, whereas the milled rice is poor in both Cooking the rice sterilises the material, improves flavour and appearance and produces changes in

structure Heat causes swelling and bursting of the starch granules, breaking up the fibres, and causes partial cardalisation or dextrination of the starch *White polished parboiled and milled rice, which is entirely starch, is the most dangerous of all rices and can be protected only by preservatives and proper storage* Rice-feeding, which is so commonly used for South Indian children, has such a baneful effect on their physique, being responsible for rickets, anaemia, scrofula, abdominal and intestinal complaints (See "*Wheat*" also for further advice on infant-feeding) In South India, rice that is cooked and strained is commonly used in infant-feeding An I M S has noticed that epidemic dropsy and beri-beri were most common among those who lived on poor and often partially fermented rice He experimented by feeding fowls on fermented rice In the Philippines, beri-beri is a very common and fatal disease among the poor classes who live on a diet that consists principally of polished rice which is deficient in vitamin B For a number of years the Philippines Bureau of Science has been making a standard extract of rice bran (known as Tikitiki" Extract) which contains vitamin B This extract is widely used for curing or preventing beri-beri It has been estimated that for adults approximately 30 grams of high grade rice-bran contain enough of the anti-neuritic vitamin B for their daily requirements as a preventive of beri-beri This is about equivalent to 11, level (not heaping) teaspoonfuls of bran or approximately 2 cubic centimeters of standard rice-bran extract —(Scientific Indian Monthly of Calcutta) For young persons and invalids, especially neurotic dyspeptics, *milk puddings as those made of rice* are the best When intended to correct a diarrhoeic tendency it should be used ground At all times care should be taken to have it well cooked and milk should be added just 20-30 minutes before the pudding is served For, to cook milk an hour or more makes the albumin difficult to digest Where there is an irritable or inflammatory state of the stomach, bowels or kidneys, *rice gruel* or *conjee* water, as it is commonly called, (Decoction 1 in 40) or thicker liquid made by boiling the rice powder in water, with a pinch of salt and a squeeze of lemon, makes a good drink, and without the lime-juice and salt in gastric ulcer.

measles, erysipelas, prickly heat and other inflammatory affections of the skin, also to burns and scalds It allays heat and irritation To burns and scalds rice flour should be used soon after the occurance of the injury and it should be dusted thickly over the whole of the burnt surface, so as to absorb any discharge that may be present and at the same time exclude the air as far as possible If, in a few days, this becomes hardened and irritating, a warm rice poultice should be applied, so as to soften it and allow its easy removal, the surface should then be dressed with lime liniment (composed of equal parts of lime water and a bland oil such as olive oil, linseed oil or sesamum oil) or resin ointment Rice poultice made of rice flour, is used also as a substitute for that of linseed meal poultice Before applying it, the surface of the poultice should be smeared with a bland oil, this renders it more soothing and keeps it longer, soft and moist Poultice of rice flour with curd from which excess of water is removed (better if a teaspoonful of *Chandanadi thailam* is added) applied comfortably hot four times a day gives ample relief even in diabetic abscess by diminishing its pain and burning sensation, by diminishing the thickness of the base, and by making pus flow freely through openings A rice poultice requires changing twice or even thrice daily It is an excellent application to abscesses, boils, buboes, ulcers and other local inflammatory affections, inflamed piles, etc In chronic bronchitis and other chronic coughs a large soft rice poultice is placed over the chest at bed-time and allowed to remain all night, another may also be advantageously placed on the back between the shoulder blades The efficacy of these poultices is in many cases, increased by the addition of a little mustard flour (1 part to 3 or 4 of rice flour), so as to produce a slight redness of the skin, or the surface of the poultice may be smeared over with oil of turpentine *Poudre-de-riz*—one of the requisites of the toilet table in Europe—is not made from rice, but of soap-stone finely powdered ' In India, however, a rice powder is prepared from the grains for similar purposes Sanskrit medical works describe some preparations of rice used in sick diet and they are as follows.—(1) *Yavagu*.—powdered rice boiled with water for the use of the sick or convalescent. It is made of 3 strengths, viz., with nine, eleven and

this, some previously soaked rice is steamed until all the grains have become soft The whole mass is spread out on mats to cool and sprinkled with the spores of a fungus called "*Aspergillus oryzae* and placed in a cellar. After 24 hours a white mould begins to appear on the rice, which at the same time grows more and more sticky, and green spots begin to show themselves. The mass is stirred up about every twelve hours and water added, and in from three to four days the preparation of the "Koji" is finished It may be dried and packed in tins and kept a considerable time like German yeast.

Sake" is prepared as follows—During four or five days ten parts of water, three of Koji and seven of steamed rice are stirred in a bowl with a wooden spoon The mixture is poured into another vessel and covered with a mat The first fermentation now takes place, and lasts from 10 to 20 days depending on temperature 50 parts of this fermented substance are taken and 150 of boiled rice, and 200 of water added to it The whole mass is stirred five or six times a day with the big wooden spatula, at which the second fermentation immediately begins and is checked after 5 or 6 days by pouring the liquid into another vessel In about 12 days the 'Sake is ready for use The whole preparation thus takes about a month 'Sake is sold in casks which in their turn are again packed in a straw cover so that they resemble bales of rice Sake contains about 13% of alcohol the Japanese usually drink it hot out of very small porcelain cups It is sold in bottles of porcelain earthernware or glass The Japanese drink Sake at the beginning of a meal and it is an important beverage at wedding

The Chinese also prepare an alcoholic drink from rice containing about 36% of alcohol and made in less time than the Sake of the Japanese In Java an arrack is made from rice by the action of a substance known locally as ragi the active agent in which is apparently another kind of mould The Dyaks in Central Borneo also prepare a sort of arrack from rice

A common kind of alcoholic liquor known as rice beer (*pachwai*), prepared in a very simple manner by half boiling

the grain in water and allowing it to ferment slightly, is in almost universal use by the lower classes in many parts of India A raw spirit is prepared from this liquor to a considerable extent by a rude process of distillation

"Rice-straw is used as fodder for cattle Husks or chaff are useful for manure Rice-bran and the mixture of broken grains, dust, etc, are valuable cattle foods As a fodder crop, rice is far inferior to 'jowar' both in the quantity and quality of the straw which it yields and which is not very sustaining, and as a result, the cattle in districts or provinces devoted to rice growing are usually very inferior *Pohas* and *Murmuras* are most useful as ready cooked food for a journey and are generally given along with *dal* or parched gram pulse, to Hindu soldiers on a sea voyage Flour is also used in various preparations To make *Pohas* the husked rice is soaked in cold water for three days, scalded and left to drain dry in an open basket It is then slightly parched and pounded in a stone mortar The crushed pulp forms into flat lozenge shaped pieces and the husk is separated by a winnowing pan To make *Murmuras,* the husked rice is partially dried in the sun after a three days soaking and scalding It is slightly parched and the husk separated by braying in a mortar Salt water is next thrown over it and the grain is again parched in hot sand which makes it puff and swell "5

1773 OSBECKIA CUPULARIS, Don

(N O —Melastomaceae)

Tam —Churkualathi Whole plant is pounded and applied to swellings

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1774 OSYRIS ARBOREA, Wall

(N O —Santalaceae).

Nepal —Jhuri *Bom* —Popli Leaves are emetic

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(1), (2) (3), (4) & (5)—Bombay Govt Agricultural Dept Bulletin

1775. OTOSTEGIA LIMBATA, Benth.

(N.O:—Labiatae).

Punj.—Bui Leaves are applied to gums and in ophthalmia

1776 OUGEINIA DALBERGIOIDES, Benth.

(N O —Papilionaceae).

Sans—Tinisa-segandun *Hind*—Sandan *Ben*—Tinis *Bom*—Tiwas *Tam.*—Tella-motuku This drug is a febrifuge in diarrhoea and dysentery See also Dalbergia oojeinensis

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1777 OXALIS CORNICULATA, Linn

(N.O·—Geraniaceae)

(*Sans*—Amlalonika, Amlika, Chukrika, Changeri *Eng*—Indian Sorrel *Fr.*—Oseille a trois feuilles ou du bois *Ger.*—Gehornter Saurklee *Punj*—Surchi, Khattamitha, Chukha, Amrul *U.P*—Ambuti *Hind*—Amrul *Ben*—Amrulsak *Sant*—Tando Chatoonarak, Tandi-chatomarak *Bom*—Bhui-sarpati, Ambuti *Duk & Mah.*—Umbuti *Arab*—Hemda *Assam*—Chengeri tenga *Malay*—Poliyarala *Tel*—Puli chintaku, Pallachinta, Anboti-kura *Tam.*—Puliyarai, Puliakire, Paliakiri *Mal*—Pullampurachi *Can*—Huli-huni-che *Kon*—Teltuppi) is a common garden weed found throughout India. The plant has an acid taste due to the presence of acid oxalate of potassium *Leaves* have long been considered cooling, refrigerant and antiscorbutic, astringent, appetising, useful in fevers and biliousness "In the Punjab and N W F Provinces, the juice of the whole plant along with onion is applied to remove warts"—(Chopra). *Leaves* have been used for removing corns, warts and other excrescences on the skin *Juice of the leaves* with pepper powder and ghee added and mixed well is applied locally to red-spots or eruptions on the skin through biliousness Bruised with or without water and formed into a *poultice* and applied over inflamed parts, the

leaves relieve pain and other inflammatory symptoms Fresh leaves made into a curry improve the appetite and digestion of dyspeptic patients *Fresh juice* relieves the intoxication, produced by datura, it also, on application, removes fibres over the cornea or opacities of the cornea *Expressed juice* of the leaves made into a *sherbet* with honey or a little sugar is often prescribed in dysentery, prolapse of the rectum and also to ally thirst Leaves boiled in butter milk given 2-3 times a day prove useful in chronic dysentery, and enteritis — (Indigenous Drugs Report, Madras) A soup of Indian Sorrel is used in convalescence of diarrhoea patients Chakradatta recommends a preparation called '*Changeri Ghrita*" which is made thus —Take of clarified butter 4 seers, fresh juice of Oxalis corniculata 4 seers, curdled milk called *dadhi* 16 seers and the leaves Oxalis corniculata reduced to a paste 1 seer Boil them together in the usual way and prepare a *ghrita* This preparation is useful in diarrhoea, dysentery, prolapse of the rectum, tympanites, piles and difficult micturition Bhavaprakash gives following process for preparing a compound *ghrita* —Take of the fresh juice of Oxalis corniculata, decoction of jujube fruits and ginger, alkaline water and curdled milk each 4 seers, clarified butter 4 seers and prepare a *ghrita* in the usual way It is recommended for use in prolapse of the rectum The plant is rubbed down with water, boiled, and the juice of white onions added, this mixture is applied to the head in bilious headaches Various preparations in which this plant, especially leaves, forms a chief ingredient are much esteemed in the treatment of fevers dysentery and scurvy *Sorrel should not be eaten by gouty persons*

1778 **OXYSTELMA ESCULENTUM**, Br, or Asclepias roseu,

A climbing plant of the genus Asclepiadaceae (*Sans* — Dughdika, Tiktadugdha *Hind.*—Dudlata *Ben* —Khirai *Hind* -& *Ben* —Dudhlalata *Punj* —Gharote *Sind* —Doodhee *Tel* —Doodee-pala, dudipalla *Bom* —Dudhika *Mah & Kon* — Dudhani) is found wild in the plains and lower hills of India Fruits are edible A [illegible] *tion of the plant* is used as a

in aphthous ulcerations of the mouth and in sore-throat *Fresh roots* are used in Orissa as a specific for jaundice

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1779 PACHYGONE OVATA, Mirs

(N.O —Menispermaceae)

Occurs on the Cormandel Coast, Nellore to Tinnevelly, in the plains all over the sea coast

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1780 PACHYRHIZUS ANGULATUS—

See Dolichos bulbosus

1781 PAEDERIA FOETIDA, Linn, or Convolvulus foetidus or Apocynum foetidum,

Is a twining plant of the genus Rubiaceae (*Sans* —Prasarini Prasarinijati *Hind* —Gandhali, Gandha-prasarini, Gundali, Gundhabhaduli, So-maraji, Khop *Eng* —Chinese Flower Plant, Chinese Moon-creeper, King's Tonic, Stinking Opal Berry *Ben* —Gandha-bhadulia *Bom* —Prasaram *Mah* —Hiranwel, Chandbeli *Guj* —Gandhana *Assam* —Bedoli sutta *Nepal* —Pade-biri *Sikkim* —Padebiri *Tam* —Penarisangai, Pichulati elai *Tel* —Savirela Gombheyamagaruchettu, Sabiralachettu *Mal* —Talanili, *Lepcha*,—Takpoedrick Found in the Central and Eastern Himlayas, southward to Malacca, Western India, Bengal and Assam It contains an essential volatile oil of an offensive odour, two alkaloids, viz *Alpha* paederine and *Beta* paederine The plant gives off, when bruised a marked odour of carbon disulphide Fruit blackens the teeth and is a specific against toothache —(Gamble) *Leaves and root* are wholesome and tonic, and are used to a considerable extent in Bengal as a constituent of a food given to the sick and convalescent "*Leaves* are boiled and made into a soup or decoction which is also a good remedy for diarrhoea and dysentery and in convalescence from acute illness" —(Chopra) The offensive odour is removed in the process of

cooking *Juice of leaves* is considered astringent and given to children in diarrhoea, dose 1 drachm —(Surgeon Mukerjee) *Root* is an emetic —(Roxburgh), it is also described as emollient and carminative, useful in colic, spasms, rheumatism and gout —(Dymock) *Entire plant*, including stem, leaves and root, is used both internally and externally in rheumatic affections, for which it is a specific ——(Dutt) Externally it is used as *liniment* Bhavaprakash gives the composition of an electuary named *"Prasarini Leha'* which is made by boiling two seers of the leaves, root and stem of this plant in 32 seers of water till reduced to one fourth, and adding to the strained decoction two seers of treacle and again boiling till it is reduced to the consistence of a thick syrup, and lastly, powdered ginger, long pepper, black pepper, plumbago root and the root of Piper chaba equal parts, in half a seer, dose is one tola in acute rheumatism Several *oils* or *liniments* for external application are prepared with this plant, e g, the following called *Kubja Prasarini Taila* recommended by Chakradatta and made up of 16 substances *It is used externally* in rheumatism with contraction and stiffness of the joints After the application of the oil, the affected parts should be fomented with dry heat

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1782 PAEONIA EMODI, Wall

(N O —Ranunculaceae)

(*Sans* —Chandra. *Eng* —Paeoncy Rose *Hind* —Ud-salap *Punj & Kash* —Mamokh, Mamekh *Bom* —Ud salam *Bhutan* —Bhuma madiya, Yet ghas) is found in west temperate Himalayas from Kumaon to Hazara, in the upper Tons Valley and Kashmir *Tubers* of this plant are reputed to be blood purifier and antispasmodic, esteemed remedy in colic, uterine disorders, epilepsy, bilious obstructions leading to dropsy, convulsions and hysteria In large doses the drug causes headache, giddiness, vomiting etc Tubers contain malates, oxalic and phosphoric acids, a little tannin, sugar, starch and volatile oil *Root combined* with the bruised leaves of Melia is a favourite remedy for bruises, sprains, etac Root

is given to cattle to render them prolific. *Infusion of the dried flowers* is a highly valued remedy for diarrhoea. *Seeds* are emetic and cathartic.

1783. PAEONIA OFFICINALIS, Linn.

(*Hind.*—Ud-salap *Bom.*—Ude-salam). Contains glucoside and essential oil Used in epilepsy.

1784. PANAX FRUTICOSUM, Linn.

(N.O:—Araliaceae)

Contains saponin Action—febrifuge and astringent.

1785. PANDANUS ODORATISSIMUS, Willd

or P. sativa or Anthrodactylis spinosa of Pandanaceae family.

(*Sans.*—Ketaki, Dhuli puspika *Eng.*—Fragrant Screw-pine, Caldera Bush *Hind.*—Keora *Ben.*—Keora; Keya; Kea; Ketaki *Bom.*—Keur *Mah.*—Kevda *Tel.*—Mogili; Gajangi, Ketaki *Tam.*—Taium, Talamchedi; Kedagai; Thazhal *Mal.*—Kaitha, Ketaki *Can.*—Kedage, Mundige. *Kon.*—Kedagi; Bondayi) is a shrub with fragrant flowers found wild in Southern India, Burma and the Andamans; cultivated in gardens in Bengal There are two varieties—the white and the yellow White is plentiful in *Shravan* (Aug-Sept) month; the yellow in *Magh* (Feb) and *Phalgun.* (March). Action—Bitter, purgative and aromatic Constituents: Essential Oil A perfumed oil called *Kevda Oil* is extracted from the floral brackets by means of sesamum oil, and a fragrant otto and *aqua—Keora-ka-arak* (prepared by distilling flowering tops or bracts in water 20 parts to 1 of *Ketaki*) are also prepared; both are employed medicinally. Dose of the aqua is ½ to 1. drachm, used as stimulant, diaphoretic and antispasmodic. Oil and the otto are stimulant and antispasmodic and are used in headache and rheumatism. Oil is also useful in earache.

In epilepsy a powder made of the anthers and the tops of the bracts is recommended to be frequently sniffed like snuff, and in sore-throat and other throat affections *cigarattes* made of the interior of the anthers are smoked *Root* brayed in milk is used internally in sterility and threatened abortion A medicinal oil is prepared from the roots In Prameha, i e, extreme heaty constitution, the *root-juice* two tolas mixed with sugar is given, or the *expressed juice* of the bracts with *Jeera* and sugar is given for 7 days Diet is rice and curds or buttermilk, all saimes should be avoided *Fruit* or *seed* is a remedy for *Vata*, *Kaffa* and *Meha* It acts like saffron "The drug is used in leprosy also"—(Chopra)

1786 PANICUM ANTIDOTALE, Retz.

(N O —*Gramineae*),

Hind—Gunara *Punj*—Ghamur Used in throat affections smoke is used to fumigate wounds

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1787 PANICUM COLONUM,

(N O —*Gramineae*),

(*Hind*—Shama, Sanwa) is a much smaller plant than P crus galli grown in India Used for forage Hindu labourers eat the grain by boiling in milk as "*Khir*" Sometimes the grain is also prepared as rice or eaten merely parched Grains are also ground and the meal is eaten as a kind of porridge (Bombay Govt Agri Dept Bulletin)

1788 PANICUM CRUS CORVI, Linn.

(*Hind*—Sanwak *Ben*—Burashama *Used* in spleen and to check haemorrhage

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1789 PANICUM CRUS-GALLI,

Var P frumentaceum (Trim), (*Mah.*—Berti *Eng.* American Barn-yard Millet *Hind.*—Bhartı *Guj.*—Bantı *Can.*—Navani, (Raia) occurs in Sind and Mirpurkhas provinces, and Northern Gujarat Composition.—Church gives the following analysis of *banti* (with husk).—Water 12 0, Albuminoids 8 4, Starch 72 5, Oil 3 0, Fibre 2 2 and Ash 1 9 p c respectively A crop good for forage and silage, but probably best used for feeding green, to cattle Grain has to be pounded to separate the husk and is usually boiled and eaten like rice It is much esteemed by the poor and is most wholesome.—(Bombay Govt Agri Dept Bulletin)

1790 PANICUM DACTYLUM—

See Cynodon dactylon

1791[†] PANICUM FRUMENTACEUM—

See P italicum

(*Eng.*—Barnyard Millet, "Billion-dollar grass") grows in America and India (Sind and Mirpurkhas) This crop, green or converted into silage, makes excellent fodder, especially for milch cattle (Bombay Govt Agri Dept Bulletin)

1792. PANICUM ISACHNE, Roth

(N O.—Gramineae)

Surat.—Khariu *Sholapur.*—Shimpi *Dharwar.*—Shimpigyan hullu, Chimpigyan hullu

Habitat.—A delicate annual grass of the Bombay Presidency

Constituents —

	Before flowering	In flower	After flowering	
Moisture	76 92	74 98	66 12	p c
Ether Extract	1 62	2 00	1 80	,,
Albuminoids	2 12	2 50	2 00	,,
Carbohydrates	10 47	11 15	12 86	,
Woody fibre	6 13	6 55	14 12	,,
Ash	2 74	2 82	3 10	,

Uses —Cattle are very fond of this fine soft grass, which is found to increase the milk yield The best time to feed this grass is in the flowering stage when it is most nourishing (Bombay Govt Agri Dept Bulletin)

1793 PANICUM ITALICUM Linn, or Setaria italica

Is a bread yielding species of Gramineae (*Sans* —Kanku, Shyamaka *Eng* —Italian Millet Deccan Grass *Hind* — Kangui, Samak, Kangni *Ben* —Kora, Syamdhan *Mah* — Samve *Tel* —Korralu *Tam* —Tinnai *Mal* —Tina *Can* — Navaneakki, Kungo-gida *Kon* —Varayi *Sind* —Rala) This seed is much esteemed in some parts of India as an article of food, but it has heating properties and when taken as the sole food it is apt to produce diarrhoea

Constituents —A toxic glucoside and an oily alkaloid It acts as a diuretic and astringent and is of use externally in rheumatism It is a popular domestic remedy for alleviating the pains of parturition

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1794 PANICUM JAVANICUM,

Poir is a common grass occuring in South India (Bombay Govt Agri Dept Bulletin)

1795 PANICUM MAXIMUM, Facq

or P jumentorum

(N O —Gramineae)

Eng —Guinea Grass

Habitat —Though a native of tropical Africa this is cultivated in plains of Northern India and Western India

Constituents —Analysis on a basis of ten percent of water is as follows —

	Fresh Grass (Poona)	Fresh Grass (Poona)	Dried Grass (Average)
	p c	p c	p c
Water	63 4	71 5	10 0
Ether Extract (oil etc)	0 8	1 0	2 6
*Albuminoids (Proteid nitrogen x 6¼)	1 9	2 0	6 2
Soluble Carbohydrates etc	19 4	13 7	45 9
Fibre	8 8	5 7	20 1
Ash	5 7	5.3	15 4
Total	100 00	100 00	100 00
*Total Nitrogen	0 41	53	1 3
Proteid Nitrogen	0.30	42	1 0

Uses —An exceedingly fine nutritious fodder for all descriptions of farm animals especially for horses and even for ewes and lambs (Bombay Govt Agriculture Dept Bulletin)

1796. PANICUM MILIACEUM, Linn or milium

(*Sans & Hind*—Chinа *Eng*—Small Millet Common Millet Broom-corn Millet *Fr*—Millet rond *Ger*—Achte Hirse *Mah*—Dhengali China Vari Ralle Ghatasava

Dudha vari, Dhengli, Cheno, Vara *Sind, Deccan & Mah* —Vari, Chino *Guj*—Gadio, Kuri *Can*—Save, Baragu) is a species cultivated in Africa, Western and Central India and Gujarat *Vari* is a hill-millet which is a valuble carbohydrate food and is used as a demulcent in diarrhoea and externally as poultice "There are three principal varieties cultivated, readily distinguishable by the colour of the seeds, which are white, yellow and red Composition of *vari* is —Moisture 7 95, Ether Extract 4 11, Albuminoids 6 81 (cont'g Nitrogen 1 09), Soluble Carbohydrates 67 26, Woody fibre 7 63 Ash 6 24 (cont'g Sand 4 08) p c"—(Bombay Govt Agri Dept Bulletin)

1797. PANICUM MILIARE, Lamk

(N O —Gramineae);

(*Mah*—Sava, Bhadli, Vari-gudhi, Halvi-vari, Vari-Mahan, Vara (varieties) *Guj*—Cheno, Gadro, Kuri *Sind*—Saon *Can*—Save, Baragu) grown in the Bombay Presidency, principally in Gujarat, chiefly in garden-land N B —Though *vari* and *sava* are, to all appearance, very much alike as regards the plants and the grain, on very close observation there are some differences between the two Thus (1) *vari* takes longer to come to maturity than *sava*, (2) *Sava* has a more vigorous habit of growth and has a peculiar lustre in the foliage which *vari* does not possess (3) the graceful drooping panicles of *vari* are more evenly balanced than those of *sava* the latter nodding somewhat to one side, (4) *vari* has a smaller and brighter grain than *sava* *Sava* grain is boiled like rice and sometimes ground to flour and made into bread The straw is not used as fodder Church in his 'Food Grains of India" gives the following analysis of *sava* —Water 10 2 Albuminoids 9 1, Starch 69 0 Oil 3 6 Fibre 4 6, Ash 3 5 p c —(Bombay Govt Agri Dept Bulletin).

1798. PANICUM PILOSUM

Mah —Bhadli.

Uses —*Bhadli* grain is husked by pounding, and is eaten by the poor It is sometimes boiled and eaten whole, and more rarely ground to flour. The crop is a valuable fodder.

N B —*Bhadli* is much like red *rala* and is sometimes confounded with it It is, however, larger, grows well in poorer soil and the ripe ear is a reddish brown and bristly, while the ripe *rala* is smooth and of a pale yellow colour.

1799 PANICUM RAMOSUM

(*Mah* —Dhengli) is a common wild grass of Bombay Presidency (Bombay Govt Agri Dept Bulletin)

1800. PANICUM TUMENTORUM

(*Eng* —Guinea-grass) grown in many parts of Sind, this makes an exceedingly fine fodder for all descriptions of farm animals (Bombay Govt Agri Dept Bulletin)

1801. PAPAVER ARGEMONE

(N O —Papaveraceae)—

See Argemone mexicana

1802 PAPAVER DUBIUM, Linn

Is found in Western Himalayas from Garhwal to Hazara in corn-fields and in Simla 4/7000 ft From the seed capsules an alkaloid known as "aporeine" is obtained by extraction with light petroleum The alkoloid is a tetanus poison similar to thebaine See Papaver rhoeas.

1803. PAPAVER HYBRIDUM, Linn,

There is an alkaloid.

1804 PAPAVER NUDICAULE, Linn.

Leaves contain HCN-glucoside.

1805. PAPAVER ORIENTALE, Linn,

Contains alkaloids morphine, narcotine, thebaine, iso-thebaine

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1806. PAPAVER RHOEAS, Linn

An annual herb with a milky juice (*Sans*—Rakta-posta *Hind. & Ben*—Lal-poshta *Eng*—Red Poppy *Bom*—Jangli-mudrika *Mah.*—Tambde-khaskhasache-jhad *Guj*—Lal-khaskhasnu jhad *Tam*—Shivappu-postaka-chedi, Shevappu ghas-ghaschedi *Tel*—Erra-posta kaye chettu *Can*—Kempu Khasa-khase gida *Malay*—Chovanna khaskhasa chcheti) is met with in Kashmir and in several plains of India Constituents—Rhoeadine, morphine, paramorphine, narcotine Syrup of Red poppy (1 in 1½ of water and 2½ of sugar) is a preparation used as a colouring agent. Milk from the capsules is narcotic and has slightly sedative properties—(Watt)

1807 PAPAVER SOMNIFERUM, Linn.

Var: P glabrum, P. setigerum.

(N O—Papaveraceae)

Sans—Khas Khas, Kasa bijam (seeds), Kakasha (seeds), Ahiphenam (resin) *Eng*—Opium Poppy Capsules, White Poppy, Poppy Seeds *Fr*—Oeillete Pavot somnifere *Ger*—Sclafmohn *Hind*—Kahs-khasa, (seeds) Sufeed Srah *Ben*—Posto-dheri *Mah*—Afu *Tel*—Posta-katol, Gasugasalu,

Nallamanthu *Tam*—Gashagasha, Kasa-kasa (seeds), Abhini (resin) Posthakkai *Mal*—Kashakasha *Can. & Kon*—Kasakasa Burm—Bhinbin

(Opium the inspissated juice) —*Sans*—Ahiphena, Saphenaka *Eng*—Opium *Hind Duk Punj & Kash*—Afim *Bom Guj & Mah*—Aphim, Apphou *Tel & Tam*—Abini, Gashagasha *Can & Kon*—Afhini *Sinh.*—Abin *Burm*—Bhin Bhain *Malay*—Affiun *Pers*—Afiyun, Khash-Khash *Arab.* —Afiun Qishrul khash khash *Chin*—Ya pin

Opium is the air-dried concrete milky latex or exudation (inspissated juice) obtained by incising the unripe seed capsules (heads) of P Somniferum (white poppy) There are two varieties of opium poppy—one with black seeds and the other with white seeds White seeds yield better oil It is at first brownish in colour which soon changes to dark, it is bitterish in taste and of an unpleasant odour Seeds are white, grey or greyish black, in taste they are sweetish and oily

Habitat—Bihar and Bengal produce what is known as 'Patna or Bengal garden opium", Benares and the United Provinces of Agra and Oudh produce "Benares opium" and Central and Western India (Gwalior, Bhopal and Baroda) and Rajputana are the sources of what is known as 'Malwa opium Opium is grown in many parts of the world and chiefly in Turkey, Asia Minor, Persia, India, China, Egypt and Southeastern Europe'[1] It is also grown and produced in Nepal Assam and Burma It is the white flowered variety of poppy that is largely grown in India The purple variety, however, grows luxuriantly in Rajputana and Central India red flowered variety with dark seeds is cultivated in the Himalayas

Parts Used—The nearly ripe and dried capsules, petals, seeds and the inspissated juice The drug is of three varieties —white purple and red with black (dark) and white seeds— Papaver nigrum & Papaver album.

Constituents —'Opium varies considerably in appearance, composition and quality according to its place of origin and the mode of its manufacture' The Patna Garden opium

essential oil and ash 6 p c, containing salts of ammonium, calcium and magnesium Sap contains oxalic acid

"Chemistry and Physical Properties of Narcotine —Narcotine, C^{22} H_{23} O_7 N, exists in the plant in a free state though some authorities think it occurs in the form of a meconate It can be readily separated from the other alkaloids It has been found to occur in the dried poppy capsules in fairly large quantities, and as a bye-product in the manufacture of morphine and codeine Analysis of unlanced poppy heads carried out at the Calcutta School of Tropical Medicine and Hygiene showed that it constitued about 30 p c of the total alkaloidal yield It usually occurs to the extent of 5 to 6 p c in Asia Minor opium, but in Indian and Persian opium it is present to the extent of 10 to 12 p c A perusal of the following table will show that in Patna or Bihar opium the narcotic content is nearly double that of the morphine content, in Malwa opium narcotine is slightly larger in quantity than morphine, in Smyrna opium narcotine occurs in much smaller quantities, less than quarter of the morphine content

Description of Opium	Morphine %	Narcotine %
Patna Opium (Bihar Provision cake)	3 98	6 36
Malwa Opium	4 61	5 14
Smyrna Opium	8 27	1 94

When opium is extracted with water, morphine goes into solution, but the greater part of narcotine remains undissolved By exhausting the residue with dilute hydrochloric acid the alkaloid is removed as a hydrochloride, from the solution of this salt the base may be precipitated by sodium bicarbonate and crystallised from alcohol Narcotine may also be extracted from opium by boiling it with ether

Narcotine occurs as odourless, tasteless shining prismatic crystals, having a melting point 176°C The base is very slightly soluble in water, 1 in 25,000 at 15°C and 1 in 7000 at 100°C It is soluble in alcohol, ether and in benzene, very soluble in chloroform, slightly soluble in amyl alcohol or light petroleum'[6]

The opium alkaloids are divided into two groups —(1) the phenanthrene-pyridine group comprising morphine, codeine, pseudomorphine, neopine and thebaine, (2) the benzyl-isoquinoline group consisting of papaverine, narcotine and most of the remaining alkaloids The members of the first group are strong bases and very poisonous whilst the second group as a whole have little physiological action The valuation of opium depends on the amount of morphine present in the sample—this being the most abundant and physiologically the most active of the alkaloids The amount of morphine present in samples of opium from different countries is as follows —Turkey 5—14%, Persia 6—14%, Egypt 0.28—8%, India 3—15%, China 1 5—11%, Japan 0 7—13%, Bohemia 11—12%, Turkestan 5—18%, Australia 4—11%

"The relative proportions of the important bases in the Indian and Turkish opium are as follows —

	Indian Opium (average)	Turkish Opium (average)
Morphine	9 5 to 14 2 p c	10-14 p c
Codeine	1 8 to 4 0 p c	0.2 to 3.2 p c
Narcotine	3 9 to 7 6 p c	4 to 11 p c

various alkaloids and other principles obtained from it Opium in medicinal doses at first stimulates the brain, heart and respiration, this effect is soon followed by general depression Generally opium is anodyne, hypnotic, antispasmodic, diaphoretic, narcotic, myotic, intoxicant and cerebral depressant Its chief action is on the cerebro-spinal system and through the nerves it acts upon all the organs of the body, it stimulates the generative organs, it affects all the secretions except milk and sweat which it increases by stimulating the mammary and sweat glands It causes dryness of the mouth and throat, lessens the secretion of the stomach and thus impairs appetite, also dimmishes bile and causes constipation, decreases the quantity of urine secreted, increases heart action and arterial tension It at first produces exhilaration of the cerebral functions, then a sort of mild intoxication followed by drowsiness and sound sleep, often disturbed by dreams, and often followed on waking by headache, constipation, indigestion and depression of spirits Large doses produce depression of the heart, lessened activity of the cerebral cells and reduction of the blood supply to the brain centres, lowering of circulation and causing loss of body heat, the oxidation is interfered with The cerebral depression is followed by headache, vertigo, slow and laborious respiration In poisonous doses stertorous breathing and coma supervene, followed by feeble and slow pulse, cold clammy perspiration, contraction of the pupils followed by dilatation as the end approaches, cyanosis of the face and fingers, followed by abolished reflexes, deep coma, paralysis of respiratory centres, carbonic acid accumulation in the blood and death *Physiological action of Opium alkaloids* — 'The alkaloids of opium are more or less narcotic and convulsant in their action, but as the latter group occur in small quantities, their action is dominated by the former group The exact difference between the action of morphine opium and combinations of other alkaloids introduced in therapeutics under the names of 'pantopon', narcophine' etc, have not been worked out Older investigators have shown that a dose of opium acts more strorgly on the frog than the corresponding quantity of morphine contained in it Winternitz (1912) showed that hypnotic and sedative effects were produced in man by

alkaloids of opium from which morphine had been completely eliminated'[0] As regards chemical constitution they fall into two main groups One, the morphine group including morphine, codeine and thebaine, and the other, narcotic group including narcotine, narceine and papaverine as its principal members The most characteristic feature of the physiological action of the opium alkaloids is their simultaneous depressing and exciting action on the central nervous system and in this respect there is no clear line of demarcation between the two groups The five chief members—morphine, papaverine, codeine, narcotine and thebaine—all exhibit this peculiarity and as the series is descended in the order just given the narcotic action diminishes and the power of reflex stimulation increases until in thebaine a strychnine-like effect is exhibited Morphin causes stupor and sleep If morphine is taken when there is pain, it makes that part numb and pain is not felt though the trouble remains there all the same 'Small doses of morphine in themselves inactive produce when combined with small quantities of the subsidiary alkaloids severe symptoms of poisoning (Gottlieb & Eeckhout, 1908) 'Morphine habit apart from addiction does not cause physical deterioration There is no change in the Hepatic, Endocrine, and Circulatory functions'—(Dr S E Subedar Bombay) "The greatest increase in activity is obtained when equal parts of narcotine and morphine are given together The decrease in perception of pain in man is also more marked when morphine and narcotine are combined Interesting experiments conducted by Macht Johnson and Bollinger (1916) and Macht, Herman and Levy (1918) have shown that the increase in the pain-depressing action is due to the subsidiary alkaloids especially narcotine By measuring the strength of the induced current which would just produce a pain sensation from a single sensation point they showed that 'pantapon' and 'narcophine' increase the threshold value of the effective stimulus more than the corresponding amount of morphine These observations have been confirmed and open a wide field for the use of narcotine Narcotine also possesses an antagonistic action to the depressing effect produced by morphine on the respiratory centre "Although narcotine by itself is not a therapeutically very active

drug, it has got great possibilities of being a useful therapeutic agent by combination with other opium alkaloids in suitable proportions which have yet to be worked out" (Lt. Col. Chopra) [9] *Morphine* exerts both a depressing and stimulating action on the central nervous system, the former being produced mainly in the brain, the latter mainly in the spinal cord In man the depressing action dominates the whole nervous system. Respiration is slowed by morphine, in many cases it may be deeper at first though the amount of air taken in per minute is reduced Death ensues from arrest of respiration The alkaloid has little effect on the circulation and this is also true of the peripheral muscles and nerves Pupil of the eye is much contracted in morphine-poisoning until just before asphyxia when it is widely dilated. Alkaloid causes a slight fall in body temperature Morphine is excreted mainly by the digestive tract, but after large doses it also occurs in traces in the urine *Papaverine* is a comparatively weak poison, but in the nature of its effects stands between morphine and codeine, it produces light sleep in comparatively small doses and this does not become deeper when the dose is increased On the other hand, the reflex irritability is increased and large doses may cause tetanising action It has more tendency than either morphine or codeine to slow the heart "Codeine when given by itself has a feeble action, but has a sedative effect in man In combination with the other alkaloids of opium, however, codeine produces as strong an effect as morphine The other alkaloids therefore appear to potentiate the action of codeine and of these narcotine has been shown to be the most important synergist"[10] Codeine resembles morphine in its general effect but its depressing action is less marked and less prolonged while its stimulating action involves not only the spinal cord but also the lower parts of the brain In small doses in man it induces sleep which is not so deep as that caused by morphine, and in large doses it causes restlessness and increased reflex excitability rather than sleep The respiration is slowed less than by morphine The pupil is contracted at first, but is dilated in the excitement stage of the intoxication "*Narcotine* which is next to morphine in importance, but which is by itself not a very active alkaloid, though an important sub-

sidiary one inasmuch as it constitutes on an average 5 to 6 per cent of opium, increases the toxicity of morphine and codeine It has a well-marked synergistic action when combined with morphine so far as its action on the central nervous system is concerned Levy (1916) found that 3 mgm of an equal mixture of morphine and narcotine exerted as great a narcotic action as 10 mgm of morphine "[11] Narcotine generally resembles codeine in its action, but is less depressant It is much less poisonous than either morphine and codeine It was at one time used in India in the treatment of migraine as an analgesic, and for malaria, but has long been superseded by quinine for the latter purpose "So far little or no use has been made of narcotine in medicine, narcotine is readily absorbed from the site of injection, it does not produce much local irritation or necrosis of the tissues Narcotine definitely inhibits the peristaltic movements of the gut It relaxes the involuntary muscle tissue all over the body, e g , of uterus, bladder, gall bladder, etc , by its direct action on the muscle fibres Given intravenously in animals, narcotine produces a fall of systemic blood pressure followed by a slight rise The fall is due to dilatation of the blood vessels, especially those of the splanchnic area by its direct action on the musculature of the vessel wall The subsequent rise is probably due to reflex stimulation of the vasomotor centre to counteract the fall in systemic pressure The stimulation of the auricle and ventricle seen in myocardiograph experiments cannot be wholly explained by vasomotor stimulation, and there is evidence to show that the sympathetic ganglion cells of the cardiac plexuses may be excited The depression of the heart seen in perfusion experiments is more than compensated by these two factors Narcotine, unlike morphine, stimulates the respiratory centre in the medulla The plain muscle of the bronchioles is relaxed The drug, in the animals at any rate, has a stronger action on the cord than on the brain The marked depressant effects of narcotine on the central nervous system found by some of the early workers can be accounted for by the presence of other alkaloids of opium as impurities, due to imperfect technique Narcotine has been shown to have a depressant action on the algesic areas in the brain and, there-

force, lessens such symptoms as headache, pain in the limbs, discomfort, etc., attendant on febrile conditions It undoubtedly enhances the action of morphine and codeine so that much smaller quantities of these alkaloids would be effective if given in combination with narcotine Voluntary muscles are not affected The secretions do not appear to be greatly influenced by narcotine in therapeutic doses In toxic doses there is a marked stimulation of salivary secretion, but urine, sweat, etc., are hardly touched Narcotine is not a very toxic alkaloid, its minimum lethal dose is 2 mg per gramme body weight in frogs and 1 5 to 2 0 gm per kilo body weight in cats Large doses such as 1 or 2 gm can be given in man without producing any marked toxic effects—(Col Chopra) [1] *Narceine* has been recommended as a hypnotic, but is believed to have very little action when pure, probably owing to the instability of its salts and the insolubility of the alkaloid itself *Oxynarcotine* is described as a feeble narcotic poison

Of the derivatives of the opium alkaloids, two are of special importance in medicine, viz —Apomorphine and Cotarnine Hydrochloride (stypticin) In the conversion of morphine into *apomorphine* the depressing action on the central nervous system is almost wholly lost, but the stimulant action remains, and is exercised over the whole central nervous system, but especially on the medulla In very small doses apomorphine may not produce vomiting, though the secondary symptoms—such as increased perspiration—which usually accompany this may be shown The emetic action is due to the direct action on the medulla oblongata and not to irritation of the stomach According to Hildebrandt *thebaine* antagonises the emetic action of apomorphine in dogs and Harnach and Hildebrandt have shown that a and b chloromorphides are also anti emetics, the former being the more powerful "*Cotarnine* hydrochloride (Stypticin), a derivative from narcotine (decomposition-product of narcotine) is used in medicine as a styptic in all forms of uterine haemorrhages and also for checking profuse menstruation, 1 to 2 per cent may be used as a tampon It is also used in the form of a 5 per cent ointment in the treatment of erysipelas, eczema and shingles Tablets of cotarnine hydro-

chloride containing ¾ grain are on the market and stypticin wool and gauze (30 per cent) are also prepared. A preparation of cotarnine pbthalate under the trade name of 'Styptol' is also on the market and is administered in 5-grain doses in similar troubles. 2:4 dihdroxyphenyl cotarnine hydrochloride has also been prepared and is said to have a quinine-like action".[13] Cotarnine is less effective than hydrastinine and produces its effect in a different way.—(Plant Alkaloids-By Dr. T. A. Henry, D.Sc., London).

Psychological Effects of Opium Addiction.—In the withdrawal or abstinence symptoms, there is a predominant psychic element which can be overcome if the circumstances demand it. During the treatment of addicts to rid them of the opium habit, opium can be largely or totally replaced by substances like gentian or nux vomica preparations in pill form without trouble. The series of cases studied by Chopra & Bose show that if the patient is not aware that he is taking opium, the drug can be effectively given for weeks and months for its therapeutic effects and can be stopped at any moment without producing abstinence symptoms. Physicians, therefore, need not hesitate to use opiates in special cases where these are indicated provided the identity of the drug is concealed from the patient. Col. Chopra regularly uses opiates in this manner in the treatment of asthma, amoebiasis or any other conditions which are likely to be benefited without producing a habit. Opium, given in this manner, can also be effectively used to detect malingering."[14]

Treatment of Opium Addiction:—(1) The quickest and the shortest method of stopping opium addiction is that of *abrupt withdrawal.* Advantages are (a) Time involved is only 3 days; (b) Mental effect on the addict after this short period is over; (c) Avoidance of complicated medication. Disadvantages are prostration, collapse and death. Not advised for those who suffer from organic disease, malnutrition and advanced age.

(2) *By gradual withdrawal:*—Advantages: Safety as regards prostration, collapse, death. Disadvantages: (a) Absence of psychological effects; (b) Prolonged vigilance; (c) No

surety, (d) Can only be undertaken when the addict is kept night and day under trained staff such as a Sanatorium or jail

(3) *Substitution methods*—By using sedative drugs, i e, Luminal, Chloral, intravenous Mag Sulph, Paraldehyde, Atropine dissolved in saline with early supply of opium 30 Mins of this to be injected every two hours Or till ¼ grain of Atropine is taken in 24 hours Or pill containing opium, nux vomica, gentian and pepper may be substituted for the morning dose leaving the evening dose alone This will prevent insomnia Minor symptoms such as diarrhoea, epi-gastric pain, and nausea may be treated by alkaline mixture In 3 to 4 weeks the drug can be entirely stopped by this method In India sudden withdrawal is only advisable in cases who take below 5 grains a day In children sudden withdrawal should be resorted to It will at first give rise to nausea, diarrhoea, irritable nature These can be safely treated by chalk powder, bromide and belladonna Adrenaline is very useful for distressing symptoms Insulin with Luminal has some advocates Canthrides blister may be applied to the chest and abdomen The fluid of this blister about 2 to 8 p c may be injected in the arm every 3 to 7 days This serum treatment produces a sense of distaste for opium Relapses occur Lecithin treatment is employed in China 4 to 6 eggs are given daily Craving may be met by giving Tr Opi Lecithin, Pulv Glycerisa Co made into pills of 4 grains each and given with iron and strychnine mixture Soya bean lecithin 60 to 90 grains a day is also used A German scientist says that an opium addict should be treated as a case of shock He has prepared a drug called Rosseum which is taken by the mouth for 5 days Hospitals on the Continent, speak favourably about it—(Dr S E Subedar, L C P S, Bombay)

Action & Uses in Ayurveda & Siddha—Tikta kashaya rasam, kapha vata haram, balyam, vrishyam *Resin*—Tikta-rasam, ushnaveeryam, kapha haram, vata pitta haram, grahi, intoxicant ruksham, in kasam, improves agni—(Therapeutic Notes)

Action & Uses in Unani—Seeds—*White*—Cold 2°, Moist 1°, *Black*—Cold 3°, Dry 2°, *White*—Hynotic, tonic to brain,

in heat cough, T B, weak liver and kidneys, fattens body, urinary diseases, causes *nuzj* in thin *safra*. *Black* —Liver, heat, leucorrhoea, chronic diarrhoea (Therapeutic Notes)

Treatment of Poisoning by Opium —In early stage give emetics (Zinc Sulphate, Copper Sulphate or Mustard or 1/6th grain of apomorphine hydrochloride hypodermically), stomach pump or syphon to wash out the stomach with a weak solution of Potassium Permanganate (1 in 400) until the fluid returns with its purple colour unchanged, repeat this every half hour for 12 hours, prevent sleep by walking the patient about and giving strong coffee both by mouth and by rectum Flick bare skin with towels, maintain warmth, to combat failing respiration, apply *artificial respiration, interrupted galvanic current*, and inject subcutaneously Liquor Atropine Sulphate every ten minutes until the pupils dilate or the pulse is quickened Faradic battery, strychnine hypodermically in case of respiration becoming very slow, Alcohol and Ammonia as stimulants internally.

Preparations —(of the poppy seeds) —Oil (of the poppy heads or capsules) —Fresh prepared syrup (1 in 2½ of water, ½ of spirit and 1½ of sugar), dose is 1 drachm Decoction (1 in 15) for fomentations etc, and Poultice (Of Opium) —Extract (1 in 3 to 4 of water and ½ of spirit), dose is 2 to 5 grains Pills, Tincture (1 in 8—laudanum), dose ½ to 1 drachm, Compound powders, Wine (1 in 20), dose is 10 to 60 minims, Plaster, Enema, Suppository, Liniment and Ointment, Morphine or Morphia occurring as a white amorphous powder, or shining transparent acicular prisms, Dose is 1/10th to 1/3rd grain (½ of a grain of morphine is equal to 1 grain of opium) Oleatum morphinae (1 in 60 to 1 in 10) is a local sedative orphine hydrochloride a white crystalline amorphous neutral soluble powder Dose is 1/8th to ½ grain For more preparations see B P

Incompatibles —Potassium Permanganate is able to oxidise and so destroy the medicinal and toxic properties of an equal weight of opium, the other incompatibles are alkalies, alkaline carbonates and alkaline earths, substances containing

tannin, salts of lead, iron, copper, mercury, zinc and Liquor Arsenicalis

Uses—These are varied and multifarious "For euphoric purposes, opium is habitually taken by some in the form of a pill or in solution in water' [3] In Assam and C P, opium is sometimes smoked In China, opium smoking is replaced by morphine injections The poppy seeds yield a bland fixed oil which is used for culinary purposes Medicinally it is used like olive oil in doses of ½ to 1 drachm Seeds themselves are innocuous and used as an article of food They are boiled, mixed with a little oil and salt and taken as curry with rice, or they are made into balls and formed with tamarind into an acid curry As a mild astringent, they are given with sugar and cardamoms (burnt), they are useful in diarrhoea and dysentery Poppy seeds are used as syrup in cough and asthma, as they are destitute of any narcotic principle, they are sprinkled over some sweetmeats and largely used in confectionary they are also used in insomnia Poppy seeds and lettuce seeds 2 and 1 part respectively are soaked in water and mucilage extracted, mixed with sugar and taken in insomnia 'Capsules and the inspissated juice or *Afyun* have been used by Vaidyas and Hakims as a sedative both for internal use and external application, and employed in the preparation of soporific drugs or in the preparation of stimulating and soothing beverages from times immemorial Hakims prescribe capsules (alone or combined with astringent drugs) for headache, diarrhoea, dysentery and digestive troubles in children, and as a household remedy in many parts of India, mothers give them to their children to keep them quiet during teething periods Chinese writer Wang Shih and others said that the effects of poppy capsules in dysentery were magical The Chinese were using both the red and white forms of poppy A beverage called 'post or Kuknar' prepared from capsules is even now taken in the Punjab It resembles the old "*Kuknar*' and *Char-bughra*" beverages of the Moghuls used for euphoric purposes' [16] Locally bruised poppy seeds (capsules) are used as a sedative in the form of fomentations, poultice and infusion as a soothing application to bruises, inflamed, excoriated and

painful swollen parts, to tender and irritable ulcers, and various forms of painful conjunctivitis, ophthalmia, inflammation of the ears etc Their decoction is used as a soothing injection in cancer of the uterus They contain a trace of opium For fomentations etc, they should be broken up and boiled in water, and the liquor only is used Into this, when quite hot, a flannel should be dipped and wrung out and then laid on the part affected dipping it afresh as it begins to cool Fomentation is applied also to sprains, contusions, etc The inspissated juice is the drug known as opium "Opium is said to cure 'the concurrent derangement of the three humours, increase the seminal and muscular powers and produce stupefaction of the brain', and Hakims prescribed it in hemicrania, pain in the joints, lumbago etc, and was not only given internally but was applied externally also in the form of a paint "[17] It is given internally in diarrhoea, dysentery, sleeplessness, colic, intestinal and inflammatory pains, severe cough, asthma and hiccup It is useful in fevers chiefly during exascerbation It is also useful in supporting the strength and calming the exhausted nervous system In Egypt opium is taken as an asphrodisiac, and in India "Hakims also recommended it as an aphrodisiac as it was believed to lengthen the time of seminal discharge during coitus, but the drug after a temporary stimulation diminishes sexual desire and causes impotence "At present opium is used in combination with other drugs in the treatment of diabetes mellitus, as small and moderately large doses of opium alone have little or no effect on the blood-sugar, and opium in doses ranging from 1 to 9 grains daily in patients suffering from albuminuria has no deleterious effect on the quantity of albumin excreted, in fact, in many cases there is an appreciable decrease" —(Chopra) [18] In typhus fever, small pox and typhoid fever, during low muttering delirium with subsultus and jactitations, it is highly beneficial to revive the flagging nervous system In fever with violent delirium, wakefulness, suffused eyes and constant rising from the bed, opium given in combination with aconite renders the patient tranquil and induces sleep —(Khory) Opium procurable in the bazaars is always more or less adulterated Of the several kinds of

opium met with in India the chief are—(1) Patna Garden Opium; (2) Malwa Opium.

Some points connected with the use of opium which should always be borne in mind are:—

(a) *The drug should be avoided in cases of*:—(1) Doubt as to the advisability of giving opium; (2) Persons who are very intolerant to the action of opium, in whom even the smallest dose produces great nervous excitement, violent headache and vomiting; (3) Infants and young children who bear opium badly—(in diseases of childhood in which it is very necessary it should be given only under expert professional advice or superintendence and not otherwise; (4) Pregnant women, as it seems to exercise a prejudicial effect on the foetus; (5) Persons who are suffering from disease of the kidneys especially if there be a tendency to dropsy and Bright's disease of the kidney or nephritis, (6) Strongly marked contraction of the pupil; (7) Inflammatory and other diseases in which the tendency to death is by coma or by apnoea, rather than by asthma; (8) Congestion of the brain shown by suffused eyes and contracted pupils; (9) Bronchi filled with excessive, thick and viscid tenaceous secretions (10) Conditions with suspected venus congestion, (11) Heart-disease, (12) In excessive excitement as in acute meningitis, puerperal mania and insanity it *should not be long continued* as it would ultimately derange the digestion and the secretions, (13) In phthisis, opium should not be used for a long time; (14) At the commencement or *during the height of fever with a dry tongue*, opium should not be given

(b) If the patient is a confirmed opium taker, he requires a far larger dose to produce a given effect than one not habituated to it

(c) When the use of opium is clearly indicated and the patient from any cause is unable to swallow it may be given in an enema, in this case a larger dose is required than when given by mouth.

Opium is used in many diseases such as diarrhoea, insomnia, diabetes, convulsions, rheumatism, tumours, cancer car-

the advanced stages it is valuable either alone or in combination with camphor, antimony etc In chronic gastritis, gastrodynia, nervous and sympathetic vomiting, diarrhoea, dysentery, strangulated hernia, visceral obstructions etc, it is given with the best results In diseases of the gastro-urinary system *e g*, cystitis cystorrhoea, spasmodic structure of the urethra, also in menorrhagia, dysmenorrhoea, irritable states of the uterus, metritis etc., it is a remedy of the highest value Tetanus and acute rheumatism are amongst the other diseases in which opium has been employed as a sheet anchor In cases of spasmodic affections of the bowels, violent colic, and the violent pain due to the passage of all calculi, a full dose *i e*, 20 to 25 drops of laudanum in a wine-glassful of opium water or infusion of sweet-flag root repeated once or twice if necessary at intervals of ½ to 1 hour, affords speedy relief It proves, however, even more effectual if introduced into the rectum either in the form of suppository (2 grains of opium with 4 grains of soap), or in enema (30 to 40 drops of laudanum in 2 ounces of thin conjee water) It may also be given with great benefit in irritable states and painful affections of the kidneys In retention of urine due to spasmodic stricture of the urethra a hot-bath and a full dose of opium (25 to 30 drops of laudanum), followed by a dose of castor oil will give relief in recent cases of no great severity, following a debauch, exposure to wet, etc Opium given in an enema of two or three ounces of rice conjee sometimes succeeds when it fails if given by mouth In diabetes, opium is narcotic and occasionally produces the most beneficial results, especially in old cases occuring in the aged, the dose should be diminished or the remedy left off altogether, if it gives rise to headache or other bad symptoms Generally persons suffering from this disease will take large doses with impunity The Amritsagar recommends following preparation of opium in diabetes —Take of camphor and musk, each one part, opium and mace, each four parts Make into two-grain pills They are administered with the juice of betel leaves.

"In determining the question from a scientific point of view as to what extent opium has the power to cure and prevent

genuine malarial fever, Dr Roberts pointed out that the two important and abundant alkaloids occurring in opium are morphine and narcotine or anarcotine Morphine represents the anodyne and hypontic properties of the drug and narcotine is a bitter crystalline alkaloid resembling quinine and like that substance possesses tonic and antiperiodic properties."[19] "Opium on account of its sedative effects undoubtedly ameliorates the symptoms produced by malaria, but it has neither a prophylactic nor a curative action in this disease ' "[0]

"As quinine became cheaper and more abundant, of late, narcotine which was used successfully for malaria, by Drs Palmer and Gordon, in 1 to 3 grain doses, where there was an intolerance of quinine, came into disuse, and narcotine tried by Lt -Col Chopra, in a number of patients suffering from malaria, diabetes, pneumonia, etc , in doses varying from 5 to 20 grains daily, none of these patients showed any marked depression of the higher faculties as occurs with morphine, nor were there any signs of stimulation of the psychical areas of the brain The algesic areas, however, appeared to be somewhat depressed and sensibility of th patient to pain and discomfort produced by disease was decidedly diminished The patients looked more comfortable after the alkaloid was administered and felt better although the temperature was not appreciably affected There was no very marked stimulation of the respiration and the heart, and no heightening of the reflexes, so that in therapeutic doses in man at any rate there wer no outward signs of hyper-excitability of the medulla or the spinal cord When taken by the mouth in doses of 0 4 gm (6 grains) and 0 6 gm. (10 grains) narcotine produces a nauseating feeling which increased on moving the head. There was a distinct sensation of well being for about an hour after the drug was taken No other action on the central nervous system was observed In another individual 8 grains were given after a hard day's work. The sensation of fatigue greatly disappeared and this was followed by a feeling of lassitude and inclination to lie down if not to sleep No other effects were observed."—(Lt. Col Chopra) "[1]

In many affections of the uterus besides using opium in

the form of suppository of enema, as mentioned above, *camphorated opium liniment* warmed, may be rubbed into the loins or a hot rice poultice sprinkled with laudanum, applied over the lower part of the abdomen Internally in these cases it requires to be given in full doses combined with camphor. For the relief of after-pains 15 to 20 drops of laudanum in a wineglassful of camphor *julep* or *omum* water or a little simple *conjee* generally affords speedy relief In threatened abortion from a fall, over-exertion etc., in dysentery, a full dose of laudanum, and for the relief of the local pain, bearing down and straining in dysentery a small enema (30 to 40 drops of laudanum in 2 ounces of *conjee*) affords relief Opium is a valuable adjunct to catechu and other astringents in the treatment of diarrhoea Rasendrasarasangraha gives the composition of a pill alled *Grahani Kapata Rasa*, which is recommended in chronic diarrhoea and dysentery, it is prepared by taking nutmeg, borax, prepared talc and datura seeds, each one part, opium two parts and making into 2-grain pills with the juice of Paederia foetida In cases of diarrhoea with anasarca, another pill called *Dugdhavati* much used by Kavirajas is described in Bhaishajyaratnavali, it is made by taking opium and aconite 24 grains each, prepared iron 10 grains, prepared talc 12 grains, and beating them into a mass with milk and making into 4-grain pills One pill is to be given every morning with milk

The diet is restricted to milk alone, *water and salt being prohibited* For diarrhoea with high, fever, Bhashajyatantra recommends another pill known as *Sambunatha Rasa*, —Take of orpiment, realgar, cinnabar, white arsenic, borax, aconite and alum each one part, mercury, sulphur and opium each 7 parts, soak them for 7 days in each of the following fluids *viz*, juice of the leaves of Cannabis sative, Vitex negundo, datura and *nim* Make into 2 grain pills These are given with ginger juice Vomiting is sometimes speedily relieved by a few drops of laudanum (5 to 10 drops) in an effervescing draught, or a little omum-water This drug is used as an aphrodisiac generally in combination with nervine and stimulant drugs Sharangadhara gives the composition of a compound powder

known as *Akaradi Churna* and used as an aphrodisiac It is made up of pellitory root, ginger, seeds called *kakkola*, saffron, long-pepper, nutmegs,, cloves, and red sandalwood, each 2 tolas, opium 8 tolas, rubbed together and passed through a cloth Then sugar is added equal in quantity to all the above ingredients Dose is grains 6 to 12 with honey

A simple opium liniment, (readily made by rubbing down a drachm of bazaar opium in 2 ounces of cocoanut, sessamum of other bland oil) proves very useful in many external or local diseases, including chronic rheumatism, lumbago and other muscular and neuralgic pains, spasms and bruises, enlarged glands, mumps etc Its efficacy, however, is greatly increased by conjoining it with an equal quantity of comphor liniment This camphorated opium liniment, is an excellent application in many painful external affections *It should be well shaken before being used Care should be taken not to apply it to an abraded or sore surface, it is only adapted for the sound skin, and not even then if the pain is attended with much heat and redness* This camphorated liniment well rubbed in along the course of the spine is occasionally very useful in whooping cough For stiff neck, warm laudanum rubbed in over the part answers better than liniment

"A combination of one molecule of morphine and one molecule of narcotine, with meconic acid, has been recommended by Straub (1912) and named 'narcophine' for use as a general analgesic "[22] In ophthalmia attended with great intolerance of light great relief may be obtained by fumigating the eye with the vapour of boiling water containing a teaspoonful of laudanum, or a couple of grains of opium An excellent eye-wash in these cases is composed of laudanum, vinegar and brandy each 1 part and water 4 parts Toothache depending upon a decayed tooth is often relieved by a grain of opium put into the hollow of the tooth, *the saliva should not be swallowed* Earache also frequently yields to mixture of equal parts of laudanum and any bland oil inserted into the outer passage of the ear on a piece of cotton wool, *care should be taken not to push it in too far.* To painful piles where there is much swelling and heat, a very soothing application is a soft rice *poultice*

sprinkled over with laudanum or smeared over with simple opium liniment Cold pressed oil is prepared as a table or cooking oil, and the darker-coloured oil is used for conversion into soap in Europe Opium is an antidote to snake poison and scorpion sting

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1808 PARMELIA PERLATA,

P parietina, P perforata P karatschadalis or Lichin odoriferous

(N O —Lichenes)

(*Sans*—Silavalka *Hind*—Charela, Phathar ke phul *Eng*—Stone flowers Yellow Lichen Rockmoss *Fr*—Parmelia des murs *Ger*—Wandschildflechte *Pers*—Davala *Arab*—Hinna i Korisha *Guj*—Chadila, Ghabilo *Can*—Kallu huvu) are species of the Lichenes Order belonging to Family Parmeliaceae, found on trees, old plants walls and on rocks on the Himalayas Punjab, Persia etc These lichens contain a yellow crystalline stuff, gum, sugar extractive licherin and chrysophanic acid They are bitter, febrifuge, astringent resolvent emollient demulcent and formerly considered useful as a diuretic also soporific and sedative They are used in diarrhoea, dyspepsia, spermatorrhoea, amenorrhoea and dysentery In the form of a *poultice* they are applied to renal and lumbar regions which cause a copious flow of urine As a liniment it is applied to the head in cases of headaches The lichen is much used as an *incense* especially to relieve headache and also in the preparation of a *masala* used for washing the hair Its powder is applied to promote healing of wounds

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1809 PARAMIGNYA LONGISPINA Hook

1810 PARAMIGNYA MONOPHYLLA, Wright

(Bom —Karıwageti) Action —alterative and diuretic Root is given to cattle in haematuria

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1811 PARDANTHUS CHINENSIS, Ker

(N O —Irideae)

Action —Aperient and resolvent Used in cobra bite

1812 PARMELIA KAMTSCHADALIS, Esch

(N O —Lichenes*)*

Uses are same as P parlata

1813 PASTINACA GRANDE—See Peucedanum grande

1814 PASTINACA SATIVA—

(Eng —Cultivated Parsnip)

1815 PARSONSIA SPIRALIS Wall

(N O —Apocyanaceae)

Tam —Pe-nalivalli Juice of the plant is given internally in insanity

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1816 PASPALUM SANGUINALE (Lamk Var ciliare)

(N O —Gramineae)

Sindhi —Karsih Taro Modhan *Surat* —Tara *Dohad*— Shikaol or Arotaro *Broach* —Chamarien *Bijapur* —Koli Kalamhullu *Belgaum.*—Shumpigyanhullu *Vernaculars* — Fakri Fakria Kurad, Suka, Rirga Dinohi, Shikar

Habitat —An annual grass common in Bombay Presidency, Northern India

Composition —

	Before Flowering	In Flower	After Flowering
Moisture	74 00	72 00	69 07
Ether extract	1 70	2.24	2 00
Albuminoids	0 75	0 86	1 06
Carbohydrates	15 05	14 39	13 66
Woody fibre	5 40	6 59	10 22
Ash	3 10	3 92	3 99

Uses —This grass is a good green fodder highly valued in Rajputana and in the U S A Best fed after flowering Much relished by cattle, and is found at any stage to increase the flow of milk Makes good hay For silage this grass should be used only after flowering

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1817 PASPALUM SCROBICULATUM, Linn.
(N O —Gramineae)

Sans —Kodrava *Mah* —Kodra *Can* —Harik *Guj* —Kokra Harik *Hind* —Kodo *Ben* —Kodoa-dhan *Tam* —Kiraruga

Habitat —This is a native of India, mostly grown in Gujarat, Konkan and Deccan

Composition —Two cleaned samples of *Kodra*—one from the Poona and one from the Ratnagiri district gave the following results when analysed —*Poona* —Moisture 8 01, Ether Extract 3 36 Albuminoids 5 8 (containing Nitrogen 0 93), soluble carbohydrates 70 06 Woody fibre 8 43, and ash 4 29 (sand 2 95) p c *Ratnagiri* —9 07, 3 34, 5 46, (containing Nitrogen 0 87), 70 77 9 37 and 1 99 (sand 1 09) p c respectively

Uses —The new grain is said to be powerfully narcotic and is eaten only by the poor who prepare it in various ways and from use are able to use it with impunity The straw is hurtful to cattle Used in scorpion sting

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1818 PASSIFLORA FOETIDA, Linn
(N O —Passifloraceae),

(*Sans* —Mukkopeera *Tam* —Mupparisavalli) Fruit is emetic Contains HCN Decoction is used in biliousness and asthma Leaves are applied on the head in giddiness and headache

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1819 PATHOS OFFICINALIS—See Scindapsus officinalis

1820 PAULINIA ASIATICA—See Toddalia aculeata

1821 PAVETTA INDICA, Linn Ixora pavetta,
(N O —Rubiaceae)

(*Sans* —Papata, Pappana, Tiryakphala *Hind* —Papari Kankra *Ben* —Kukurchura *Guj* —Papat *Mah* —Papadi

Tel.—Paputta vayru, Papiti *Tam*—Pavuttayvayr, Pavattai *Can*—Pavatay, Sulay-bottu-gida, Patta Is a common shrub found throughout India It contains a green resin, starch, (no tannin), an organic acid and a bitter glucoside resembling salicin but more soluble It is bitter, tonic and aperient Root is purgative It is frequently prescribed in visceral obstructions Root, together with dried ginger, is rubbed and given in *conjee* water in cases of ascites, renal dropsy etc A *decoction of the* root (1 in 10) is also given in doses of ½ to 1 ounce in torpor of the liver, and with ginger added, in dropsy Mr H M Birdwood calls it "Matheran Coffee" It is given in powder to children, the dose is about a drachm or more Local *fomentation with the leaves* is useful in relieving the pain in case of piles

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1822 PAVONIA ODORATA, Willd

(N O —Malvaceae)

Is a herb (*Sans*—Bala, Harivera *Ben*—Bala, Bola *Hind*—Bala, Sugandha-bala *Fr*—Pavonia Odorante *Bom*—Kalo-valo, Bala *Mah*—Kala vala, Randodaki *Tel*—Muttu-ralagamu, Erra-kuti *Tam*—Peramuttal Avibattam, Pera mutiver, Paramutty *Can*—Bala rakkasi gida) is wild in the U P, the Western Peninsula, Sind and Burma Herb and roots have a musk like aromatic odour *Roots* are regarded in Ayurveda as cooling demulcent, carminative, diaphoretic, diuretic and they enter into the composition of a well known fever drink called *Sadanga Paniya* Fragrant root is also used as astringent and tonic in combination with other medicines of the sort in inflammation haemorrhage from internal organs, etc Preparation of the root with Aegle marmelos is useful in dysentery *Leaves* and *young shoots* are used as an emollient

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1823. PAVONIA PROCUMBENS, Soiss.

Is a small shrub growing in clayey soil

1824 PAVONIA ZEYLANICA, Cov.

(*Tam*—Chittamutti) is a species found in Ceylon and the Andaman Islands It is used like P odorata

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1825 PEDALIUM MUREX, Linn

(N O—Pedaliaceae)

Is a succulent herb (*Sans*—Gaja daunstree *Hind*—Faribduti, Bara-gokhru *Duk*, *Guj* & *Ben*—Bara-gokhru *Uriya*—Gokshura *Bom* & *Mah*—Moto or Mothe-gokhru Karonta, Ubha-gokhru *Guj*—Kadva-gokhru, Mothan gokhru *Tel.*—Pedda-palleru *Tam.*—Peru-nerunji *Mal*—Kattu nerinjal *Can.*—Aneneggilu, Anne-galugida Doddaneggilu *Kon*—Selusaran *Punj*—Gikru-kalan *Malay*—Kathenerinnil *Arab*—Khasake-Kabir *Pers*—Khasake Kalan *Sinh*—Atineranchi *Burm*—Sulegi) common the Deccan and sea-coasts of Southern India ond Ceylon The four angled spiny fruit contains a mucilaginous alkaloid, fat, resin gum and ash 5 p c "Yellow *flowers* when bruised emit a musk-like odour"—(Chopra) "The *fruit* as well as the *leaves* and *stems* render water or milk mucilaginous when agitated with or steeped in them, and for which property they have been advocated for gonorrhoea An *infusion* or *extract* thus prepared, or of the fresh leaves and stem in cold water, is demulcent and diuretic",—(Chopra), useful in disorders of the urinary system such as the ardor urinae, gonorrhoea, dy-suria, spermatorrhoea, incontinence of urine etc It relieves strangury and dissolves calculi It is generally sweetened with sugar In gonorrhoea half a pint of the above infusion taken every morning for 10 days successively relieves the scalding (burning sensation during micturition in gonorrhoea), and in many cases, nocturnal emissions and impotency, a cure is effected As it increases the flow of urine it proves useful in some forms of dropsy *Powdered leaves* are given in two drachm doses with milk and sugar in gonorrhoea and gonorr-hoeal rheumatism *Decoction of the dried fruit* is used when fresh plant is not obtainable In spermatorrhoea, nocturnal emissions, impotence and incontinence of urine about a pint of

amounts, being 2/3rd the quantity of the total alkaloids, Harmalol occurs only in traces"[1] Harmaline when treated with hydrochloric acid yields Harmatol in orange-red crystals sparingly soluble in water Harmine occurs as colourless crystals Fuming hydrochloric acid converts it into Harmal, when oxidized by means of chromic acid it yields harminic acid in silky tufts—(for further process, refer to Chopra's book) Physiological effects of these three alkaloids is to reduce the temperature Harmaline belongs to the group of protoplasmic poisons of which the best known alkaloid is quinine and the actions of harmaline and quinamine are practically the same

Action —Alterative, antiperiodic, stimulant, emmenagogue and abortifacient "In the indigenous medicine 'harmal' is described as alterative, purifying, aphrodisiac and lactagogue The three alkaloids are anthelmintic "[2] "Harmaline was found to have some anthelmintic action probably by paralysing the musculature of the parasites Both Harmine and Harmaline paralysed the skeletal and cardiac muscles of frogs In warm-blooded animals harmine and harmaline caused convulsions, salivation, interference with respiration and depression of temperature Harmaline stimulated the respiration in small doses but in large doses paralysed it The minimal toxic dose of harmaline for rabbits was determined to be 0 23 gm per kilogram of body weight According to Gunn (1910, 1912), harmaline resembles quinine in having more toxic effects on mammals than on frogs Harmine produces a fall in blood pressure in mammals due to weakening of the contractions of the heart Death occurs as a result of cardiac failure in these cases"[3] *Seeds* are regarded as narcotic, anodyne, emetic and emmenagogue, act in large doses like ergot, savine and rue, also stimulant of the sexual organs and alterative

Uses —"*Powdered seeds* were used by Greeks, as anthelmintics against tapeworms and in the treatment of intermittent and remittent fevers" 'The drug is useful in chronic malaria, but is not so effective in acute cases'—(Gunn & Marshall) 'Harmaline was tried in acute and chronic types of malaria, but did not produce any appreciable effect either on the mala-

rial parasites or on the clinical symptoms of the disease'—(Chopra) [4] *Powder* in doses of ½ to 2 drachms is a good anodyne in asthma, colic and jaundice, and the watery *infusion* is similarly useful It may be used also in the form of *tincture* (1 in 8) in doses of ½ to 1 drachm, or in *decoction* of the seeds (1 in 20) in doses of ½ to 1 ounce It is given in amenorrhoea It increases the flow of milk and menses. It is used for a gargle in laryngitis It is used for procuring abortion Wounds are fumigated by burning the seeds, the smoke being believed to have antiseptic properties, the *fumigation* is applied in palsy and lumbago also

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1830. PENNISETUM CENCHROIDES, Rich

(N O —Gramineae)

Sind—Jiral, Anjan, Dhaman, *Guj*—Vaghnoru Habitat—A perennial grass growing in Bombay Presidency

Uses —This grass in the flowering stage is liked by cattle

Composition —

	Before Flowering	In Flower	After Flowering
Moisture	83.93	76.85	63 40
Ether extract	0.90	1.39	1.33
Albuminoids	1.93	2.81	1.70
Carbohydrates	6.66	8 94	16.59
Woody fibre	3 72	4 46	10.92
Ash	2.89	5.55	6 06

and is an excellent fodder In Multan district this is considered to be the best grass to give to milch cows, to increase flow of milk. Lisboa says that in some parts of India the grass is credited with having the property of imparting a slightly intoxicating effect to the milk of the buffaloes grazing on it. The grass gives fine soft hay of fair quality. For silage the grass should be cut either in the flowering stage or seed stage as the stage before flowering contains too much water

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1831. PENNINSETUM GLAUCUM—See P. typhoideum

(1), (2) (3) & (4) Chopra's "LD of I" pp. 347-348.

1831a. PENNISETUM PURPUREM

(N O —Gramineæ).

Eng —Elephant grass or Napier's fodder Habitat —Though a native of South Central Africa, has recently been cultivated in Poona Agricultural College Farm, as a special fodder crop

Composition —When freshly cut, the grass gave the following figures on analysis —Water 61 81, Ether Extract oil, etc ,) 0 29, Proteids (nitrogen x 6 25) 2 92, Digestible carbohydrates 17 29, Woody fibre 14 77 and Ash 2 92 per cent respectively total 100 per cent

Uses —This grass is highly relished by cattle

1832 PENNISETUM TYPHOIDEUM, (Rich)

or P gly glaucum (R Br)

Mah —Bajri, Sajgure *Guj* —Bajri, Sejji *Sind* —Bajhri *Hind* —Bajra *Eng* —Bullrush millet or cat-tail millet, spiked millet, Pearl millet, *Tam* —Cumbu *Tel* —Sajja *Ben* —Bajra

Habitat —Largely cultivated in India, especially in Bombay Presidency

Composition —Bajri grown at the Agricultural College Farm, Poona and cut green, gave on a basis of 60 per cent of water, the following composition on analysis (1912-13) —

Water 60 0, Ether Extract (oils etc o 4, Albuminoids (cont'g nitrogen 0 21) (i e nitrogen x 6¼) 1 3, Digestible Carbohydrates 20 0, Woody fibre 15 8, Ash 2 5 per cent respectively (Total 100 per cent)

'Bajri" contains about 10% of proteids and 70% of starch

Action —On account of the millet's heating qualities, this is largely consumed by the tribes of Northern India during the cold weather

Varieties —Dehi of Gujarat or Nadiad Bajri, Bhavnagri, Jabalpuri Malbundro or Madhodri, Awned Bajri, Deccan Bajri, Poona Bajri, Sind Thari, African Bajri

1836 PENTAPETES PHOENICEA, Linn

(N O —Sterculiaceae),

(*Sans*—Raktaka Bandhuka, Bandhujiva, Arkavallabha, Pushpa rakta *Punj*—Gul duparia *Ben*—Kat-lata, Bandhuli, Doopahuria *Hind*—Gejulia, Dopahariya *Santal*—Barebaha *Mah & Kon*—Tambdi duparı, Banduja. *Tam.*—Nagapu *Tel*—Makina chettu *Can*—Banduray) is found throughout the hotter parts of India It has four varieties distinguished by the colour of flowers—white, black, red and yellow *Fruit* is officinal on account of its mucilaginous properties *Root* is employed as a medicine by the Santhals—Campbell) Action—Root is said to be 'astringent, light, antibilious, anti phlegmonous and alleviative of wind and fever —(N N Sen Gupta) also demulcent The drug is used in snake-bite also

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1837 PENTATROPIS MICROPHYLLA, W & A

(N O —Asclepiadaceae)

Tam—Parparam Action—Cooling and alterative

1838 PENTATROPIS SPIRALIS, Dene

(*Punj*—Bonvert Bom—Singarota) Action—Astringent

1839 PEPEROMIA PELLUCIDA, H.B & K

(N O —Piperaceae)

Is an annual herb found in Madras and many other towns as a garden weed

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1840 PERICAMPHYLUS INCANUS, Miers

(N O —Menispermaceae)

(*Ben & Hind*—Barakkanta) is found in Sikkim Assam, Khassia Hills, Chittagong etc Constituents—There is a narcotic alkaloid *Roots* are held in great repute by snake charmers as an antidote to snake poison According to Dr Cunningham s research a *fluid extract of the roots* injected into

the bitten part renders the poison inert by precipitating it when brought into direct relation with it prior to the absorption of the venom into the system generally

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1841 **PERIPLOCA SYLVESTRIA**—See Gymnema sylvestre

1842 **PERIPLOCA APHYLLA** Dene

(N O —Asclepiadaceae)

Punj—Barri *Bom*—Buraye Milky juice is used in swellings

PERIPLOCA INDICA—See—Hemidesmus indicus

1843 **PERIS TROPHE BICALYCULATA**, Nees

(N O—Acanthaceae).

Hind—Atrilal *Ben*—Nasabhaga *Bom*—Pitpapra *Tam*—Chebira The drug is an antidote to snake poison

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1844 **PEROVSKIA ABROTANOIDES**, Karel

(*N O —Labiatae*).

Pushtu—Shanshohai or Shanshobai Action—Cooling

1845 **PEROVSKIA ATRIPLICIFOLIA**, Benth

Essential oil from flower-heads consists of d a pinene, B-pinene and camphene (definitely confirmed), 15-18% of alcohols and esters consisting mainly of d-borneol and bornyl acetate, and the rest of sesquiterpenes consisting mainly of a-caryophyllene and aromadendrene—(Madyar Gopal Rao, Dehra Dun)—(Bombay Govt Agri Dept Bulletin)

1846 **PETEROSPERMUM ASERIFOLIUM**

(N O—Helictereae)

Is a variety of Cassia fistula (*Sans*—Karnikara *Hind*—Chhota sondal *Mah*—Laghu-yahava *Ger*—Ahornblattriger Flugelsamen *Bom*—Olat Kambal *Duk*—Kanier *Tel*—Kerugakkay, Goguchettu) found in Western India *Flowers*

are used in gastralgia & leucorrhoea *Bruised leaves* as a hemostotis, it is said to be beneficial 'in diseases of uterus, also administered in leprosy, oedema, boils and blood diseases"—(Chakravarthy)

1847 PETEROSPERMUM HEYNEANUM

(Ger —Heyne's Flugelsamen) is a species found in Bengal and East Indies, where *flowers* are used in leucorrhoea, and powdered *leaves* are smoked like tobacco in nervous headache —(Chakravarthy)

1848 PETEROSPERMUM SUBERIFOLIUM,

Is a species found in Southern India, resembling P heyneanum, and *flowers* of which are used in migraine

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1849 PETROSELINUM HORTENSE, Hoffm or P sativum (Hoffm)
(N O —Umbelliferae)
1850 PETROSELINUM SATIVUM,
(N O —Umbelliferoe)

Is o culinary herb (*Eng* —Parsley) Habitat —Cultivated in gardens in India *Constituents* —Parsley contains sugar, starch, essential oil, and a glucoside substance called "opiin" or "oppin", and an olkaloid Apiol is the essential oil of parsley It is a green liquid distilled from the root The name is also opplied to a crystalline stearoptene contoined in parsley oil distilled from the seed *Action* —Diuretic *Uses* —*Apiol* has been much recommended in amenorrhoea ond dysmenorrhoea in doses of 2 to 3 minims odministered on sugar or in capsules *Pills* made of quinine sulohate 2 grains, Apiol 1/3rd grain, and Permanganate of Potash ¼ grain, are useful in cases of arrested menstruation accompanied by feverish symptoms, ond in Malaria *Leaves* applied to the breasts several times o day will suppress secretion of milk effectively —(Tukina) Bruised they are used also as a poultice for sore eyes In minute doses oniol is of service as curative of epileptic fits *Root* has a beneficial effect on the kidneys The herb is used for its oromatic flavour in soups ond other dishes

1851 PEUCEDANUM GRANDE, Clarke

(N O —Umbelliferae)

(*Eng*—*Wild carrot Hind & Pers*—Daku, Duku *Bom*—Baphalle, Baphali) found on the hills of Western India *Fruit* contains an essential oil of a light yellow colour *Infusion* (1 in 10) of fruit is used in doses of ½ to 1 ounce like that of fennel seeds, as carminative, diuretic and stimulant in flatulency, gastric and intestinal disorders etc Fruit is used in curries as a flavouring agent

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1852 PEUCEDANUM GRAVEOLENS, Benth

(N O —Umbelliferae)

Sans—*Misroya, Sthatapushpi Eng*—*Dill, Dill Seed. Fr.*—Persil des marais *Ger*—Garter dill *Hind.*—Sowa *Punj*—Soya, Sowa *Arab*—Shubit *Duk*—Soyi *Bom*—Balantshep *Mah*—Shepu *Kash*—Soi, biol *Ben*—Soolpha *Guj*—Surva-nu bi *Tel*—Shatakupivittulu *Tam*—Shatakupiviraı, Satakuppi *Mal*—Chatukuppa *Can*—Sabbasige *Singh*—Sadakuppa *Burm*—Samin *Malay*—Adaspudus

Habitat—Cultivated in Indian gardens for culinary purposes "As the fruit of the Indian variety is much more narrowly winged than the variety met with in Europe, it is considered by some to belong to a distinct species Anethum sowa, (Roxb) or Peudecanum sowa (Kurz) ' '

Constituents—Dried ripe dill fruit contains a volatile oil 3 to 4 p c , and fixed oil The *volatile* essential oil is composed of anethine, phellandrene and d limonene, and apiol (which is rather peculiar in its properties) termed 'dill apiol' (Ciamician & Silber 1896), also carvol (carvone) and another hydrocarbon "The essential oils derived from Indian and *foreign* (English and German) fruits also differ in composition The Indian oil shows a higher specific gravity, lower rotation, and a constituent with a high boiling point The total yield of the oil from the East Indian fruit is practically the same as that obtained from other sources Thus, the English fruit yields about 4 0 p c , German 3 8 p c and the East Indian about 3 19 p c of oil In contra-distinction to other dill oils,

the Indian oil is obtained in two different fractions—a fraction with a low specific gravity known as the "light oil" and another with a high specific gravity known as the "heavy oil"[2] 'Genuine dill oil contains no constituent boiling at so high a temperature as 285° and no portion of the distillate sinks in water On account of these differences, oil obtained from the dill fruit growing in India has not been accepted officially Recently, some experiments were conducted with samples of Baroda oil from which the dill apiol has been removed by distillation This oil (without dill apiol) is said to correspond very closely to the official standards and might probably be used as a substitute "[3]

Action —Casminative, stomachic, aromatic, stimulant, diuretic, resolvent, emmenagogue and galactagogue Dill water prepared from the fruit (seed) is regarded as stimulant carminative and aromatic, and like anise, popularly supposed to promote the secretion of milk

Uses —*Essential oil* contained in the fruit and the distilled water of the fruit are much used in flatulence, hiccup, colic and abdominal pain in children and in adults It may be combined with Sodium bicarbonate or a little of lime water in hiccup and flatulence It is used to diminish the griping of purgatives, and the tormina of dysentery An *infusion* of the bruised fruits or seeds (1 in 30) is also very useful Of this when strained and cold, the dose for an infant is 2 drachms or more sweetened with a little sugar It is also given as a drink to women after confinement With *methi* the seeds are fried in butter and used to check diarrhoea *Seeds* bruised and boiled in water and mixed with the roots are applied externally in rheumatic and other swellings of the joints *Seeds* are used as a worm remedy, also for colic, especially in horses Among Indian drugs, dill seed keeps a prominent place as a stomachic medicine, especially in the ailments of children and women *Leaves* are moistened with a little oil and warmed and applied to boils and abscesses to hasten suppuration *Leaves* are also cooked as a pot herb, along with other vegetables The strong flavour of the leaves is disliked by many

1853 PHALAENOPSIS AMABILIS, Lindl

(N. O.—Orchidaceae)

There is an alkaloid

(1)—Chopras I D of I" p 218 (2) & (3) p 219

1854 PHALARIS CANARIENSIS, Linn

(N O.—Gramineae)

Fruits contain oxalic acid

1855 PHALARIS ZIZANOIDES or Agrostis verticulata, or Anatherum muricatum—

See Andropogon muricatus

1856 PHANERA MACROSTACHYA or Bauhinia macrostachya or B scandens

(*Ben.*—Guruchi) is a glabrous climbing plant allied to Lasiobema anguina or B anguina found in Sylhet and Assam Juice is used in skin lesions (Chakravarthy)

1857. PHANERA VARIEGATA

(*Eng.*—Mountain Ebony *Fr.*—Bauhinie Panachee)—See Bauhinia variegata

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1858 PHARBITIS NIL, Choisy

N O.—Convolvulaceae)

See Ipomoea hederaceae

This drug is a substitute for jalap

1859. PHARMACUM LITOREUM

See Clerodendron inerme

1860 PHASEOLUS ACONITIFOLIUS, Jacq

(N. O.—Papilionaceae)

Sans.—Makushtaka *Eng.*—Tapery Beans Kidney Beans *Hind., Mah. & Guj.*—Math *Ben.*—Banmuga *Tel.*—Banmudga *Tam.*—Tulka-payre *Can.*—Madali *Mal.*—Mathi

Sind —Mohar, Muhri) Grown much in the Deccan, Karnatak and north Gujarat, is one of the varieties of Leguminous pulses Constituents —An analysis of some samples of "*Math*" or "*Matki*' grown in the Bombay Presidency showed the following results —Moisture 4 60 to 8 15, Ether Extract 0 65 to 1 75 Albominoids 22 56 to 25 50 (con'g Nitrogen 3 32 to 4 08), Soluble carbohydrates 58 49 to 63 20, woody fibre 4 30 to 5 45, and ash 3 70 to 6 30 (cont'g Sand 0 15 to 2 35) p c respectively —(Bombay Govt Agri Dept Bulletin) Action —Root is narcotic Seeds are aphrodisiac and digestive It is a valuable food well utilised by the body, said to be "alleviative of *Vata Pitta and Kafa*", and its infusion is said to be "antibilious, digestive, aphrodisiac and cardiac" Uses —"It is used as a split pulse in different ways.—It is ground to flour and used with the flour of other grains in making cakes It is also eaten parched or boiled whole with condiments The grain is given to horses and cattle and is said to be a fattening diet as are also the leaves and stalks"—(Bombay Govt Agri Dept Bulletin)

1861 PHASEOLUS ADENANTHUS

(*Sans* —Aranyamudga *Tam* —Kattupayru) Decoction is used in bowl complaints and stricture

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1862 PHASEOLUS GLABRA

Is cultivated throughout the Bombay Presidency, for the sake of the young pods, or at a later stage, the large seeds

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1863 PHASEOLUS LUNATUS, Linn

(*Eng* —Lima pole bean Double bean, Rangoon bean *Ben* —Cima) is a species growing in the tropics, especially in Southern India s Hill Stations, with flat pods used as food and as vegetables in Bengal, when pods are young Seeds contain HCN glucoside *This species sometimes exhibits markedly poisonous properties*

1864 PHASEOLUS MULTIFLORUS

(*Eng*—Scarlet Runner Bean, *Hind*—Sem) is a perennial climbing plant, a native of South America but grown in India Immature pods are used as a vegetable—(Bombay Govt Agri Dept Buletin)

1865 PHASEOLUS MUNGO, Linn

(N O—Papilionaceae)

Sans—Mada Mudga *Eng*—Green Gram *Fr*—Haricot mungo *Ger*—Rauhhaarige Bohne *Hind*, *Ben* & *Punj*—Moong Mung *Ben*—Moog *Sind*—Ma *Guj*—Mag *Bom. Mah* & *Kon*—Moog *Tel*—Pachhai pesulu, Pesalu *Tam*—Pachhai payaru, Payaru *Can*—Hesaru *Mal*—Cherupayar

Habitat—Extensively cultivated for its seed, in all parts of India especially in Southern India, to which it is a native It is also grown in Africa There is a yellow seeded variety also

Constituents—Church gives the following analysis of *mug* (with husk)—Water 10 8 Albuminoids 22.2, Starch 54 1, Oil 2 7, Fibre 5 8 and Ash 4 4 p c respectively

Action—Green gram is considered fattening

Uses— The green pods are eaten as a vegetable The ripe green coloured pulse is eaten, boiled whole or is split and used as *dal* It is parched, ground to flour, mixed with butter and made into spice balls It is also made into porridge'—(Bombay Govt Agri Dept Bulletin) It is given to relieve thirst in fevers when given in large quantities it is an aperient *Soup* made of it is a best article of diet, very nutritious and wholesome after recovery from acute illness, therefore very well suited to sick persons can be given as diet to patients of enlarged liver and spleen, in sub-acute cases, and in fistula in ano *when there is no fever* It is useful in relieving the heat and burning of the eyes, when applied in the form of *powder* *Powder* or *flour* is used for bath in lieu of soap, during Ayurvedic treatment *A poultice* of it is useful for checking secretion of milk and reducing distention of the

mammary glands The drug is also used in scorpion-sting 'The crushed *stalks* stems and *leaves* are much prized as fodder and are used to give a tempting flavour to trash that cattle might otherwise reject as uneatable"—(Bombay Govt Agri Dept Bulletin)

1866 PHASEOLUS NANUS

(*Eng*—Bushbean *Fr*—Haricot nain *Ger*—Fruhbohne) is a species found in Bengal, cultivated for its edible pods and the small white seeds

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1867. PHASEOLUS PAUCIFLORUS

Is a thick creeper (*Sans*—Mudgavalli, Aranyamudgu *Guj*—Mugavaine *Mah*—Mugavel, Ranmug) found in South Konkan and Goa For uses etc, see P mungo

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1868 PHASEOLUS RADIATUS—See P. roxburghii

(*Tam*—Ulundu *Tel*—Uddulu *Ben*—Kalamoog)

1869 PHASEOLUS ROXBURGHII, or

P radiatus, Linn (N O—Papilionaceae)

San—Masha *Eng*—Black Gram *Fr*—Haricot Radie *Ger*—Strahlfruchtige Bohne *Hind*—Urid *Kon & Mah*—Udid *Ben*—Mashkalai, Mash-kulay *Guj*—Arad *Tel*—Minumu *Tam*—Ulundu *Mal*—Ulunnu *Can*—Uddu

Habitat—Cultivated everywhere in India

Constituents—It contains albuminoids 22 7, starch 55 8, oil 2 2 fibre 4 8, and ash (containing phosphoric acid) 4 4 p c It has larger proportion of starch, oil and ash than the yellow seeded form of P mungo "An analysis of some samples grown in the Bombay Presidency shows Moisture 6 05 to 11 95, Ether Extract 1 25 to 2 60, Albuminoids 19 81 to 27 50 (cont'g Nitrogen 3 17 to 4 40), Soluble carbohydrates 50 05 to 60 69, woody fibre 4 25 to 5 90 and ash 3 45 to 5 35 (cont'g Sand 0 15 to 1 00 p c respectively"—(Bombay Govt Agri Bulletin)

Action —It is the most demulcent cooling as well as nutritious of all pulses, also aphrodisiac, lactagogue and nervine tonic, the only drawback is that it causes wind (flatus), to prevent it a little asafoetida just enough to give it a flavour should be added, while it is cooked Roots are narcotic

Uses —'*Green pods* of *udid* are occasionally used as a vegetable The *black ripe pulse* is split into *dal* and is a most fattening food It is parched and ground to make different sorts of spice balls and is the chief element in the thin wafer biscuits called *papads* (Marathi) "—(Bombay Govt Agri Dpt Bulletin) A clear *decoction* of it is useful to a dyspeptic It is made into cakes which are nutritious diet to the weak and infirm Pure black gram cake baked on steam *(idli)* with ghee, is a right diet for diabetics Medicinally it is employed both internally and externally, internally in gastric catarrh, dysentery, diarrhoea, cystitis, paralysis, piles, rheumatism and affections of the liver and of the nervous system, in the form of decoction and externally as poultice, also in gastritis, dysentery and rheumatism Chakradatta recommends following decoction —Take the pulse of Phaseolus roxburghii roots of Castor oil plant, Mucuna pruriens and Sida cordifolia half a tola each and prepare a decoction in the usual way This decoction is given with the addition of rock salt and asafoetida As a nervine tonic a confection made of its *dal* is very useful *Mashadi Modaka* is prepared thus —Take of P roxburghii without husk), Wheat, Indian barley (without husk), *Chol'ha* Long Pepper, each 1, and sugar 5 parts Make a *ladu* by adding ghee in quantity equal to half the weight of the whole Finally bake the whole over a gentle fire Used in seminal debility, leucorrhoea etc *Dala* is also useful as a preventive of attacks of cold in winter. Parched it is eaten in uterine complaints Ordinary cooked *dal* acts as lactagogue Oils containing this pulse as their basis are useful for external application in rheumatism, contracted knee, stiff shoulder etc For example, oil recommended for these complaints by Chakradatta and called *Sculpa Masha Taila* is made thus —Take the pulse of Ruxurghii 8 seers, water 64 seers, boil down to 16 seers and strain Boil the strained decoction with 4 seers of

sesamum oil and one seer of rock-salt till the water is evaporated Root is a remedy for aching bones It is used as a *poultice* for abscesses and inflammations "*Stalks & leaves* are a good fodder (N.B —It may be mentioned here that the seed of *udid* (or *mash*) is the reputed origin of the weight known as '*masa*, 12 of which go to the tola and 960 to the seer in the Bombay Presidency"—(Bombay Govt Dept Agri Bulletin)

1870 PHASEOLUS TRILOBUS, Ait

(*Sans*—Vanamudga, Mudgaparni *Fr.* Haricot a trois lobes *Ger*—Dreilappige Bohne *Hin & Ben*—Mugani *Mah*—Jangli mung *Bom*—Mukuya *Tam*—Pani pyre, Naripppayaru) is a trilobed variety of P roxburghii common in Deccan and Bengal *Leaves* are sedative, cooling, antibilious and tonic They are applied in the form of *paste* to the eyes to improve the sight, and also in opbthalmia and in haemorrhoids In Bihar the plant is used as a febrifuge Fruit is used in scorpion-sting

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1871 PHASEOLUS VULGARIS, Linn

(*Eng*—Common French or Kidney Bean, French Haricot Bean *Fr*—Petitefeve *Ger*—Fasein *Hind*—Bakla, Sem, Vilaiyte sem *Punj*—Babri *Mah*—Shravan ghevda *Can* Pingalavaray *Tam*—Barigalu) This delicate annual, the native country of which is not known, is raised as a vegetable in the plains of Northern India The French bean thrives better at hill stations than in the plains, it is cultivated for its seeds

Uses—"The white beans are chiefly used as food and medicinally as emollient cataplasms"—(Chakravarthy)

Constituents—Fresh vegetable contains 95 00 p c. moisture, and the completely dried material contains Ether Extract 2 00 p c, albuminoids 23 75 p c (cont'g Nitrogen 3 80 p c), soluble carbohydrates 40 25 p c., woody fibre 22 00 p c. and ash 12 00 p c (cont'g sand nil) respectively"—(Bombay Government Agri Dept Bulletin) Beans have a high dietic value due to the large amount of proteid they contain and which

exists in combination with sulphur and phosphorus Pods and green seeds are eaten boiled as a vegetable and ripe seeds and grain are usd as a pulse

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1872 PHECTRANTHUS AROMATICUS—See Coleus aromaticus

1873 PHELIPAEA CALOTROPIDES, Walp

(N O —Orobanchaceae)

Used in sores

1874 PHLOGACANTHUS THYRSIFLORUS, Nees

(N O —Acanthaceae)

Ben—Bakah tita *Punj*—Lal bahuk Used like Adhatoda vasika

1875 PHLOMIS CEPHALOTES—See Leucus cephalotes

1876 PHLOMIS NEPETAFOLIA—See Leonutes Nepetafolia

1877 PHLOMIS ZEYLANICA—See Leucus zeylanica

1878 PHOENIX DACTYLIFERA, Linn
P excelsa

(N O —Palmae)

Sans—Pinda kharjura *Eng*—Edible Date *Fr*—Palmier dattier *Ger*—Dattelpalm *Hind*—Pindakhejur *Bom.*—Khurma, Chhuhara *Mah*—Khajur, Kharik *Guj*—Khara kia *Ben*—Gharar khejur *Punj-& Kon*—Khajur *Pers*—Khurmal khushk *Arab*—Khurmal yab-is *Tel*—Karjura kaya *Tam*—Perichchangayi *Can*—Gijjira hannu Khajjuri Uttatti

Habitat.—This is a tall palm, a native of North Africa, Egypt, Syria and Arabia, but now cultivated in Sind and the

Punjab, chiefly in the Multan District 'In Sind, dates are sold in the market in three shapes, viz *'Khasoon', 'Lun-Khari* an and *Vanpakyun*, representing three distinct stages of its development —(Bom Govt Agri Dept Bulletin)

Varieties —Grown in Rohri of Sind Province—(1) Lohar, (2) Assuli (3) Thottiar (4) Idulshahi, the first two are very superior —(Bom Govt Agri Dept Bulletin)

Constituents —Dates contain valuable salts and iron in an assimilable form tannin extractive matter, mucilage, insoluble matter and lime

Analysis of Sind varieties raised from seedlings —

	Black	Red	Black tops	Yellow dates	Long tapering	Muskat	Crown
Seed	7 70	13.33	22.22	20 45	11 36	7 50	7.85
Edible matter	82 30	86 67	77 78	79.55	88 64	92.50	92.15
On edible matter —							
Moisture	25 00	60 00	35 00	55 00	40 00	22.10	23.14
Woody fibre	2.34	1.90	2 22	2.50	2.14	1.82	1.88
Reducing sugars	59 16	19 38	46 27	18.23	44 07	76 00	69.80
Non-reducing sugars	4.20	nil	nil	nil	1 04	nil	nil
Total sugars	63 36	19.38	46.27	16.23	45 11	76 00	69.80

(Bom Govt Agri Dept Bulletin)

Action —Dates are very nutritious, expectoran, aphrodisiac, tonic demulcent, lavative, diuretic and highly saccharine

Uses —Water in which fresh dates are *steeped for a while* is a drink given to relieve alcoholic intoxication Milk in which clean and fresh dates are infused is a very nourishing and restorative drink to children as well as adults, especially during convalescence from fevers and small pox Date fruits quickly supply heat and repair waste Some doctors advise dates for consumptives, they promote expectoration, soothe the chest and also prevent constipation In Egypt, Persia, Arabia and Africa dates form the principal food of the people, and like use of the various domestic animals dogs, horses and

camels They are the main source of sustenance for caravans on their long journeys through the desert "The soft portion adjoining the growing bud is removed from such date palms as are cut down as useless or from the superfluous suckers and sold in Sind bazar as 'Tarmagzi', which is eaten raw by school children"—(Bombay Govt Agri Dept Bulletin) The sweet pulpy fruit is also useful in dysentery *Dried fruit (Khaarak)* pounded and mixed with almonds quince seeds, pistachia nuts, spices and sugar forms a *poushtik* much in vogue It is used as an ingredient in various aphrodisiac and tonic confections Dates are useful in asthma also *Seeds roasted* and ground into powder make a beverage like coffee, it is called "date-coffee' *Paste* made of the ground seeds is said to be applied for opacity of the cornea and to the head to relieve headaches and hemicrania The smoke produced from the burning of the date seeds in powder, is a useful *fumigatory* for piles A fine paste made of the seed of the date fruit and the root of Achyranthus aspera, applied to betel leaves like lime and made into small packets together with clove, cardamom, catechu and betelnut powder is a popular antiperiodic remedy among Vaidyas for the prevention of attacks of Ague which is preceded by severe shivering Three such betel packets are recommended to be administered at intervals of one hour before the expected attack of the periodic fever A gum *Kukm chil* or the juice obtained from the stem and named *laghi (Khar-*jurni-daru) is used as a demulcent, diuretic and refrigerant in genito-urinary affections The spirit "*Kharjurinidaru*" is obtained by distillation of the fruits

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1879 PHOENIX FARINIFERA, Roxb

(*Eng*—Small Date *Hind*—Palawat *Tel*—Eechakoyya *Tam*—Eechamaram, Kasangu *Can*—Sanna-eechalumara *Mal*—Chitteenth) is a palm met with mostly in Malabar and Travancore These are generally the same as those of the above variety Edible dates are prescribed in cough, asthma also in fever and gonorrhoea *Gum* is esteemed as a useful remedy in diarrhoea and diseases of the genito-urinary system Seeds, like those of the above species, are made into a paste by

trituration with water and applied over the eye-lids in ophthalmia, keratitis and for opacity of the cornea *Fruit* is used in foetid breath Fresh juice is cooling and laxative

1880 PHOENIX PELUDOSA

(*Sans*—Hintala *Ben*, *Hind*-& *Duk*—Hental) is a "remarkable tree" found in Bengal and some parts of Southern India It is acidulous, sweet, cooling, antiphlogistic, phlegmatic, alleviative of thirst, and beneficial in wind and bile —(N N Sen Gupta)

1881 PHONENIX SYLVESTRIS, Roxb

(*Sans*—Kharijuri, Kharjura *Eng*—Wild Date or Toddy Palm Date Sugar Palm *Hind*—Khajuri, Thalma *Ben*—Khajur *Mah*—Shindi *Guj*—Kharik *Tel*—Indu, Ishanchedi Itha *Tam*—Paerichhu, Perraitcham, Ichan *Mal*—Katenth *Can*—Eechalamara) is indigenous to India and is widely cultivated for the sake of its sap Action—Tonic and restorative The dates are small and somewhat less sweet and a trifle astringent *Sweet sap* obtained by notches cut in the tree is manufactured into gur or jaggary by evaporating the sap this soft yellowish sugar is more nutritious and agreeable than cane sugar and a good substitute for maltine and its various preparations *Juice* or *sugary sap* by fermentation and distilling gives a kind of spirit which is used as an intoxicating drink for toddy (*tari*) Fresh juice called "*Shindi*' in Marathi, is a cooling beverage Central tender part of the palm is useful in gonorrhoea and gleet *Root* is used in toothache and is also good in nervous debility *Flowers* are highly scented and possess a sweet substance (nectar) *Fruits* are edible

1882. PHYLLANTHUS ACIDUS, Skeels,

(*Eng*.—Otaheite Goose-berry *Sans*—Lavani *Hind*—Nari, Harfarauri, Narphal. *Ben*—Noari *Mah*—Harpurrewdi Guj—Amla. *Can*—Kirnelli, *Tam*—Arunelli Fruit, which is extremely sour, is usually eaten cooked with sugar It is also preserved by pickling—(Bombay Govt Agri Dept Bulletin)

1883 PHYLLANTHUS EMBLICA, Linn—

See Emblica officinalis

1884 PHYLLANTHUS Distichus,

See P longifolius

Sans—Lavani *Hind*—Harfarauri *Ben*—Noaris *Tam*—Arunelli Fruit is astringent, root is purgative, seed is cathartic Leaves and roots are used as artidote to viper venom Contains 'Saponin"

1885 PHYLLANTHUS MADERASPATENSIS, Linn

(*Hind*—Kanocha *Tam*—Nala userekee, Melanelli *Tel*—Nelausiri) This drug has mucilaginous properties

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1886 PHYLLANTHUS MULTIFLORUS, Willd

(*Fr*—Phyllanthe multi flore *Ger*—Vielblutige Blattblume *Hind*—Kamuni, Panjooli *Tel*—Nallapurugudu *Tam*—Neerpoola *Mal*—Katu niruri *Can*—Sannakage-soppu *Kon*—Kakesappu *Ben*—Panjooli) is met with generally on the East and West Coasts of India *Root* and the *root bark* are alterative and are given in the form of *decoction* in 4-ounce doses twice daily or as *pill* made with other alternatives and aromatics The drug is employed in the treatment of vesical affections *Leaves* are employed as diuretic and cooling especially their *juice*, it is made into a pill with camphor and cubebs which is allowed to dissolve in the mouth in cases of bleeding from the gums

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1887 PHYLLANTHUS NIRURI, Linn

P. urinaria

Is a perennial herb of the same genus as above (*Sans*—Bahupatra, Bhumyaamlaki, Bhuta-dhatri *Hind*—Jaramla, Niruri *Fr*—Phyllanthe niruri, Herbe due chagrin *Ger*—Weisse Blatt-blume *Ben*—Bhuiamla. *Bom. & Mah*—Bhuiavala *Tel*—Nela usirika. *Tam*—Kizhkay nelli *Can*—Kirunelli. *Mal*—Kilanelli *Kon*—Bhuyavali) common in Central

and Southern India, extending to Ceylon The plant is considered de-obstruent, diuretic, astringent and cooling A *decoction of the plant* is administered in jaundice, or half ounce rubbed up in a cup of milk is given morning and evening, or the root or the dried small bitter *leaves in powder*, are used in teaspoonful doses Whole plant is employed also in some forms of dropsy, gonorrhoea menorrhagia and other genito-urinary affections of a similar type Young *tender shoots* are administered in the form of *infusion* for chronic dysentery Juice of the stem mixed with oil is used in ophthalmia Whole *plant* pounded with its root and combined with rice water is used as *poultice* for ulcers, sores and swellings A poultice of the leaves mixed with salt cures itch and other skin affections A bitter neutral substance named 'Phyllanthin' has been isolated from the plant As a stomachic bitter it is useful in dyspepsia The plant is said to be useful in diabetes

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1888 PHYLLANTHUS OBLONGIFOLIUS

(Ger —Ovalblattrige Blattblume)

Is a species "the root-bark of which is a stomachic tonic Root-bark, stem and branches together with leaves and fruits are used in baths for gout"—(Chakravarthy).

1889 PHYLLANTHUS PEDUNCULATUS

(*Ger* —Langstielige Blattblume) is a Malabar shrub used as a pectoral *Leaves* and *root* are applied in inflammatory swellings —(Chakravarthy)

1890 PHYLLANTHUS RESTUSUS

Is a large tree, the root of which is astringent and is used together with the fruit and leaves as a pectoral —(Chakravarthy)

1891 PHYLLANTHUS RETICULATUS

(*Sans* —Krishna Kamboji *Kon* —Panpoye *Ben* —Pankushi *Guz* —Dotwan *Hind* —Panjoli *Mal* —Katunirure

1896 PHYSALIS ALKEKENJI, Linn

(N O —Solanaceae)

(*Eng*—Strawberry tomato *Sans.*—Rajaputrika *Ind*, *Baz*—Kaknaj) is a native of Europe and United States Fruits are available in Indian city-bazaars *Straw berries* contain malic and citric acids, a volatile matter, sugar, mucilage, pectin, woody fibre and water They are said to act on the liver and are diuretic, alterative, anthelmintic and laxative, useful in strangury, stone and in kidney and urinary diseases, and in skin diseases also, even diabetics are allowed to eat strawberries, for the sugar they contain is levulose and not hurtful They are invaluable in feverish conditions Hoffman recommends them in haemoptysis and some authors have thought them useful in dropsy Aldo Castellani and K C Browning (*B M Journal*, May 6, 1922) tried the use of an *ethereal extract* of strawberries in 5-grain doses given 3 or 4 times a day in cases of typical sprue in conjunction with the usual milk diet and alkaline treatment and found that it hastened the improvement of the general condition of the patients *Leaves* are useful in gout *Root* is astringent and used in diarrhoea Dose of the berries is 5 to 6, of the succus 1 to 2 ounces of the tincture 1 to 2 drachms A tea made of the *leaves* checks dysentery Linnaeus is said to have cured himself of gout by the use of this fruit Strawberries are a remedy also for anaemia and rheumatism as they contain salicylic salts They are found to be rich in alkaline and mineral salts in lime a bitter substance, an alkaloid, and in phosphates They contain 0 05 per cent of iron mingled with manganese and therefore easily assimilable so as to highly enrich the blood

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1897 PHYSALIS FLEXUOSA Linn

1898 PHYSALIS INDICA

(*Eng*—Winter Cherry *Can*—Bondula gida *Mal*—Ottampuli) *Fruit* is sometimes used in nephritis dysuria ascites etc *Juice of the leaves* is administered in cases of colic due to worms in children

1899 PHYSALIS MINIMA, Linn,

Is a variety of P indica (*Sans*—Tankari Eng—Cape gooseberry *Can*—Bandula *Hind*—Tulatipati *Mah*—Tanmori *Tel*—Kupante, Budamakaya *Tam*—Siruthakkali *Ben*—Bantiparıya, Bantepari *Punj*—Kaknaj) is found in many parts of India It is alterative, diuretic, tonic and aperient, useful in dropsy, urinary diseases and gout Fruit infuses vigour in worn out system and cures premature decay A compound medicated oil containing P minima, Aplotaxis auriculata, *Hing Hirdan*, Long pepper, black salt, *Saindhava*, Rock salt, *Javakhara*, ginger, butter or ghee, is used as an application to the enlargement of the spleen The drug is also used in snake poison and scorpion sting

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1900 PHYSALIS PERUVIANA, Linn

See P minima (*Eng*—Cape Gooseberry *Hind*—Tiparı *Mah*—Teparee) is a perennial plant grown in gardens in Bombay Presidency An admirable jam is prepared from the fruits Juice of leaves is given in worms and bowel complaints (Chopra's "I D of I" p 515, and Bom Govt. Agri Dept Bullettin)

1901 PHYSOCHLAINA PRAEALTA Hook

(N O —Solanaceae)

Punj—Nandru Action—Poisonous Leaves are applied to boils

1902 PHYTOLACCA ACINOSA, Roxb

(N O —Phytolaccaceae)

Hind—Matazor Action—Narcotic Constituents—A bitter toxic substance phytolacca toxin

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1903 PICRASMA EXCELSA—See Quassia excelsa

1904 PICRASMA JAVANICA, Blume

Is a species of Simaroubaceae, of which the *bark* is exceedingly bitter, useful as a febrifuge instead of quinine Bark contains a bitter principle allied to quassin and contains no tannin

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1905 PICRASMA NEPALENSIS, Benn

This was examined at the Calcutta School of Tropical Medicine, but was found to be inactive "—(Chopra's "I.D of I" p 220)

1906 PICRASMA QUASSIOIDES, Benn

(N O —Simaroubaceae)

Sans—Charangi *Hind*—Bharangi *Punj*—Puthorin, Dirgo Khashbar *Bom*—Bhurungi *Nepal*—Shama-baringi

Habitat—A plant found in sub-tropical Himalayas, Mao, on the border line of Manipur and Naga Hills (Assam), Nepal, Kashmir, Garhwal and Bhutan

Constituents—Wood is found to contain a bitter crystallisable principle *quassin*, which is almost identical with the *picrasmin* of the official P excelsa, also a resin like substance, a non crystallisable, bitter, resinous body and a pungent slightly bitter and acrid alkaloid 'Comparative analysis of P quassioides and P excelsa, is as follows —

	P quassioides	P excelsa
Aqueous extract	8 36 p c	5 04 p c
Alcoholic extract	5 78 „	3 25 „
Bitter principles	0 31 „	0 48 „

White needle-shaped crystals were obtained mixed with other extractives and the residue was extremely bitter The quantity of crystals which appeared in the case of P excelsa was somewhat in excess of those derived from P quassioides Besides these, the latter contains a bitter alkaloid to the extent of about 0 05 p c and another fluorescing bitter substance soluble in chloroform amounting to 0 15 p c These act as adjuvants to quassin and enhance the action of the drug

Action.—*Bark, wood* and *root* are quite as bitter as the quassia (Picraena or Picrasma excelsa of the British Pharmacopoeia), for which it would prove an excellent substitute.

Uses.—"*Bark* and *leaves* are used in the Punjab as a febrifuge and as an insecticide".—(Chopra). *Leaves* are applied to itch.

1907. PICRORRHIZA KURROOA, Benth.

(N.O:—Scrophulariaceae)

Sans.—Katuka; Katurohini. *Indian dialects:*—Katuki. *Hind.-& Ben.*—Katki; Kuru. *Punj.*—Kali kutki. *Bom.*—Balkadu; Kali-kutki. *Tam.*—Katukarogani; Kadugu-rohini. *Arab.-& Pers.*—Kharbaqe-hindi; *Arab.*—Khanekhaswael.

Habitat.—Common on the North-Western Himalayas from Kashmir to Sikkim.

Parts Used.—Dried rhizome.

Constituents.—Root contains a glucoside called "Picrorrhizin", a fairly large percentage of soluble bitter substance with an acid reaction. The drug also contains other substances such as glucose, wax, cathartic acid etc. "A systematic chemical investigation of the roots, on extraction with different solvents, yielded following results:—

Petroleum ether extract	..	1.49	p.c.
Sulphuric do	..	3 45	„
Absolute alcoholic extract	..	32.42	„
Aqueous extract	..	8.46	„

On further examination of different extracts, it was found that—(a) Petroleum ether extract contains a trace of an alkaloid and a waxy substance melting at 39°C. (b) Sulphuric ether extract contains a glucoside, resins etc. (c) Aqueous extract contains sugar, large quantities of bitter substance etc. The percentage of the bitter substance in the drug was found to be 26.6 per cent. A glucoside was obtained as a cream coloured amorphous powder extremely bitter and hygroscopic having a specific rotation of—100° (in aqueous solution). It is freely soluble in water, acetone, alcohol and acetic ether, insoluble in chloroform, benzene, ether, etc."[1]

Action —In small doses, it is a bitter stamachic and laxative, and in large doses, a cathartic It is reputed as an antiperiodic and cholagogue

Action & Uses in Ayurveda & Siddha —Katu rasam, slightly tiktam, katu vipakam, seetha veeryam, kapha pitta haram, ruksham, lagu, dipanam, bedhanam hrithyam, in swasam, jwaram, pramehan, kasam, krimi, kushtam Laxative —(Therapeutic Notes)

Action & Uses in Unani —Hot 1°, Dry 2°, anti-balgham, epilepsy, paralysis, removes kidney, emmenagogue, emetic, abortifacient, antidote for dog-bite Externally used in skin-diseases and improves eye-sight —(Therapeutic Notes)

Preparations —Tincture, extract or powder

Uses —Two drachms of *powdered root* given with sugar and warm water acts as a mild purgative Ten to twenty grains of the powder with aromatics or drugs such as pepper, asafoetida, *triphala* and salts is useful in constipation due to scanty intestinal secretions In bilious fever Chakradatta recommends a *compound decoction of Katuki* root, liquorice, raisins, nim bark, ½ tola each and water 32 tolas boiled down to its quarter, and in dyspepsia with severe pains the same recommends a compound powder of *Katuki*, Acorus calamus, Chebulic myrobalans and plumbago root in equal parts, given in doses of one drachm with cow's urine The drug is useful in 10 to 20 grain doses as a tonic and in 40 to 50 grains as an antiperiodic For worms in children it is given in combination with aromatics This drug must be carefully distinguished from other drugs with the same Indian dialectic name, e g, from *Kala kutki* (Black Hellebore) Recently it has been tried and found beneficial in several cases of ill defined fever, such as low fever with constipation, symptomatic fever of elephantiasis and fever of malarial origin which had resisted other home remedies The drug is used in scorpion-sting also

N B —"P kurrooa is very commonly used either as an adulterant of or as a substitute for G kurroo Great confusion exists with regard to the identity of these drugs as the

name katki is employed in the vernacular to mean both of them P. kurroo is considered in the indigenous medicine to be a valuable bitter tonic almost as efficacious as gentian, and as the pharmacological activity of gentian depends on the bitter principle contained in it, P kurroo if properly standardised might be used on a more extensive scale in cases where bitters are indicated"[2]

1908 PIMPINELLA ANISUM, Linn

See—Illicium verum

(N O—Umbelliferae)

Sans—Shatapushpa, Madhurimisi, Karavee, Shatava, Shetpushpa *Eng*—Anise, Sweet fennel, Aniseed *Fr*—Anis *Ger*—Anis-Biberrell *Hin*—Saonf, Saunf, Sonf *C P*—Tiri *Arab*—Anisun *Ben*—Muhuri, Mithi-jira *Bom.*—Ervados, Sonf *Tel*—Kuppi, Sompu *Tam*—Shombu *Can*—Sapu *Pers*—Badian

Habitat—This annual is a native of Egypt, but is cultivated in Persia, U.P, Punjab, Orissa and various other parts of the world

Constituents—Fruit yields an essential oil (distilled in Russia in large quantities), which is known as the oil of anise-seed (oleum anisi), and consists of anethole or anise camphor 80 p c, anise aldehyde and methyl chavicol. "The anise herbs cultivated in India yield the same constituents on distillation as the other varieties and are in no way inferior Illicium verum (the star anise) which grows more plentifully than the true anise (Pimpinella anisum) and the essential oil obtained from the former being available at a much cheaper price, is more popular in use The two oils are practically identical except that the true anise oil has a more delicate 'odour and flavour than the star aniseed oil' The content of anethole which is supposed to be the chief constituent is practically the same Both these oils have been made

(1) & (2)—Chopra's "I.D of I" pp. 179-180

official and, therefore, may be used freely in medicine."—(Chopra's "I.D. of I" pp. 222 and 223).

Action.—*Fruit* or *seed* is stimulant, carminative, diuretic, slightly expectorant, and the fruit and essential oil are much valued as aromatic, stomachic and carminative. Fruit allays griping of purgative medicines. Oil is stimulant expectorant like all volatile oils.

Uses.—Locally, oil is applied to the head in headache and to the abdomen in flatulence and intestinal colic. *Anise water* or *'Arak Badian'* is also similarly used by Hakims and is an anti-spasmodic. It is also much appreciated for its aroma in toilet soaps and dentifrices. *Seed* is chewed with betel-nut, employed in confectionery and for distillation, and as a condiment. It is useful in bowel complaints as well as in bronchial catarrh, especially among children after the acute stage has passed away. Half a drachm of the seed with one drachm each of sugar and chebulic myrobalan in powder is a good laxative, and aniseed and caraway taken in equal quantities and parched form a nice digestive taken in teaspoonful doses after meals. Dose of the *powdered seeds* is from 10 to 30 grs., of the *infusion* or *distilled water* (1 in 80) is 1 to 2 ounces, of the *essential oil* 4 to 20 drops on sugar. *Root* is used in fever. *Leaves* are used for garnishing and for flavouring purposes. *Seed-pods* from which anise seed is made, form a reliable remedy for dyspepsia, to relieve flatulency, indigestion, colic in children, and to diminish the griping of purgatives.

1909. PIMPINELLA HEYNEANA, Wall.

(*Central Provinces*:—Tiri) *Root* is used in fever.

1910. PIMPINELLA SAXIFRAGA, Linn.

Contains an essential oil, a biter substance saponin.

1911. PINUS DEODARA, Roxb.—See Cedrus deodara.

1912. PINUS ECHINATA—short-leaf pine.

1913. PINUS EXCELSA

(the Kail or blue pine) occurs in the temperate Himalayas, U.P., and the Punjab.

1914. PINUS GERARDIANA, Wall.

(N.O:—Coniferae)

Eng.—Neozapine Edible pine. *Hind.*—Gunobar; Rhi; Rhee; Neoza. *Pers.*—Tukhm-i-sanobara. *Arab.*—Hubula Sanobara. *Punj.*—Mirri; Gogajal. *Guj. & Mah.*—Chilgoza; Galgoja.

Habitat.—This is met with in N. W. Himalayas and Afghanistan.

Constituents.—Pine nuts contain albuminoids, starch, oil and ash. Kernel contains about 50% of essential oil, which is non-volatile. Nearly 95% of the oil consists of glycerides of unsaturated fatty acids.—(S. D. Hardikar, Gwalior).

Action.—Seeds are anodyne, stimulant, nutritive, tonic and aphrodisiac like *badam, pista, charoli*, etc. and used in the form of confection; in doses of 1 to 2 drachms in chronic rheumatic affections, seminal debility, leucorrhoea and gleet.

1915. PINUS HETEROPHYLLA—(Slash pine).

1916. PINUS KHASYA, Royle.

(*Eng.*—Dingsa or Khasia Pine; *Khasia.*—Dingsa) occurs in the Khasia Hills, the Lushai Hills, the Chittagong hill tracts, in the Shan hills and in hills of Martaban in Burma. Constituents:—An essential Oil.

1917. PINUS LONGIFOLIA Roxb.

(N. O:—Coniferae)

Sans.—Sarala; (oleo-resin) Sarala drava; Srivasa; Kshira. *Eng.*—Long-leaved Pine; Chir Pine. *Fr.*—Pin a longues

feuilles *Hind*—Saral, Chirgond (oleo-resin), Chil, Chir *Guj* & *Duk*—Gandha biroza. *Pers*—(resin) Samaghe sanobara *Nepal*—Salsel-dhup *Tam*—Shirsal *Arab*—Aalokus. *Kash*—Chir

Habitat—Common on the slopes of the Himalayas, North Western Frontier Province from Afghanistan to Kashmir, the Punjab, U.P. to Bhutan, Assam and Upper & Lower Burma

Constituents—Its sapwood yields on incision an oleo-resin from which "turpentine is obtained by steam distillation, which contains about 20% volatile oil of turpentine called "pinene" with a small quantity of limonene, and about 80% of residue which is very largely used under the name of "calophony" or resin. The rectified oil, oleum terebinthinae rectificatum, is used very commonly in medicine. Foreign turpentine is largely used in perfumery and in the manufacture of artificial camphor."[1] "Indian turpentine available in the market is produced chiefly from *P. longifolia*, one of the most important trees of India."[2] "American and French turpentines are mostly composed of 'terpenes', chiefly the 'pinenes', but the Indian turpentine consists mainly of two other hydrocarbons 'carene' and 'longifolene'. The Indian turpentine, on account of absence (or insufficiency?) of pinene, cannot be employed in the camphor industry. It also undergoes easy oxidation and leaves a high percentage of resin on evaporation and hence is considered to be inferior to the other products. But Indian turpentine can be used in many industries in place of the American or the French, though the composition varies to a certain extent."[3]

Action—*Wood* is aromatic, antiseptic, deodorant, stimulant diaphoretic and refrigerant, rubefacient and carminative.

Uses—*Wood* is useful to cool the burning sensation of the body, in cough, in fainting and as an application in ulcerations. It is generally used with other medicines. It is the source of the resin usually employed as a stimulating appli-

(1) Chopra's "I. D. of I." pp. 223. (2) pp. 225. (3) pp. 226.

cation for ulcers and abscesses, and as a basis for *plasters* and an ingredient in ointments plaster is used for painful chest and enlarged liver Oleo-resin is used for fumigations Internally, *essential oil* is used with success as a stimulant diuretic in gleet long standing gonorrhoea and in similar affections In cases of gleet and urethral stricture Zad-Garib recommends a powder made of the equal parts of Curcuma longa *Sut Biroza, Dumbekh vain*, Boswella thurifera and goose berry in doses of 1 *masha* (about 15 grains) three times a day Purified oleo-resin might be given in doses of 1 to 2 drachms in emulsion The *tar* is employed chronic bronchitis and phthisis and is a favourite application in skin diseases The drug is also used in snake-bite and scorpian sting

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1918 PINUS MARITIMA
1919 PINUS MERKUSSI, Jungh.

(Burm—Tinyri) used as other pines

1920 PINUS PALUSTRIS (the long leaf pine)
1921 PINUS PINEA OR P SYLVESTRIS

(Eng—Fir tree, Pine *Urdu*—Sanaubar) is a cone-bearing tree, the *decoction of its wood and bark* is used medicinally and said to be useful for nose-bleeding and ruptures of the lungs A *fumigation* is said to open and issue menses and to aid delivery *Oil* distilled from fresh leaves is a mild stimulant and useful in chronic laryngitis in the form of inhalation —A mixture of 5 minims of the oil 24 grains of Magnesii Carbonas Levis and a drachm of distilled water, put into a mixture of cold and boiling water half pint each for the inhalation

Pinus Serotina
" Sylvestris
" toeda (Lobally pine)

are other species.

1922 PINUS WEBBIANA WALL

See Abies webbiana

1923 PIPER ALBUM

(*Eng.*—White pepper) consists of fruits of P nigrum divested of the dark outer skin, which is removed by soaking in water, berries being subsequently dried and bleached in the sun, pungent and acid principles contained chiefly in the pericarp are thereby removed Uses are the same as those of P nigrum White pepper forms an ingredient of a pill reputed to be a specific for checking the constant attacks of filarial fever accompanying elephantoid swellings It is known as *Hubbai Sahfa* It is prepared thus —Saturate white pepper and Aconitum ferox in milk for three days, changing the milk every day with fresh milk Grind the drugs in ginger juice and make pills Dose is 1 pill thrice a day —Indigenous Drugs Report, Madras)

1924 PIPER AURANTIACUM WALL

(N O —Piperaceae)

(*Sans* —Renuka. *Hind* —Sambhalukabeej *Ben* —Renuk *Bom.*—Kaunti *Tam* —Yetti) is a kind of creeper yielding a fragrant fruit resembling that of P nigrum "It is bitter, acrid, refrigerant, light, excitive of digestive fire, of memory, bilious, abortive and beneficial in phlegm, wind, thirst, burning, psoriasis and poison"—(N N Sen Gupta)

1925 PIPER BETLE, Linn

or Chavica Betle, Miq

(N O —Piperaceae)

Sans —Tambula Nagavalli *Eng* —Betel leaf Pepper *Fr* —Betel *Ger* —Betelpfeffer *Hind.*—Pan Tamboli *Ben*, *Punj*, & *Guj* —Pan *Mah* —Vidyachi Pan *Pers* —Tambol,

Barge-tanbol *Tel*—Naga-valli, Tamalapaku *Tam.*—Vettilai. *Mal*—Vettila *Can*—Villayadelay. *Kon.*—Pan, Phodipan. *Sinh.*—Balat *Burm.*—Kun-yoe *Malay*—Seereh *Arab.*—Tanbol.

Habitat—This twining plant is cultivated very extensively in the warm and moist parts of South India and Ceylon for its leaves

Varieties—"*Kali*" or black, "*Pandhari*" or white; "*Velchi*" or small, are the chief three varieties of the Bombay Presidency[1]

Parts Used—Leaves and fruit.

Constituents—Leaves yield on distillation "a light yellow aromatic essential volatile oil of sharp burning taste, aromatic odour"- containing betel phenol (chavi betol) "Its specific gravity varies from 0 958 to 1 057 The oils from the Java or the Manila leaves were found to be rich in phenols (nearly 55 per cent')[3] It can be isolated, and on being treated with caustic potash it yields chavicol, a phenol which is a powerful antiseptic, twice as strong as eugenol, to this is due the characteristic odour of the leaves and oil Leaves contain also an alkaloid "arakene" with properties allied to cocaine "Kemp (1890) tested the essential oil from some Bombay leaves and found it to be slightly laevo rotatory with a specific gravity of 0 9404 at 28° More recent work with leaves from other places (Manila, Java, Siam, etc) shows that the leaves contain starch sugars, tannin, diastases (0 8 to 1.8 per cent) and an essential oil (Betel oil) to the extent of even 4 2 per cent in some leaves'[4] Betel oil contains also terpene, and sesquiterpene According to Messrs H H Mann, Sahasrabuddhe and V G Patwardhan of Poona, younger leaves on the plant contain much more essential oil, much more diastase and much more sugars than those which are older On the other hand, tannin does not vary in this direction. Leaves both on the middle branches and on the middle part of the main vine contain the largest quantity of tannin As regards phenols, the higher the quality of the leaf, the higher their proportion in

the essential oil Essential oil, however, is not always the same It is the quantity and also the character of the essential oil which seems to determine the value of any leaf for chewing The best essential oil is that which contains as large a proportion of phenols as possible Those varieties of leaf which give an essential oil containing much terpene are very pungent and coarse

Action —According to Susruta' it is aromatic, stimulant, carminative, astringent aphrodisiac and antiseptic, juice of the leaves and the essential oil have aromatic and astringent properties, and "the essential oil of the leaves which is antiseptic gives rise to a sensation of warmth and well-being in the mouth and stomach It is also known to produce a primary stimulation of the central nervous system followed by a kind of inebriety in large doses The presence of a fairly large quantity of diastase in the betel leaves is likely to play an important part in starch digestion Persons not used to chewing of betel experience a disagreeable, acrid and burning taste and a feeling of constriction in the throat after a very short period of mastication Perception of taste is blunted Slight sores on the tongue and the throat also occur After the first effects of the excitation of the salivary glands and the irritation of the mucous membranes of the mouth have passed off, a pleasant odour remains in the mouth The betel chewer experiences a feeling of well-being His feeling of thirst and hunger is appeased and his sexual impulses are said to be augmented The assumption that it has a powerful narcotic effect is not correct —(Chopra) People chewing betel for the first time, however, seem to experience very characteristic cerebal effects Uneasiness, a stifling sensation especially faintness, slight excitation, outbreak of sweat and occasionally torpor are the symptoms likely to occur They are not of long duration and after habituation is established do not occur again Large quantities of saliva produced by chewing betel leaf act as digestive and probably the presence of diastase enhances this activity The gastric juice in these people takes a minor part in the digestion of food When deprived of betel leaf or other sialagogues they suffer from

severe indigestion"[5] Juice is a valuable stomachic and febrifuge in drachm-doses

Uses.—Fresh leaves are generally used for chewing, in the form of packets made with the addition of burnt lime, catechu or gambir, and pieces of areca (betel) nut in any state of maturity, and tobacco Those who can afford, add also cardamoms, nutmegs, cloves, camphor and other aromatics. They sweeten the breath, improve the voice and remove foetor from the mouth Also they increas the salivary secretion The ancient Hindu writers recommend betel leaves to be chewed early in the morning, after meals and at bed time In India the packet of betel-leaves is often used as a vehicle for taking cocaine by cocaine-eaters A *liquid extract* of the betel leaves may be used in doses of 10 to 30 minims, in catarrhal inflamamations of the throat, larynx and bronchi, also in cough, dyspnoea and indigestion so common in children It is also given internally in snake-bite *Essential* oil of the leaves is also similarly useful Dr Klienstruck of Zwatzen, near Jena, has also used it as an antiseptic in diphtheria as a gargle and by inhalation The dose is one drop in 100 grammes of water In India, juice of four leaves may be used similarly diluted *Leaf juice* mixed with fresh ginger is used as a pectoral Warm leaves smeared with oil form a valuable application to the chest, in cases of bronchitis difficulty of breathing and in coughs, especially those of infancy and childhood The same application has been recommended in congestion and other affections of the liver Instead of the leaves, a warm poultice consisting of 2 parts of the leaf-juice and 1 part of the hydrated slaked lime may be applied, it is a useful application also in sore-throat, laryngitis and bronchitis and over-enlarged glands Betel leaves warmed by the fire and placed in layers over the breast (the mammae) check the secretion of milk; thus employed they act also as resolvent to glandular swellings Tender and fresh leaves smeared with ghee or medicinal oil may be applied as dressing for blistered surfaces or inflamed areas of wounds, as a substitute for oiled silk or gutta-percha tissue, according as the wounds require *Samana* or *Sodhana* treatment. *Juice* of leaves is dropped into the ear

to relieve earache, dropped into the eye for painful eye-affections Internally, juice with honey or a liquid extract is useful in coughs, dyspnoea, deranged phlegm and indigestion, so common in children, leaf juice is given with milk in hysteria, and 'is much used as an adjunct to pills administered in diseases supposed to be caused by deranged phlegm."[6] Leaves administered in the form of *syrup* with spices in doses of an ounce three times a day are useful in general debility and is esteemed as an aphrodisiac In Orissa, slender *roots* with black-pepper are used to produce sterility in women (i e, to to prevent child-bearing), as they are said to produce paralysis and subsequent atrophy of the ovaries. *Root* is chewed by public singers to improve their voice Tender *stalk of the leaf* dipped in castor oil is introduced into the rectum of the child suffering from simple constipation and tympanites In cases of prolapsus ani, the patient is made to sit in a medicated bath made of *Babul-ki-phali*, betel leaves and white jaggery and a sufficiency of water—(Ilaj-ul-Gurba) "In the Konkan, *fruit* is employed with honey as a remedy for cough."[7]

1926 PIPER CHABA, Hunter,

P. officinarum—(see also Scindapsus officinalis or Pothos officinalis)

(N O.—Piperaceae)

Sans—Chavaka, Ushanah, Gajapippalee moola *Hind*—Chab Gajphal, Gaj pipal *Ben*—Chau, Chai *Bom & Mah* Kankala Chabchini *Tam. & Mal*—Chavyam *Can*—Chavya native plant of the Indian Archipelago (Java and Sumatra) Its fruit is the long pepper of European commerce and is imported into Calcutta via Singapore Action—*Fruit* is considered aromatic, stimulant and carminative

Action & Uses in Ayurveda & Siddha—Properties similar to Moda, pippali moolani In archas, ushna veeryam, katu

(1) Bombay Government Agricultural Dept Bulletin (2), (3) & (4)—Chopra's "I D of I" p 350 (5) pp 350/357 (6) & (7) p 349

rasam, pachanam, lagu, rooksham, pitta karam, root-bhidi, kapha vata haram, anaham, gulma hara.—(Therapeutic Notes).

Action & Uses in Unani.—Hot 1°, Dry 1°, snuff of this fruit is a specific for epilepsy, hysteria.

Uses.—*Fruit* is occasionally used in medicine for coughs, colds and throat affections, also in colic, tympanites and renal diseases.

1927. PIPER CUBEBA, Linn.—See Cubeba officinalis

1928. PIPER LONGUM, Linn.

Chavica roxburgii.

(N. O:—Piperaceae)

Sans.—Pippali; Trikana; Tikshnatandula; Maghadhi; vaidehikana; (root):—Pippili-moolam; Granthikam. *Eng.*—Dried catkins; Long-Papper. *Hind.*—Pimpli; Pipal; Pipli; (root) Pipli-mool. *Ben.*—Pipli; Pepul. *Guj.*—Pipara; Pipli; Pipal. *Mah.*—Mothi; Pimpli; Pipli. *Duk.*—Pipaliana. *Arab.*—Darfilfil; (root) Fil-fila-daraz; Fil-filae-moya. *Pers.*—Maghz-pipal; Pipli; Filfildray; Pipal. Tel.—Pippali-katte; Peppelu Pippallu (berries); Pipili; Modi (root). *Tam.*—Pipili; Tippali; (berries) Tippilli; (root) modi. *Mal.*—Tippli. *Can.*—Hippali; Yippali. *Kon.*—Hipli. *Sinh.*—Tippili. *Bom.*—Pipli. *Punj.*—Pipal; Darfilfil. *Malay.*—Lada; Mula-gu. *Burm.*—Peikchin. *Sind.*—Fil; Fildray. *Santal.*—Ralli. *Nepal.*—Pipla-mol.

Habitat.—This plant is indigenous to North-Eastern and Southern India and Ceylon, and cultivated in Eastern Bengal.

Parts Used.—Immature berries (i.e., dried unripe fruits or fruiting spikes) dried in the sun, and stems (roots).

Constituents.—Resin, volatile oil, starch, gum, fatty oil, inorganic matter and an alkaloid, *Piperine* 1 to 2 p.c.

Action.—Infusion is stimulant, carminative and alterative tonic more powerful than black pepper; also aphrodisiac, diu-

retic, vermifuge and emmenagogue. Externally, rebefacient. Root is stimulant "First fruits are said to be 'mathura-paka', guru, katu rasam, seetha veeryam, melt kapham"—(Therapeutic Notes)

Action & Uses in Ayurveda & Siddha.—Katu rasam, mathura vipakam, ushna veeryam, vatha kapha haram, lagu, snigdam, rasayanam, vrishyam, clears ulcers, stimulates agni, in swasam, kasam, gulmam, soolam, etc, (Berries) *Root*—as above, pittakaram, in udaram, krimi, anaham, pleeham, etc —(Therapeutic Notes)

Action & Uses in Unani—Hot 2°, Dry 2° *Berries*—in coldwet diseases, carminative, removes cold and obstruction from liver and spleen, checks nausea, emmenagogue, in bronchitis, gout, paralysis, epilepsy *Root*—Hot2°, Dry 2°, tonic to stomach, expectorant—(Therapeutic Notes)

Uses—Old long pepper is more efficacious in medicine than fresh article—(U C Dutt) *Powdered long pepper* administered with honey will relieve cough cold, asthma, hoarseness and hiccup For catarrh and hoarseness a mixture of long pepper, long pepper root, black pepper and ginger in equal parts is a useful combination A compound powder consisting of the same ingredients and in equal parts and called *Chuturushana Churnam* is useful in colic and flatulence besides coughs and coryza It was tested and found successful Dose is 10 to 60 grs twice a day—(Ind Drugs Report Madras) For diseases of the Respiratory system Vaidyas & Hakims use an extract prepared by boiling together 4 seers of Adhatoda leaves, 1 seer of white sugar, 16 tolas each of long pepper and ghee to the consistence of an extract and adding, when cool 1 seer of honey and mixing well Dose is 1 to 2 tolas A compound powder consisting of long pepper, ginger, black pepper, cinnamon and caraway in equal parts is a good expectorant and infusion made of 10 peppers with honey makes a good expectorant A powder called *Sringyadi Churna* consisting of *Karkatashringi*, *atis*, long pepper and *Nagarmotha*, made into a linctus with honey is useful especially for coughs among children In dry cough a *compound powder* made up of equal parts of long pepper, round zedoary,

ginger, root of Clerodendron siphonanthus, *Karkatashringi*, and raisins, is a very useful remedy given in doses of 30 grains with honey or treacle. In catarrhal fever with difficulty of breathing, a powder made of equal parts of *Karkatashringi*, bark of Myrica sapida and long pepper is given in one drachm doses with honey Unani physicians recommend a *pill* for asthma, it is made of filaments of Calotropis gigentea 2 parts, long pepper and rock-salt 1 part each. Pills are of the size of a *jangli bor*, dose is one such pill thrice daily For bronchitis a pill of the same size but made up of various other ingredients *viz*—black pepper, long pepper, borax, *karkatashringi*, cloves, alum, *bharangi*, *harka chilka*, dry ginger and *nimak Lahori*, all equal parts is recommended in Ilaj-ul-Gurba Two such pills to be taken at bed time As a valuable alterative tonic in paraplegia, asthma, chronic bronchitis, chronic cough, enlargements of the spleen and other abdominal viscera etc., it is used thus—An *infusion of three long peppers* is taken with honey or sugar on the first day, then for ten successive days the dose is increased by 3 peppers every day, so that on the 10th day the patient takes 30 in one dose Then the dose is gradually reduced by 3 daily so as to finally omit the medicine In rheumatism, roasted aments are beaten up with honey, they are also given powdered with black pepper and rock salt (in the proportion of 2, 3, & 1 part respectively) in half tola doses for colic A compound powder consisting of equal parts of long pepper, emblic and chebulic myrobalans and *Saindhava* salt, is a good digestive in doses of half to one drachm In catarrh and bronchitis, a compound powder known as, *cough powder* is generally in use, it is prepared thus—Take of black pepper, *ajowan*, long pepper, rock salt black salt or common salt and borax each 1 tola and Adhatoda leaves 40 tolas, put them all in a small pot, close the mouth carefully and put the pot over fire for a while till the ingredients within are completely burnt Use the burnt powder 2 to 6 grains mixed with honey A fermented decoction called *Pippali Arista*, used in asthma, cough, anorexia, piles, etc., is composed of long pepper, *lodhra*, black pepper, grapes and Cissam-pelos pareira Dose is ½ to 2 tolas twice a day With black pepper, long pepper is used in the preparation of irritat-

ing snuffs for using in coma and drowsiness e g , take of black pepper, long pepper, seeds of Moringa pterygosperma and ginger equal parts, powder the ingredients and rub them together with the juice of the root of Agati grandiflora This preparation is used as a snuff in coma and drowsiness For indigestion, chronic and painful dyspepsia, dilatation of the stomach and chronic gastritis, a compound powder known as *Bhaskara Lavanam* is much in use; it is made up of—long pepper, root of long pepper, coriander, nigella seeds, *induppu* varieties of rock salt, *Vitlavana*, Cinnamon leaves, *talispatri*, *nagkesari*, 2 palams each pepper, omum, dry ginger and *Rumex vasicarius*, 1 palam each, cinnamon and cardamom seeds 6½ palams each, pomegranate fruit-rind 4 palams, black salt 5 palams and *Kalluppu*, varieties of rock-salt 8 palams all well powdered, mixed and sifted through cloth, the dose ½ to 1½ drs , or even 1 tola, twice a day with the first bolus of rice and buttermilk Another powder generally taken along with this, in cases of dyspepsia, and containing 8 ingredients and called *Ashta Churnam* is made of equal quantities of black pepper, long pepper, dry ginger, omum, *Saindhava* salt, cumin seeds, nigella seeds and asafoetida Dose is 20 to 40 grains twice or thrice a day before meals—(Indigenous Drugs Report, Madras) A compound powder of 5 pungents named *Pancha Kola Churnam* and consisting of long pepper, long pepper root, dry ginger, stem of pepper plant and chitraka is a good appetiser useful in dyspepsia, cough, flatulence and enlarged spleen This was tried and found efficient. Dose is 10 to 30 grains twice a day—(Ind Drugs Report, Madras) As rubefacient oil containing it and ginger is applied in sciatica and paraplegia, as for instance the *Astakatvara Taila* recommended by Chakradatta, which consists of ginger and long pepper each 16 tolas, mustard oil 4 seers, butter milk 32 seers, curdled milk 4 seers, boiled together in the usual way This oil is rubbed externally in sciatica and paraplegia Both, fruit and root are much prescribed in palsy, gout, rheumatism, lumbago, etc Fruit is given to women after parturition to check haemorrhage and to ward off fever As vermifuge it is one of the best remedies for colic in children Fruit is used to some extent as a spice Root is much used

as a stimulant remedy and spice. The drug is also used in snake-bite and scorpion-sting.

1929. PIPER NIGRUM, Linn.

(N.O:—Piperaceae).

Sans.—Maricham; Maricha; Hapusha; Krishnam; Ooshnam; Valliyam. *Eng.*—Black-pepper; Decorticated pepper; Common pepper. *Fr.*—Poivre. *Ger.*—Schwartze pfeffer. *Hind.*—Gulmirch; Kalimirich. *Duk.* & *Ben.*—Kalimirich. *Punj.*—Gol-mirich; Golmorich; Habush. *Afgh.*—March. *Sind.*—Gulmirien. *Arab.*—Filfiluswud; Fil-fila-siah. *Pers.*—Pilpil. *Kash.*—Martz. *Ben.*—Vellajung. *Bom.* & *Mah.*—Kalamiri.. *Guj.*—Kalomirich. *Tel.*—Miriyalu; Miryala-tige. *Tam.*—Milagu. *Mal.*—Kuru-mulaka; Kuru-milagu. *Can.*—Volloy-menasu. *Kon.*—Miri. *Sinh.*—Kalu-miris. *Burm.*—Sa-yo-mal; Navukon. *Malay.*—Ladahitam.

Habitat.—This perennial climbing shrub is indigenous to Malabar and Travancore coasts, i.e., western coast of India.

Part Used.—Dried unripe fruit—black pepper.

Constituents.—A volatile alkaloid *Piperine* or *Pipirine* 5 to 9 p.c., *Piperidine* or *Piperidin* 5 p.c., a balsamic volatile essential oil 1 to 2 p.c., fat 7 p.c., masocarp contains *chavicin*, a balsamic volatile oil, starch, lignin, gum, fat 1 p.c., proteids 7 p.c., and ash containing organic matter 5 p.c. Chaviein is a soluble pungent concrete resin; it contains very little piperine and no volatile oil. Piperine crystallizes in flat, four-sided glassy prisms insoluble in water.

Action.—Black pepper is acrid, pungent, hot, carminative, also used as antiperiodic. Externally it is rubefacient and stimulant to the skin, and resolvent. On the mucous membrane of the urethra it acts like cubebs; Piperine is a mild antipyretic and antiperiodic.

Action & Uses in Ayurveda & Siddha.—Katu rasam, katu vipakam, ushna veeryam, vata kapha haram, pitta-haram, tikshnam, ruksham, lagu, dipanam, in swasam, soolam, krimi,

hicca, in eye diseases white pepper paste.—(Therapeutic Notes).

Action & Uses in Unani.—Hot 2°, Dry 2°. Removes balgham, carminative, aphrodisiac, used in colic. (Therapeutic Notes).

Uses.—Black-pepper (dried unripe fruits) as a culinary spice and condiment is well-known throughout the world. "Black-pepper growing in the Malabar Coast is the best, and as stimulant and carminative, is prescribed in cholera, dyspepsia, flatulence, diarrhoea and various gastric ailments." (Chopra). Medicinally also it is important being used in combination with long pepper and ginger under the name of *trikatu* or the three acrids. A compound salt reputed to be a specific for all forms of dyspepsia and known as *Kalyanakasharam* is composed of *trikatu*, the three myrobalans, *saindhava*, *vit* and black salts, marking nut, Baliospermum montanum, castor oil, cow's urine and ghee, all equal parts; grind them in cow's urine, place the paste in a new pot, cover with a *chatty* and close with cloth dipped in clay; then heat it. Dose is ½ to 1 drachm thrice a day in ghee or castor oil before meals. It is used in constipation, piles, colic, gastric troubles, ascites, anaemia, worms, asthma, etc. A preparation popular among Unani Physicians and called *Jawa rishai Thurush* used in indigestion and want of acidity in the stomach consists of pepper, ginger, embelia ribes, black salt, rock salt, sodium chloride 1 palam each, Mentha sativae 2 palams, powdered and mixed with the juice of 10 lemons. Dose is ¼ to ½ tola twice a day. Black pepper is useful in dyspepsia and flatulence, in doses of 10 to 15 grains of the powder and, in haemorrholds, in the form of confection. Following is an example—*Pranada Gudika*.—Take of black-pepper 32 tolas, ginger 24 tolas, long pepper 16 tolas, Piper chaba 8 tolas, leaves of Abies webbiana 8 tolas, flowers of Mesua ferrea 4 tolas, long pepper root 16 tolas, leaves called *tejapatra* and cinnamon 1 tola each, cardamoms and the root of Andropogon muricatus 2 tolas each, old treacle 240 tolas; rub them together. Dose is about 2 drs. This confection is given in haemorrhoids. When there is costiveness and a sense of heat, chebulic myro-

balan is substituted for the ginger in the above prescription Black pepper is occasionally employed as antiperiodic in obstinate fevers either alone or with other drugs preferably quinine With calumba and bismuth it is used in dyspepsia and with asafoetida and camphor in flatulency It is largely used in cholera pills It is a useful ingredient in tooth powder In ILAJ-UL-GURBA, a pill is recommended for syphilis, it is made by taking black pepper 2 drachms, root of Calotropis gigentia 3¾ drachms and jaggery sufficient quantity to make a pill mass and dividing it and making pills of the size of millets Dose is one such pill twice daily Eternally it is applied to boils in the form of a paste, also in cases of relaxed sorethroat, piles, alopecia and other skin diseases Strong friction with pepper, onions and salt will make the hair grow again upon the bald patches left by ringworm of the scalp—(Dymock) Finely powdered black pepper and sesame oil well mixed and heated over a mild fire form an efficient application over the affected parts in cases of paralysis

In cholera, following *pills* were held in high repute in Bengal—Take of black pepper, asafoetida and opium, each 20 grs, beat them well together and divide into 12 pills, of these one was the dose, repeated every hour or every two hours if required ON ACCOUNT OF THE OPIUM THEY CONTAIN THEY SHOULD NOT BE CONTINUED TOO LONG They are chiefly indicated at the very outset of the attack For diarrhoea pills containing the same ingredients but in different proportions *viz*, 2, 1, and ¼ gr respectively in each pill, are useful A *compound powder* consisting of pepper, ginger, long pepper, caraway and rock salt in equal parts, is a nice *digestive after food* in doses of ½ to 1 *drachm* For piles in aged and debilitated persons a *confection* made of black pepper powder 1 ounce, caraway powder 1½ ounce and honey 7½ ounces, is useful in doses of from one to two drachms twice or thrice daily It proves useful also in cases of old and weak people suffering from descent of the rectum For jaundice, ILAJ-UL-GURBA recommends a preparation made up of equal parts of black pepper and leaves of Cassia

occidentalis pounded well and mixed with some water, it is to be prepared and taken twice daily, same recommends a preparation for local application in night-blindness, it is prepared out of black pepper, long pepper and *Kamila*, all in equal parts An *infusion* of black pepper (1 in 80) forms a useful stimulant gargle in relaxed sore-throat and hoarseness dependent thereon and in toothache also *Piperine* is given with much benefit in ague, gonorrhoea, haemorrhoids etc., in doses of 3 to 10 grains In intermittent fever, black pepper in doses of about a drachm is recommended to be given with the juice of the leaves of Ocimum sanctum or Leucas linifolia — (Bhavaprakash) In obstinate intermittent fever and flatulent dyspepsia, 4 drachms of black pepper is boiled overnight in one seer of water until reduced to its quarter, then allowed to cool during the night and taken in the morning Another dose prepared afresh similarly is taken at night This treatment is continued for seven successive days The drug is also used in scorpion-sting

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1930 PIPER SYLVATICUM, Roxb

(*Ben* —Pahari pipul)

Action —Carminative Roots are antidote to snake-poison

1931 PIPER TRIOICUM

(*Eng* —Canarese Pepper, Abortive Pepper-corns *Hind & Mah* —Pokala miri *Tel* —Murial-tiga) is met with in South India It is pungent, stomachic, carminative and stimulant, used as paste and powder like *Kala-miri* They are used to relieve toothache and as an internal remedy for cholera

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1932 PISONIA ACULEATA, Linn

(N O —Nictaginaceae)

(*Ben.*—Baghachura *Uriya.*—Hati ankusa *Tam* —Kurundu *Tel* —Kunki pootri, Embudichettu) is found in South

Konkan and elsewhere in the Deccan Bark and leaves are used as a counter-irritant for swellings and rheumatic pains Juice mixed with pepper and other ingredients is given to children suffering from pulmonary complaints —(Watt)

1933 PISONIA ALBA, Spaneghe, P morindifolia of the same genus

(*Bom* —Chinaisalita) is cultivated in India Fresh leaves moistened with Eau de-Cologue are used as varalians to subdue inflammation of an elephantoid nature in legs and other parts —(S Arjun)

1934 PISTACIA INTEGERRIMA, Stewart

(N O —Anacardiaceae)

See Rhus succedania

1935 PISTACIA LENTISCUS, Linn

(N O —Anacardiaceae)

Eng —Mastiche Tree *Hind Mah & Guj* —(resin) Rumi Mastaki *Ben* —Rumi mastungi *Pers* —Kundari or Sakiz rumi)

Habitat —Growing in countries bordering on the Mediterranean its resin called the mastiche and obtained by incisions made in the bark, is imported into India from Asia Minor through Persia and Afghanistan

Constituents —*Leaves* contain a colouring matter and tannin *Fruit* contains bimalate of lime other constituents are —Resin essential oil (of fruit or leaves?)

Action —Stimulant, diuretic Mastiche galls are acid and astringent —(Chopra)

Uses —*Leaves in infusion* or *decoction* (1 in 10) in doses of ½ to 1 ounce, or as *liquid extract* in ½ to 1 drachm doses are used *Paste of leaves* is also employed in medicine *Mastiche* is used as a masticatory in tooth affections, and by dentists, for filling carious teeth. A solution of 2 parts of mastiche gum dissolved in 1 of either chloroform or ether and applied

on cotton wool, it remains as a firm plug after evaporation of the solvent It has the effect of preserving the teeth and sweetening the breath, when used as a tooth-paste It forms an ingredient in stimulating tinctures applied to the mouth and gums, such as the compound tincture of Ammoniacum Mastiche is frequently prescribed with aloes etc in *dinner pills*—e g Mastiche and Extract of Socotrine aloes each 1 grain and extract of Belladonna ½ grain Dose is one such pill with dinner each night It contains a trace of volatile oil, two resins—*Alpha* resin or mastichic acid 90 p c, and *Beta* resin or mastichine 10 p c, also an ethereal oil Mastichine is a mild stimulant and diuretic used in catarrhs of the respiratory and urinary passages It is given combined with salep in general or genital debility as an aphrodisiac Gum mastiche is applied as a *paste* to the chest in catarrh, bronchitis and to relieve local pain Its solution in alcohol is a useful styptic to arrest bleeding from leech bites *Galls* are used in emulsion in cough mixtures As an astringent they are kept in the mouth for sore mouth They are useful application for the cure of aphthae on the tongue Following are very useful simple remedies —(1) Take of Mastiche gum 4, Cubebs 5, mace 4, nutmeg seeds 3, cloves 3, benzion 2, *Mashka dana* 3, and honey 6 parts Mix and make a pill mass To be kept in the mouth Used to remove foetid odour (2) Take of Mastiche gum 4, black pepper 4, dry ginger 3, Aplotaxis auriculata 4, sulphate of copper 2, coriander 5, cumin seeds 5, chloride of sodium 4 and sulohate of iron 2 parts Mix, make a paste and apply, used in tooth ache (3) Take of Mastiche gum 2, Hygrophila spinosa 2, seeds of horse-radish 2, Corchorus humilis 5, sugar 10, common cucumber seeds and water melon seeds each 2 parts Mix and make a powder Dose is 10 grains, used in gonorrhoea (4) Take of Mastiche gum 1, cubebs 2, bamboo manna 1 and cardamoms 1 part. Mix and make a powder Dose is 5 to 25 grains, used in leucorrhoea A compound powder consisting of Mastiche and a number of other ingredients is prescribed in seminal weakness and impotence with constipation and sluggish liver

1936 PISTACIA TEREBINTHUS, Linn.

Var—P mutica, P cabulica, P khinjuk.

(N O —Anacardiaceae)

(*Eng*—Terebinth or Chian Turpentine Tree, (the resin) Bombay or East Indian Mastiche *Hind*—Mastaki, Kabuli Mustaki, Khinjak (Galls) *Pers & Hindi*—Guli-Pistah *Bom*—Buzaganja) are small trees of Baluchistan and Afghanistan The three varieties of this tree yield oleo-resins allied more or less to that of true mastiche and used in India as substitutes for it Constituents—Resin, essential oil—(Chopra) Action—Astringent, restorative—(Chopra) Uses etc, are similar to the above The oleo-resin of P terebinthus is recommended in the treatment of cancer, dose is 5 to 10 grains

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1937 PISTACIA VERA, Linn

(N O —Anacardiaceae)

(*Eng*—Pistachio-nut tree *Hind. Ben. & Bom*—Pista *Pers*—Pisteh (galls) *Bom. & Hind*—Guli Pistah, Buzaganja) is growing in the forests of Syria and Persia and cultivated in Afghanistan Fruit or nuts are brought to India by the Kabul traders along with asafoetida and other drugs Pistachio nuts are used as food being very wholesome and nourishing They are sweet and agreeable Action—Sedative and tonic—(Chopra) They enter into the composition of certain *confections*, and are used for flavouring ices and creams They yield an *oil* by expression which is used for making an electuary for diseases of the stomach. The *fruit* somewhat resembles that of the olive, ovoid and reddish externally, astringent and terebinthinate, with a kernel which yields a sweet, aromatic oil. Galls are formed on the leaves, which contain 45 p c. of tannin allied to gallo-tannic acid, besides gallic acid and 7 p.c. of a resin or oleo-resin to which their odour is due They are also imported into India. Nut is a tonic, useful in debility Oil expressed from it is used as a demulcent. Galls are useful as astringent.

1938. PISTIA STRATIOTES, Linn

(N.O:—Araceae).

Sans.—Kumbhika; Bariparni. *Eng.*—Tropical Duckweed. *Ger.*—Schwimmende Muschelblume. *Hind.*—Jal-kumbhi. *Ben.*—Takapan. *Bom.*—Prashni. *Tel.*—Antara tamara. *Tam.*—Agasa tamarai; Akasa-thamarai.

Habitat.—An aquatic, stemless plant growing on the surface of the water in tanks and stagnant pools in Bengal and is also found on the sea-shore.

Constituents.—Plant contains salts of potassium, sodium, magnesium and lime; also iron, aluminium and silicic acid. Ash of the plant consists chiefly of potassium chloride and sulphate.

Action.—Leaves are demulcent and refrigerant, and root emollient and laxative.—(Rheed & Ainslie). Leaves and root are expectorant; diuretic.

Uses.—*Plant* is reputed to be an effectual bug destroyer: it is placed close to the wall on the floor and its smell apparently has the effect of enticing the bug to it and then, of throwing the bug into a state of torpor from which nothing will arouse it. This method was successfully tried in Tanjore Jail which had been infested with bugs.—(Capt. W.A. Swanston). Leaves and root are used in dysuria. *Leaves* mixed with rice and cocoanut milk are given in dysentery, and with rose water and sugar in cough and asthma. *Ash* of the plant known as pana salt, has some repute as an application for ringworm.

1939. PISUM ARVENSE

(N.O: Papilionaceae).

(*Sans.* & *Ben.*—Kalaya. *Eng.*—Field Pea. *Fr.*—Pois de champs. *Mah.*—Vatana. *Hind.*—Desi Mattar. *Guj.*—Kala Watana; Karain. *Can.*—Batagadle) is a plant indigenous to Western Asia, now extensively cultivated in India as a food supply. "Green pods of *vatana* are being regularly picked for consumption from the time when they first reach their full

India that this plant furnishes very valuable fodder and is one which grows very well indeed in mixture with other crops, and particularly with oats. The fodder is said 'to exert a very favourable influence on the physical quality of milk' in dairy cattle".—(Bombay Govt. Agri: Dept. Bulletin).

1941. PITHECELLOBIUM BIGEMINUM, Benth.

(N.O:—Mimosaceae).

See Mimosa lucida.

1942. PITHECELLOBIUM DULCE, Benth.

(*Tam.*—Karkapilli; Korukapili; Kattuppilli. *Tel.*—Seema-chinta; Sima-chinduga).

1943. PITHECELLOBIUM FASCICULATUM, Benth.

1944. PITHECELLLOBIUM LOBATUM, Benth.

There is an alkaloid in this.

1945. PITHECELLOBIUM SAMAN

Is a deciduous tree introduced in India from America, and is grown in North Kanara (Bombay Presidency). Ripe pods have nutritive qualities and are greedily eaten by cattle. Green and tender leaves and the succulent stems are also eaten by cattle.—(Bombay Govt. Agri: Dept. Bulletin).

1946. PITTOSPORUM FLORIBUNDUM, W. & A.

or P. ceylonicum or Celastrus verticillata.

(N.O:—Pittosporaceae).

Nepal.—Tibilti. *Lepcha.*—Bongzam. *Bom.*—Vchkali; Yekdi. *Mah.*—Vikhari.

Habitat.—A small tree found in sub-tropical Himalayas from Sikkim to Garhwal, Western Peninsula, Konkan to the Nilgiris.

Constituents —A bitter glucoside *Pittosporin,* essential oil, and an aromatic oleo-resin

Action —*Bark* is bitter, aromatic, narcotic, and expectorant

Uses —*Bark* is used in doses of 5 to 10 grains, and as a febrifuge, and in doses of 50 grains it is a specific for snake poisoning In the form of *decoction* (1 in 10) also it may be used *Oil* is alterative, tonic and a local stimulant and has a specific effect on certain skin diseases It has been recommended for trial as a local application in rheumatism, leprosy, sprains and bruises, sciatica, chest affections and phthisis, ophthalmia and various forms of skin diseases Internally it may be prescribed in doses of 15 minims to 2 drachms, in cases of leprosy and other cutaneous diseases, secondary sphilis and chronic rheumatism *It must, however, be employed with caution, as in certain cases it is said to act as a gastro-intestinal irritant,* producing *vomiting and purging* —(Watt)

1947 PLADERA DECUSSATA

See Canscora decussata.

1948 PLANTAGO AMPLEXICAULIS, Cav

(N O —Plantaginaceae)

(*Punj* —Gajpipali, Isafghol, Spighwall, *Gwalior.*—Gajapipal) is found in the Punjab plains from Stulej westwards, Malwa and Sind Parts used —Seeds, which are astringent and demulcent, useful in intermittent fever and as an application to the eyes in ophthalmia, also as an antidote for snake-poison, highly valuable in pulmonary affections —(Ainslie) Used in dysentery, also Uses similar to thet of P ovata.

1949 PLANTAGO ASIATICA

See Plantago major

1950 PLANTAGO BRACHYPHYLLA or BRACHYPHYLLA?

Edgew (*Pushtu*—Parharpangi), applied to wounds

1951 PLANTAGO CILIATA, Desf.

1952 PLANTAGO ISPAGULA; P. ovata, Forsk

(Chopra deals this drug under P. ovata).

(N O—Plantaginaceae).

Sans—Snigdhajeera *Eng*—Ispaghula or Spogel Seeds *Hind*—Isapghul, Isabghul, Ispaghul, Issufgul *Ben*—Isabgul *Pers*—Ispaghol, Isparzah, Thikam-daridah *Arab*—Bazre-quatuna, Bazre-katima *Duk Punj & Mah.*—Isapghol *Guj*—Uthamujeerun *Kash*—Is-mogul *Tel*—Isapagalavittulu *Tam.*—Ishappukolvirai *Can*—Issabagolu

Habitat—This Persian herb is found also in North-West India, the Punjab and Sind, cultivated to a small extent in Bengal, Mysore and Coromandel coast "The genus Plantago comprises about 50 species, of which ten are natives of India"[1]

Parts Used—Seeds

Constituents—Mucilage, fixed fatty oil and albuminous matter, in large quantities The presence of a body of the nature of a glucoside named *aucubin* in small quantities in the seeds is confirmed by Col. Chopra

Action—Seeds are cooling, demulcent, mildly astringent, emollient, laxative and diuretic. "When soaked in water, the seeds become enormously swollen with an abundant coating of adhering mucilage which is free from taste and odour"[2] "Some degree of astringency and tonic property are believed to be imparted to the seeds by exposing them in a dry condition to a moderate degree of heat so that they shall be further dried and slightly browned The mucilage of the seeds is neutral in reaction, is not altered by adding or precipitated by boiling with alcohol, nor is it changed by iodine, borax or perchloride of iron It is only sparingly soluble in water"[3] "*Aucubin* is

declared physiologically and pharmacologically inactive, is very difficult to obtain in a pure condition; the tannins which are present in appreciable quantities have very little action on the protozoa (entamoebae) or bacteria"[4] "Large quantities of the mucilage (a gelatinous substance) having a jelly-like consistency, which is contained in the superficial layers of the seeds, is acted on by the digestive enzymes to a very slight extent Even after incubation for 24 hours with salivary enzymes, pepsin and hydrochloric acid and the pancreatic enzymes, there was very little digestion of the mucilage It thus passes through the small intestine unchanged and during its passage it lines the mucous membrane acting as a demulcent and a lubricant Further, the mucilage is not acted on by the intestinal bacteria in the large gut Its presence there, in fact, would appear to have an inhibitory action on the growth of the organisms"[5]

"Biological (animal) experiments have proved that the mucilage forms a coating over the surface of the ulcers, thereby protecting the injured mucosa from the irritating products of gastro-intestinal digestion, but would also prevent access of the motile bacteria which would be entangled in the meshes of the gel."[6]

"The jelly-like mucilage from the seeds further being of colloidal nature has a remarkable power of absorbing bacterial and other toxins The mucilage acts in very much the same way as liquid paraffin does so far as its lubricant and constipation-relieving effects are concerned It is further a vegetase product free from many disadvantages which liquid paraffin, a mineral product, possesses, viz malignant disease of the colon, eczema ani, paraffin pains, etc, besides being very much cheaper"[7]

'Dosage and Modes of Administration of P. ovata seeds —[8]

The seeds are thoroughly cleaned from sand and grit and other extraneous matter with which they are always found mixed in commerce This is done by sifting them through a fine sieve or mosquito-netting and picking out anything which still remains, with the fingers. Before the seeds are taken,

they should be quickly washed once or twice in a cupful of water The usual dose recommended is 2 to 4 drachms, but considerably large quantities, i e , 1 to 2 ounces, may be given with advantage Two to three heaped dessertspoonfuls of the seeds, or more if necessary, may be given 2 or 3 times a day They contain no toxic principles of any kind and most of them pass out of the gastro-intestinal tract in 6 to 12 hours In fact in some cases, especially when constipation is present, larger doses are essential as their action is produced partly by the lubricating action of the mucilage and partly by the increase in the bulk of the intestinal contents which mechanically stimulates the intestinal peristalsis Four methods are recommended for the administration of the seeds —

(1) The clean, dry seeds are put in a cupful of water and after a preliminary washing, 1 or 2 teaspoonfuls of sugar is added if desired The mixture is stirred and taken

(2) The seeds are added to a cupful of water and are allowed to stand for 20 to 30 minutes till all the mucilage comes out If desired some sugar is added and the mucilaginous mass is then swallowed

(3) A mucilaginous decoction is prepared by boiling the required quantity of the seeds in a couple of pints of water till the quantity is reduced to about half This is then taken divided into doses of 2 to 4 ounces and taken every 2 or 3 hours It has already been pointed out that the mucilage is not altered by boiling

(4) The mucilage-containing cover of the seeds is separated from the seeds by crushing them and separating the husk by winnowing One to two teaspoonfuls of it are given in a cupful of water with a little sugar By many indigenous practitioners this preparation is preferred to whole seeds especially in acute conditions of the gastro-intestinal tract

Col Chopra prefers the first method in ordinary chronic forms of dysentery and diarrhoea, as it allows the seeds to mix thoroughly with the intestinal contents and in this way enables them to spread over the whole of the surface of the mucous membrane evenly If the mucilage is allowed to form outside,

it conglomerates into sticky masses and is not evenly distributed and passes out of the intestine in lumps

"Experiments *in vitro* show that the digestive enzymes have a weaker action on the mucilage when it is on the seeds. When a decoction is made and the mucilage is separated, it is partly changed by the digestive enzymes into a non mucilaginous substance after incubation for 24 hours, whereas that on the seeds is little altered This supports the superior action of the whole seeds The decoction and mucilage-containing cover separated from the seeds is, however, preferable in subacute types of dysenteries both of protozoal and bacillary origin. The drug has the advantage of being tasteless, in fact, with sugar it is quite pleasant to take, and is, therefore, very suitable for children Two or three dessert spoonfuls taken at bed time produce the same laxative effects as liquid paraffin "[3]

Drugs, Madras) Steeped or boiled in water Isphagul seeds yield their bland mucilage to water and render it mucilaginous "The decoction in doses of 2 to 3 drachms, plain or mixed with sugar"[11] is very beneficial in gonorrhoea, dysentery and diarrhoea, in gastritis, gastric and duodenal ulcers and in many affections of the kidneys and the bladder such as cystitis etc, and as a demulcent in coughs and colds and other pharyngeal disorders, particularly for children In cases of dysentery (slimy) a tola each of the seeds and sugarcandy well mixed together, is taken 2 to 4 times a day For bleeding, "body-heat", syphilitic taints etc, two to four tolas of the seeds kept soaked in water during the night, rubbed well next morning and mixed with two tolas of sugarcandy is a nice drink taken daily in the mornings In the chronic diarrhoea of Europeans long resident in India, 2½ drachms of the seeds mixed with half a drachm of powdered sugar-candy is an excellent remedy, or a drachm or two of the seeds are steeped in water for about 15 or 20 minutes and then given in spoonful doses of the whole seed Many of the seeds pass out with the motions in a swollen state as they absorb much fluid in their passage through the intestines to which they give out an amount of bland mucilage, which has a healing action upon intestinal ulcers If the whole seeds cause, on the other hand, intestinal irritation, a *conjee* made like arrow-root *conjee* containing the mucilaginous shell of the seeds and popularly known as *"Isaphgulka-chilka"* may be administered frequently in tea-spoonful doses to make up a large breakfast-cupful of the *chilka* Dose of the *chilka* is one tea-spoonful in two ounces of warm water This remedy cures the protracted diarrhoea of European and Indian children, after many remedies have failed —(Waring)

'Col Chopra has given very extensive trials to the seeds of P ovata in the following conditions with excellent results — (1) Chronic dysenteries of amoebic and bacillary origin (2) Chronic morning diarrhoea, (3) Chronic constipation with auto-intoxication produced from other causes, (4) Hill diarrhoea, (5) Chronic diarrhoea in children, i e, diarrhoeas due to irritative conditions of gastro-intestinal tract In chronic

amoebic dysentery which had failed to react to intensive courses of emetine or the *Kurchi* alkaloid, Col. Chopra had tried prolonged courses of liquid extract of *Kurchi* and *isapa ghula* with success. Dose —2 drachms of the extract, 3 or 4 time a day, at the same time 2 or 3 heaped dessert spoonfuls of the seeds twice daily, the treatment being continued for 6 weeks or 2 months In chronic spastic constipation during chronic amoebic dysentery, this prescription's action may be aided by giving small doses of saline purgatives" [12]

with seeds of Salvia aegyptiaca, and they too yield copious mucilage "[13]

1953 PLANTAGO LANCEOLATA, Linn.

(*Hind*—Baltanga *Ben*—Bartung *Pushtu*—Purhar; Pangi *Kash*—Isabgool, Gola) is met with on Western Himalayas from Kashmir to Simla, the salt range and Waziristan Constituents—"A glucoside named *aucubin* $C_{15}H_{10}O_9H_2O$ has been isolated from the leaves, roots and seeds It crystallises in the form of colourless bush forming needles which have a melting point of 181°C and a rotation of inadqueous solution of—164 9° —(Chopra Action—Seeds are purgative, haemostatic Uses—*Leaves* are applied to wounds, inflamed surfaces and sores *Seeds* are used with sugar as a drastic purgative

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1954 PLANTAGO MAJOR, Linn

or P Psyllium or P asiatica

(N O—Plantaginaceae)

Hind—Lahuriya *Eng*—Cart track Plant, Way Bread. *Arab*—Lasana el-hamala *Pers*—Bartang or Barhang, Tukum i baratunga *Ind Baz & Bom*—Bartang

Habitat—This is found in temperate India, Peshawar, Punjab, Kashmir to Bhutan, Western Tibet, Assam, Khasia Hills, Burma, Malacca Singapore, Bombay, Nilgiris and higher parts of Sudan

Constituents—Seeds have the same properties as those of P ovata, contain chlorophyll, resin, wax, albumen, pectin, sugar, and a large quantity of mucilage "A glucoside named *aucubin* $C_{15}H_{18}O_9H_2O$ has been isolated from the seeds, leaves, roots and flowering stems of P major and P media It crystallises in the form of colourless bush-forming needles

(1) & (2)—Chopra's "I.D of I p 354 (3) p 356 (4) p 363, (5) p 357 (6) p 358 (7) 364 (8) & (9) p 361 363 (10) p 359 (11) p 356 (12) pp 359 360 & (13) p 356.

which have a melting point of 181°C and a rotation in aqueous solution of—164.9° "—(Chopra)

Uses.—A *cold infusion* (1 in 5) in doses of 2 to 4 fluid ounces is demulcent, it is used like Ispaghula with cardamoms and sugar-candy and given in urinary disorders and dysentery Also used in arresting fluxes and griping pain in the bowels. This plant was used in ancient Roman and Grecian medicine

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1955 PLANTAGO OVATA. Forsk.

See Plantago ispagula.

1956. PLANTAGO PSYLLIUM, Linn.

See Plantago major

1957. PLANTAGO PUMILA, Willd

1958 PLANTAGO STOCKSII Boiss

1959 PLANTAGO TIBETICA. HK. & T

Four species of Plantago are uninvestigated—(Chopra's "I.D of I" p 517)

1960 PLANTANUS ORIENTALIS, Linn.

(N O—Plantanaceae)

Kash.—Bum Constituents—Alkaloid *ellantoin, asparagin.* Uses—*Leaves* are used in ophthalmia. *Bark* is used in diarrhoea.

1961 PLECTRANTHUS STROBILITEROS

See Anisochilus carnosus.

1962. PLECTRONIA PARVIFLORA, Bedd

(N O —Rubiaceae)

(*Tam.*—Karai *Tel*—Balasu), a low spiny shrub common in scrubby jungles—(Bombay Govt Agri Dept Bulletin)

1962. PLEOPELTIS LANCEOLATA Linn

Tea made from this fern cures itch

1963 PLESMONIUM MARGARITIFERUM, Schott.

(N O —Araceae), or Arum margaritiferum

(Goa—Azomut Aroamt), found in Bengal (Serampore-Decca) Goa and U.P Its tuberous herbs 6 inches or less are bulbiferous all over Ation —Seeds are locally anaesthetic—(Chopra) Country people in Goa used the crushed seed to cure toothache, a small quantity is placed in the hollow tooth and covered with cotton, it rapidly benumbs the nerve, they also use it as an external application to bruises on account of its benumbing effect.—(Dymock)

1964 PLUCHEA INDICA, Less

See Gymnema balsamicum

1965 PLUCHEA LANCEOLATA, Oliv

(N O —Compositae)

Punj—Marmandai *Bom.*—Kura sanna Leaves are aperient and are used as substitute for Senna

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1966 PLUMBAGO ROSEA, Linn

(N O —Plumbaginaceae)

Sans—Raktachitraka Chitraka, Rakta shikha Usana. *Eng*—Rose-coloured Lead wort. *Fr*—Dentilaire Rose. *Ger*—Rosenrothe Bleiwurz. *Hind.*—Lal-chitarah, Chitra, Lal-chitra. *Ben*—Lalchita Raktochitra *Mah*—Lal-chitarakak.

Duk.—Rakto-chita. *Kash.*—Shitrapunj. *Bom.*—Lal-chitra *Tel.*—Yerra-chitramulam. *Tam.*—Shivappu Chittramulam; Chittur-mol; Kodimuli. *Mal.*—Chekkikotuveri. *Can.*—Kempu Chitramula. *Kon.*—Tambdi Chitraka. *Sinh.*—Ratnitul. *Burm.*—Kin-khenni. *Malay.*—Chitrakamerah. *Uriya.*—Lal-chita.

Habitat.—This plant is commonly cultivated in gardens throughout India.

Parts Used.—Root.

Constituents.—Root contains an acrid crystalline principle called '*Plumbagin*' "in the form of yellow needles, melting at 72°C."—(Chopra), slightly soluble in boiling water, freely in alcohol and ether; partly volatilizes when heated. "Roy & Dutt (1928) have found that *plumbagin* is present in all the varieties of plumbago met with in India, to a maximum of about 0.91 per cent".—(Chopra).

Action.—Alterative, gastric stimulant and appetiser; in large doses it is acro-narcotic poison. Locally it is vasicant. It has a specific action on the uterus.

Uses.—*Bruised root* tempered with a little bland oil or in the form of liniment is used as a rubefacient application in rheumatism, paralytic affections, in enlarged glands, buboes etc. It cures certain cases of leucoderma.—(Dr. R. Gray); it is also used in other skin diseases and in scorpion-sting. *Scraped* root is introduced into the mouth of the womb to procure criminal abortion; it will expel the foetus from the womb whether dead or alive. A tincture of the root is used in secondary syphilis, in leprosy, and also in dyspepsia, piles, flatulence, loss of appetite and other digestive complaints. It is a good remedy to check *post partum* haemorrhage.—(Dr. Bhattacharjee). *But this should be used with care and in suitable, i.e., moderate doses, viz: 5 to 20 minims.* Externally, root and root-bark enter into the composition of caustic pastes and rubefacient applications. *Root* and *root-bark* are used as a substitute for cantharides for raising blisters. Fresh root-bark is rubbed into a paste with water and a little rice-flour;

it is then spread on a piece of rag, applied to the surface and kept for about half an hour and then a rice-poultice is applied over the part, in about 12 to 18 hours a large uniform blister will be found to have formed *The chief objection to the use of plumbago blister is the great pain it causes, hence it should only be used when other blistering agents are not at hand and a blister is an immediate necessity* In rheumatism the blistering paste should be removed after 15 to 20 minutes.

1967 PLUMBAGO ZEYLANICA, Linn.

(N O —Plumbaginaceae)

Sans—Chitraka Agni shikha *Eng*—Ceylon Leadwort, White Leadwort *Fr*—Dentelaire de Ceylon *Ger*—Ceylonische Bleiwurz *Hind*—Chitra, Chita, Chiti *Gwalior*—Chitawar *Punj*—Chitrak *Uriya*—Chita *Ben*—Chita, Chitruk. *Mah Duk & Kon*—Chitramula *Guj*—Chitaro *Tel*—Agnimatha Chitra mulam *Tam*—Chittira, Chittiramulam *Mal*—Vellakotuveri *Can*—Bilay-chitramula

Habitat—This garden plant is growing wild in Bengal, U.P, Southern India and Ceylon This is an allied species and is considered to be a cultivated variety of P rosea

Parts Used—Root

Constituents—The same as those of P rosea and with same properties 'Fluckiger (1889) isolated 'Plumbagin' from the root in a purer form, Roy & Dutt (1928) have found that 'plumbagin' is present in all the varieties of plumbago met with in India, to a maximum of about 0·91 per cent."[1] "Plumbagin has the property of setting up irritation of the skin.'[2]

Action.—Similar to that of P rosea Root is said to increase the digestive power and promote the appetite "Kelen Ko (1931) finds that *plumbagin* stimulates the central nervous system in small doses, while with larger doses paralysis sets in leading ultimately to death The blood pressure shows a slight fall Vyas & Lall of Lucknow have found that plumbagin is a powerful irritant and has well marked antiseptic

properties In small doses, the drug is a sudorific, large doses cause death from respiratory failure The action is probably due to the direct effect of the drug on the muscles" [3]

Uses —*Root is powerfully poisonous and its internal use is attended with great danger* "It causes abortion The root is sometimes given internally but more commonly it is employed as a local irritant to the os uteri It is also used as an irritant to the skin by malingerers or to support false charges" [4] It enters into the composition of several Indian preparations used as caustics or abortifacients Root reduced to a *paste* is applied to abscesses with the object to opening them With milk, vinegar, or salt and water the paste may be applied in leprosy and other obstinate skin diseases, unhealthy ulcers, scabies etc *Milky juice* is also an useful application Externally as caustic, it is used thus — Take of plumbago root, root of Baliospermum montanum, milky juice of Euphorbia neriifolia and of Calotropis procera or Hamiltonia *(arka)*, marking nut, sulphate of iron, treacle and rock salt, equal parts, mix them together and make into a paste In Ayurveda root is useful in dyspepsia, piles, anasarca, diarrhoea, skin diseases &c *A tincture of the root-bark* is employed as an antiperiodic. A favourite medicine for flatulence is a powder called *Shaddharana Yoga* recommended by Susruta, it is composed of equal parts of Plumbago root, *Indrayava* seeds, root of Stephania hernandifolia, of Picrorrhiza kurroa, *atis*, and chebulic myrobalan Dose is about a drachm In the Konkan, following formula is used.— *Chitraka* root, embellic myrobalans, small black myrobalans, *(Bal-haritaki)*, long pepper, long pepper root, rhubarb and rock salt. Powder and give 6 *maskas* (about a drachm) with hot water every night at bed time in flatulence with rheumatic pains —(Dymock) For dyspepsia, Chakradatta recommends a powder made of equal parts of Plumbago root, rock salt, chebulic myrobalan and long pepper; the dose is about 40 grains Root is used generally as a stimulant adjunct to other preparations in the form of a combination called *trimada* consisting of Plumbago root, baberang seeds and tubers of Cyperus rotundus. Hakims use it in rheumatism and en-

largement of the spleen Root has a beneficial effect on piles, in these cases it is given in various combinations, *e g*, an earthen jar or pot of which the inside is lined with a paste of the root is used for preparing curds (*dadhi* or *Kanjica*) which is given to persons suffering from haemorrhoids and prurigo Root was employed in the treatment of intermittent fevers by Dr Oswald It acts as a powerful sudorific—(Dymock) For chronic and muscular rheumatism and all painful affections of the joints, pills or powder called *Chitra Kathi* are recommended They are prepared thus —Take in equal parts of each of the root of P Zeylanica roof of Pipper longum, crude sodium carbonate or Barilla, the five salts, *viz*,—common salt, *Saindhava*, Vit salt, black salt and *Kacha lavanum*, dry ginger, long pepper black pepper, asafoetida, omum and Piper chaba Powder them all and use as powder, or grind with lime juice and make pills of 5 grains each Dose —of the powder 15 grains or 3 pills three times a day For epilepsy, hysteria, mania and other mental disorders a compound powder composed of *Chiraita* root, *Brahmi* and Acorus calamus is useful in doses of 10 to 30 grains three times a day—(Indigenous Drugs Report Madras) For paraolegia, pills popularly known as *Yogaraj Guggula* are recommended They are composed of —roots of P zeylanicum and Piper longum, seeds of Ptychotis ajowan, Nigella sativum Embelia ribes, Chidium diffusum and Cuminum, Pinus deodara, Piper chaba Cardamoms *Saindhava* salt, Aplotaxis auriculata Vanda roxburghii Tribulus terrestris, Coriander seeds, *the three myrobalans* tubers of Cyperus rotundus, *the three acrids*, Cinnamomum zeylancium roots of Andropogon muricatus, Carbonate of potash Abies webbiana and leaves of Cinnamomum tamala, all in equal parts, pound and mix them together Take also purified Balsamodendron mukul equal to the combined measure of all the above ingredients First pound it with ghee and add powders previously made and pound them again with ghee and convert into pills of 6 grains each. Dose is 1 to 4 pills. As alterative and tonic useful in nervous and rheumatic affections and in reducing obesity, a compound pill of Bdellium Plumbago zeylanicum, *Trikatu* and *Triphala*, and known as *Dasanga Guggula* is recommended. Dose is 1 to 4 pills of 6

grains each, three times a day. "Vyas and Lal have found *plumbagin* to give fairly good results in early cases of leucoderma and baldness of the head."[5]

1968. Plumieria acuminata; P. alba.

(*N.O:—Apocynaceae*).

(*Sans.*—Kshira; Champaka. *Hind.*—Gulchin. *Tel.*—Adavi-ganneru. *Guz.*—Rhadchampo. *Ben.*—Gorurchampa. *Uriya.*—Kalchampa. *Mah.*—Khairchampa. *Santal.*—Gulanjbala. *Gond.*—Champ-pungat. *Tam.*—Perungalli. *Can.*—Kadusampige. *Mal.*—Velutharali) is met with generally on the sea-coast districts of Southern India. The plant is milky. *Bark* bruised is applied as plaster over hard tumours and used as a cure for gonorrhoea. *Leaves* made into a poultice are used to dispel indolent swellings; *milky juice* is employed as a rubefacient in rheumatism. Internally, *root-bark* is a strong purgative. Bark of the tree is given with cocoanut, ghee and rice as a remedy for diarrhoea. *Flower-heads* are eaten with betel leaves in ague. *Milky* juice which is a gastro-intestinal irritant like gamboge is in minute doses an effectual purgative. Dose is as much as a grain of parched rice will absorb, the grain being administered as a pill. Externally, juice with sandalwood oil and camphor is employed as a cure for itch. Root is a violent cathartic. Its branches are used like those of *Chitraka* to procure abortion.

1969. PLUMIERIA ACUTIFOLIA, Poir.

(*N.O:—Apocynaceae*).

Sans.—Kshira champa. *Hind & Bom.*—Khair champa. *Ben.*—Gobar champa. *Tam.*—Vadaganneru. Action:—Purgative, rubefacient, antiherpetic; antidote to snake-poison. Constituents:—Bitter glucoside, essential oil, plumeric acid. Uses:—Used in gonorrhoea, and in snake-poisons.

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(1), (2), (3) & (4)—Chopra's "I.D. of I" p. 385, (5) pp 385-6

partly depends, and that they gave 10 02 per cent of the active principles, and therapeutically, the resin from the Indian variety has also been found to be quite as active as, if not more than the imported root' [1]—"Podophyllum collected in all seasons, localities and elevations does not contain the same amount of resin nor does the resin yield the same amount of active principles, podophyllo toxin and podophyllo resin [2] Resin is a sure purge in torpid liver, producing copious discharges of bile It is largely employed in bilious fevers It is named "vegetable calomel as its action somewhat corresponds to that of mercury It is usually given in pills alone or combined with other hepatics and purgatives or in solution in alcohol as tincture (1 in 30), dose is 5 to 20 minims Scarlet-red pulpy fruit is eaten by the hill tribes as the 'May apple' or Mandrake (N O —Berberidaceae) (fruit of P peltatum) is in America It acts as a hepatic stimulant and cholagogue purgative —(Indigenous Drugs Report, Madras) Rhizome itself is not employed in medicine A pill containing ½ grain of podophyllum emodi and 3 grains of extract hyoscyamus is an efficient purgative causing four to six watery stools containing much bile Rhizome of P emodi has been proposed as a substitute for the B.P officinal drug P peltatum

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1972 POGOSTEMON PARVIFLORUS, Benth.

P purpurascens, P plectranthoides, P purpuricalis

(N O —Labiatae)

(*Mah*—Pangra *Bom*—Pangala) growing in Deccan Peninsula—Ratnagiri It contains an alkaloid "pogostemonine'—a yellow varnish of a slightly bitter taste and mouse like odour, trimethylamine, a volatile (principle) oil of the odour like that of cedar wood, resin and an astringent matter It is stimulant and styptic. Fresh leaves are used as a poultice to clean wounds and to stimulate granulations Root is used as a remedy for the bite of *Phursa* snake and in other snake-bites Fresh root about the size of an almond is given inter-

(1)—Chopra's "I.D of I." pp 229 230 (2) p 230

nally three times a day and the paste of the root or poultice of the leaves is applied on the bites.

1973. POGOSTEMON PATCHOULI, Pellet.

(*Bom.*—Phangla; Patch pan. *Hind.*—Pacholi. *Ben.*—Patchauli; Pachapat. *Guj.*—Pacha. *Mal., & Tam.*—Kattam. *Kon.*—Pat) is met with in the Deccan and sub-tropical Himalayas. Dried tops yield by distillation a strong scented essential volatile oil called "Oil of Patchouli". Its leaves, flowering spikes or dried tops and root are used in medicine. An infusion (1 in 10) in doses of ½ to 1 fluid ounce is given. It is diuretic and carminative, generally given with *Tulasi* seeds in scanty urine and biliousness. As an insecticide the herb is kept in the wardrobe to drive away flies, ants, moths, gnats and mosquitoes; also used as a perfume to prevent ravages of moths and insects in shawls and woollen clothes.

1974. POGOSTEMON PLECTRANTHOIDES, Desf.

(*Duk.*—Pangla).

Uses same as P. parviflorus.

1975. POGOSTEMON PURPURASCENS, Dalz.

(*Duk.*—Pangla.)

Uses same as P. parviflorus.

1976. POINCIANA ELATA, Linn.

(N.O:—Papilionaceae).

(*Bom.*—Vayni; *Tam.*—Pade-narayanam). Used in rheumatism and flatulence.

1977. POINCIANA PULCHERRIMA, Linn.

(*Hind. & Ben.*—Krishna-chura; *Tam.*—Maili-kannai). This is an emmenagogue and purgative.

1978 POLANESIA ICOSANDRA & P VISCOSA

See Cleome viscosa

1979 POLIANTHES TUBEROSA, Linn

(*N O* —*Amaryllidaceae*).

(*Sans*—Sandhyaraga *Hind & Bom*—Gulcheri, Gulshabba *Ben*—Rajanigandha *Tel*—Undi-Mandare, Sulanda-raji, Nelasampenga, Virusampenga. *Tam*—Nilasampangi *Mal*—Andi mallery *Kon*—Gulsabo) is met with in Konkan as a common garden plant, whose flowers are very fragrant. Constituents —Essential oil *Blub* is used in medicine, flowers are diuretic and emetic, chiefly used in gonorrhoea in the form of tincture (1 in 10) in ½ to 1 drachm doses Rubbed with turmeric and butter it is applied as a *paste* over small red pimples which trouble new-born infants, also applied to buboes It sometimes emits phosphorescent light in the dark.

1980 POLYALTHIA LONGIFOLIA, Benth

(N O—Anonaceae).

Hind, & Ben—Devadaru *Bom*—Asoke *Tam.*—Assothu, Asogu, Netlingi *Tel*—Asokamu. Action —Febrifuge

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1981 POLYCARPEA CORYMBOSA, Lamk

(N O —Caryophyllaceae)

(*Porbander*—Small leaves Okhared, *Tam.*—*Nilaisedachi*) is found throughout *India, Ceylon and Burma. Pounded leaves* are used *externally as well as internally for* bites of venomous reptiles and of animals, also over boils and swellings as *poultice Internally* they are used in the form of a *pill* in jaundice.

N.B —Three species of Polycarpea occur in the plains of South India

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1982. POLYGALA CHINESIS, Linn

(N O —Polygalaceae)

Hind —Meradu, *Bom* —Negli Uses similar to "Senega"

1983 POLYGALA CROTALARIOIDES, Ham & P telephioides

(N O —Polygalaceae).

(*Santal* —Lilkathi) are found, the former in the Himalayas and the latter in the Madras Presidency They are used in catarrhal affections by the natives of the localities they grow in 'The former is expectorant and purgative, and is used as a cure for snake-bites' —(Chopra)

1984 POLYGALA ELONGATA, Klein

(*Tam* —Periyananka) used in biliousness and constipation and is a specific for snake-poison

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1985 POLYGALA ERIOPTERA, DC

Var —P vahliana is a common weed of the black cotton soil and of heavy soils

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1986 POLYGALA TELEPHIOIDES, Willd

This is an expectorant and a cure for snake-bite

1987 POLYGALA VULGARIS, Thumb

This is an expectorant, tonic and purgative Uses are like "Senega"

1988. POLYGONUM ALATUM, Ham

(N O.—Polygonaceae)

Punj —Satbalon Action —Astringent

1989 POLYGONUM AVICULARE, Linn., P. bistorta; P. viviparum.

(*Sans.*—Miromati, Nisomali *Eng*—Knot grass *Punj*, & *Hind.*—Kuwar, Bijband, Ban natia *Sind.*—Endraru *Kash*—Drop *Ben*—Machutie *Arab*—Asar-rai, *Anjubar Pers*—Hozar, Bandak) is universal in India. Constituents—Polygonic acid, tannic and gallic acids, starch and calcium oxalate and essential oil It is expectorant, diuretic, tonic, astringent, antiseptic and antiperiodic. Mixed with gentian it is given as *a decoction of the root* (1 in 10) in 1 to 2 ounces doses in malaria, chronic diarrhoea and lithiasis, also used in capillary bronchitis, whooping cough and other lung affections, succus is also useful Decoction is used in gleet and leucorrhoea as an *injection* and as an excellent *gargle* in relaxed sore-throat and spongy gums, and as an excellent lotion for ulcers

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1990 POLYGONUM BARBATUM, Linn or P. rivulare

(*Punj*—Narri *Ben*—Bekh-unjubaz. *Tam.*—Atalari *Tel.*—Kondemalle, Niruganneru *Malay*—Velluta modela mukku *Mah*—Dhakta sheral. *Jaspur*—Mangarleta) is found throughout the hotter parts from Assam to the Indus and southward to Ceylon etc. Seeds are employed to relieve the griping pains of colic. *Root* is used as astringent and cooling *Decoction of the leaves* and *stalks* is a stimulating wash for ulcers. Other uses are similar to P aviculare

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1991 POLYGONUM CISTORTA, Linn.

(N O—Polygonaceae)

Constituents—Oxymethyl-anthraquinones ca-oxalte

1992. POLYGONUM CYMOSUM, Roxb

(N O—Polygonaceae)

Action—Anthelmintic Uses—Used in bites of scorpion and insects

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1993 POLYGONUM FLACCIDUM, Roxb

(N O —Polygonaceae)

Uses —Used in insect and snake bite

1994 POLYGONUM GLABRUM, Willd & P persicaria.

(*Ben* —Bihagni *Assam* —Larborna, Bih langani, Patharua *Santal* —Sauriarak Jioti *Bom* —Rakta rohida *Tam* —Atlaria *Kon* —Sisori) is growing in ditches from Assam Sylhet and Bengal westward to the Indus southward to Burma Action —Febrifuge *Infusion of the leaves* is used to relieve pain of colic It is also employed as a cure for "stitch in the side and in Assam as a remedy for fever —(Watt)

1995 POLYGONUM HYDROPIPER, Linn

(*Ben* —Packur mul) Action —Diuretic, carminative and anthelmintic Constituents —Essential oil oxymethyl-anthraquinones

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1996 POLYGONUM MOLLE, Don

(Nepal —Patu swa)

1997 POLYGONUM PERSICARIA, Linn

Uses are same as other species

1998 POLYGONUM PLEBEJUM, Br

(*Santhal* —Ranuphul) Root is given in bowel complaints

1999 POLYGONUM VIVIPARUM, Linn

(*Punj* —Maslum) Root is astringent, and is used in diarrhoea, dysentery, fever, sore-throat and haemoptysis

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2000 POLYPODIUM QUERCIFOLIUM, Linn

(Bom—Kadikapana) Used in phthisis, fever and dyspepsia

2001 POLYPODIUM VULGARE, Linn

(Ind Baz—Basfaij) Action—Aperient and alterative

2002 POLYPORUS OFFICINALIS, Fries

Is a fungus (*Eng*—White Agaric, Bamboo or Worm Mushroom *Hind & Bom*—Gharekun *Ind Baz*—Gharikum) In shape and appearance it resembles *Bhui Kohala* Odour is acrid and taste is bitter It contains resin In small doses it acts as an astringent, and in large doses as emetic and purgative Its active principle *"agaricin'* is a powerful anhidrotic checking the night sweats of phthisis dose is 1/6th grain In order to check its laxative effect it is given combined with Dover's powder The drug is used in the form of pill, powder and decoction "As a cathartic it is given with honey in eruptive fevers to promote the rising of the eruptions In large doses it gives rise to large watery motions, nausea and vomiting, and also excessive sweats In spasmodic cough and phthisis, combined with liquorice it is very useful in checking collequative sweats Applied to the breasts it stops the secretion of milk It checks bleeding from leach bites Dose—2 to 3 grains every hour"—(Khory) The drug is also used in diarrhoea

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2003 PONGAMIA GLABRA, Vent.

or Galedupa Indica.

(N O—Papilionaceae).

Sans—Karanja, Naktamala *Eng*—Indian Beech *Hind* Karanj, Kiramal *Punj*—Sukhchain. *Ben.*—Dahar-karanja, Nata-karanga *Bom.*—Karanja *Bom*, & *Mah*—Karanj, Kidamar *Tel*—Kanuga-chettu *Tam. & Mal.*—Pungammaram *Can.*—Honge-mara *Kon.*—Karinje-rooku

Habitat—This tree is common all over India, and met with from Central Himalayas to Southern India and Ceylon.

It is of six varieties—(In Bengali)—Dahar karanja; Nata karanja, Kanta karanja, Makra karanja, Bish karanja; and Amba karanja Karanjika is one of the varieties called Kanta-karanja 'It is bitter, acrid, stimulant, astringent and beneficial in gonorrhoea leprosy, piles, boils and intestinal worms Karanji is the variety called *Maha-karanja* in Bengali and *Arabi* in Hindi It is bitter, stimulant and beneficial in piles, vomiting, intestinal worms, leprosy and gonorrhoea Karamarda is otherwise called *Amla karanja* in Bengali, *Karoda* in Hindi, *Karamande* in Marathi & *Karanjay* in Karnatic Fresh fruit is appetiser, astringent, alleviative of thirst and generative of phlegm Ripe fruit is refrigerant, appetiser and alleviative of bile and thirst"—(N N Sen Gupta)

Parts Used—Seeds, stem, leaves, fruit, root and oil from the seeds

Constituents—Seeds contain a bitter (in taste as well as smell) pale fatty, sherry (brown) coloured oil 27 to 36 4 p c known as Pongamia oil (Pongamol) or *Honge* o l Besides the fixed oil, the seeds contain traces of an essential oil"[1] Bark contains a bitter alkaloid, resin mucilage, sugar, but no tannin Leaves also contain a bitter substance *Prof D B. Limaye of Poona*, has isolated 'Karanjin' a crystalline constituent of the oil The new compound 'Karanjin' ($S_{18}H_1O_4$) has been shown to be the methylether of Karanjonol ($C_{17}H_{16}O_4$) which possesses feeble tinctorial properties Acetyl and benzoyl derivatives and the ethyl ether of Karanjonol are also described On hydrolysis Karanjin gives (1) benzoic acid, (2) a phenolic body $C_{11}H_{10}O_4$ m p 93°C, (3) Karanjol carboxylic acid $C_9H_6O_4$ which melts at 200° with decomposition, and (4) a neutral, sweet smelling liquid with Ketonic properties B P about 230°. "The fatty acids present in the oil include myristic 0 23, palmitic 6 06, stearic 2 19, arachidic 4 30, lignoceric 3 22, dihydroxystearic 4 36, linolenic 0 46, linolic 9 72, and oleic acid 61.30 per cent, together with 3 56 per cent, of unsaponifiable matter"[2]

Action —Expressed oil from the seeds has antiseptic and stimulant healing properties Oil appears to be an active agent as the residue after expression is inert Seeds, leaves, root and oil are antiparasitics, they destroy both vegetable and animal parasites in skin diseases Bark is astringent Powdered seeds are a febrifuge and tonic, and have expectorant properties Leaves are also cholagogue

Preparations —From the seeds, Homoepathic triturations 1X, 2X, 3X and dilutions 1, 3 & 6 have been manufactured by Research Homoeopathic Society Ltd, Calcutta, and successfuly proved and used as specifics for malaria since 1923 [3]

Uses —*Oil* is applied to skin diseases, in scabies, sores, herpes and the like cases of eczema have been benefitted by applying a mixture of the oil and zinc oxide (1 drachm to 1 ounce of the oil)... "Internally the oil has sometimes been used as a stomachic and cholagogue in cases of dyspepsia with sluggish liver" [4] An *embrocation* made of equal parts of the oil and lemon juice is an application in rheumatism (muscular and articular), in psoriasis, porrigo capitis and pityriasis *Decoction of the leaves* is applied as bath or fomentation to rheumatic joints *Leaves* are also used in diarrhoea and in cough *Juice* of the stem, leaves and root is useful similarly For destroying worms of foul ulcers and fistulous sores juice of the root by itself or with that of *Neem* and *Nirgund* or the leaves of all of these ground into a paste are used *Juice* with cocoanut milk and lime water well shaken and in obstinate cases with hydnocarpus oil, camphor and sulphur added, is a remedy for gonorrhoea, juice of the root by itself is also internally given in gonorrhoea and urethritis *poultice of the leaves* is used in ulcers infested with maggots, and juice of the leaves is useful in flatulency, dyspepsia and diarrhoea In leprosy, leaves of *Karanja* and *Chitraka* mixed with pepper and salt are powdered and given with curds —(Dymock) *Pulp* of the seeds is an application in leprosy 'Powdered seeds are supposed to be of value in asthenic and debilitating conditions They are also used very commonly in bronchitis and whooping cough" [5] *Young*

leaves are applied to bleeding piles *Bark* is useful internally in bleeding piles *Dried flowers in powder* in combination with other ingredients is given as decoction in diabetes to quench thirst *Seeds* of Pongamia glabra, Cassia tora, and the root of Aplotaxis auriculata are rubbed into a *paste* with cow's urine, and applied to eruptive skin diseases — (Chakradatta) In the same is recommended an oil called *Prithvisara Taila*, it is prepared thus —Take expressed oil of the seeds of Pongamia glabra 1 seer, *Kanjika* 8 tolas, roots of Plumbago zeylanica, Nerium odorum, Vitex negundo, Aconite and the seeds of Corchorus olitorius 8 tolas each, in the form of a paste made with *Kanjika* Mix them together and warm in the sun This oil is useful in various sorts of skin diseases ulcers etc Chakradatta recommends also an ointment known as *Tiktadya Ghrita* or *Tiktaka Ghritam* it is made thus —Take of the leaves and fruits of Pongamia glabra root of Picrorrhiza kurroa, wax, turmeric liquorice root, leaves of Trichosanthes dioica, Aganosma caryophyllata and Azadirachta indica equal parts in all one seer Beat them into a paste and boil with 4 seers of clarified butter and 16 seers of water in the usual manner This preparation is used as an ointment in unhealthy ulcerations and wounds, and in the beginning cases of leprosy, is prescribed in doses of a teaspoonful with hot milk and sugar twice a day, morning and evening In enlarged scrotum and scrofulous enlargements root of *Karanja* rubbed with rice water into a paste or *Lep* is applied locally *Flowers* are used as a remedy for diabetes *Pods* are worn round the neck in whooping cough *Seeds of Karanja* are powdered after decortication and given as a specific for whooping cough and harassing cough For infants and young children, dose is from 1 to 5 grains according to age For those above 12 years, dose is 15 grains *Powder should not be wrapped in paper as paper absorbs its oil Powder loses efficacy on being kept and should, therefore, be prepared fresh.* Used in scorpion-sting

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(1)—Chopra's "I.D of I" p 366 (2) p 367 (3) Catalogue of Research Homoeopathic Society Ltd., Calcutta (4) & (5) Chopra's "I.D of I" p 366

2004. POPULUS CILIATA, Wall.

(N.O:—Salicaceae).

(*Nepal.*—Bangikat; *Kash.*—Falsh). Action:—Tonic and stimulant.

2005. POPULUS EUPHRATICA, Oliv.

(*Punj., & Bom.*—Safeda). Aetion:—Vermifuge.

2006. POPULUS NIGRA, Linn.

(*Kash.*—Frast). Action:—Depurative. Buds are used for haemorrhoids. Decoetion of bark is used for colds. Constituents.—Glucoside, salicin, populin, chrysin and essential oil.

2007. PORPHYRA VULGARIS, Linn.

(N.O:—Florideae).

Bom.—Las. Action:—Demulcent and nlterntive. Constituents.—Iodine. Used in scrofula.—(Chopra's "I.D. of I." p. 519).

2008. PORTULACA MERIDIANA, Linn.

(N.O:—Portulacaceae).

Ben.—Nooni shak; *Bom.*—Kurfa. Uses similar to P. quadrifida. (Chopra's "I.D. of I." p. 519).

2009. PORTULACA OLERACEA, Linn.

(N.O:—Portulacaceae).

(*Sans.*—Loni; Lonika. *Eng.*—Common Indian Purslane; Garden Purslane. *Hind.*—Khursa. *Ben.*—Baraloniya *Sind.*—Lunak. *Bom.*—Kurfah. *Arab., & Pers.*—Kurfa *Hind., & Ben.*—Chhota Lunia. *Uriya*—Puruni-sag.

Pun—Lonak, (seeds) dhamni *Mah*—Bhuigholi, Gholbhaji, Motighol *Guj*—Loni, Ghol *Tam*—Parukire, Parpulire *Tel*—Peddapavila kura *Can*—Duda-gorai) is found throughout India in all warm climates, it is an abundant weed in cultivated grounds throughout Ceylon Constituents—Fresh leaves, which contain oxalate of potash and mucilage are acid—(Bombay Govt Agri Dept Bulletin) *Leaf juice* is used in spitting of blood "*Fresh leaves* bruised are applied to the temples to allay excessive heat and pain, and are also used as a cooling external application in erysipelas and an infusion of them is given as a diuretic Sour leaves are used as a vegetable Young stems and leaves are cooked like spinach with salt and chillies, and are also used in curries" (Bombay Govt Agri Dept Bulletin) *Plant* and *seeds* are used in diseases of the kidney and bladder, as strangury, dysuria, haematuria, gonorrhoea etc, and of lungs also such as haematemesis, haemoptysis, etc, also as external application in burns, scalds and various forms of skin diseases Seeds are described as demulcent, slightly astringent and diuretic, leaves as astringent, refrigerant, diuretic and emollient Herb abounds in a milky juice A paste made of it with *gokhru, Kakdibij* and *Javakhar* is used in gonorrhoea scanty urine etc, dose is 2 to 3 ounces *Seeds* are beneficial to intestinal mucous membrane and therefore relieve tormina, tenesmus and other distressing symptoms in dysentry and mucous diarrhoea, particularly when combined with some other drugs of similar nature—(Moideen Sheriff) *Seeds* and *expressed juice* may be administered in doses of from 30 to 60 grains of the former and from 1 to 2 fluid ounces of the latter or of the *infusion* of the leaves and seeds which act as substitutes for spirits of nitrous ether, Pareira, tragacanth, elm bark, rhatany, copaiba and ice Herb is chiefly valued as a refrigerant and alterative pot-herb, particularly useful as an article of diet in scurvy and liver diseases *Juice of the stems* may be applied with benefit to prickly heat as well as to the hands and feet when a burning sensation is felt Seeds are vermifuge Uses are similar P quadrifida

2010. PORTULACA QUADRIFIDA, Linn.

or P. maridiana.

(N.O:—Portulacaceae).

(*Sans*—Laghu lonika, Upadyki. *Hind. & Ben*—Nunisak; Baralunia; Lonia. *Punj.*—Luni-buti. *Bom.*—Chavel-ke-bhaji; Kota. *Mah.*—Ranghol. *Duk.*—Gholi-ki-bhaji. *Tam.*—Soin-pappu-kirai; Pasaraikeeray. *Tel*—Sannapappu; Goddu-pavili. *Can*—Halt bachchele. *Kon.*—Bhui-goli. *Sinh.*—Hingende-kola) a diffuse annual succulent herb or weed is found toroughout the warmer parts of India. Leaves contain mucilage and acid potassium oxalate Uses of the leaves are similar to those of P. oleracea. Seeds also possess qualities identical with those of P. oleracea "Used in skin diseases, in diseases of the kidney, bladder and lungs".—(Chopra).

2011. PORTULACA SATIVA, Linn

Action—*Cooling, astringent and demulcent*

2015. POTENTILLA LEŠCHENAULTIANA

Is found in Western Ghats, Nilgiris and Pulney Hills.

2016 POTENTILLA NEPALENSIS, Hook.

(*Punj.*—Rattonjot). Root is depurative.

2017. POTENTILLA REPTANS, Linn

Uses same as P. nepalensis.

2018. POTENTILLA SUPINA, Linn.

Root is febrifuge, astringent and tonic.

2019. POTHOS OFFICINALIS

See Scindapsus officinalis.

2020. POTHOS SCANDENS, Linn.

(N.O:—Araceae)

Used in snake-bite.

2021. POUZOLZIA INDICA, Gaud.

(N.O:—Urticaceae).

Tam.—Kalluruki Used in syphilis, gonorrhoea and snake-poison

2022. PRANGOS PABULARIA, Lindl.

(N.O:—Umbelliferae).

(*Sans.*—Komal; Avipriya. *Eng.*—Silphium Parsley. *Ind. Baz.*, & *Bom.*—Fiturasalium. *Arab.*—Phatera-e-Saleyuni. *Afg.*—Badian-e-hohe. *Mah.*—Phatura-Salyuna. *Tibet.*—Prangos. *Hind.*—Komal) is found in the north of India, Tibet and Kashmir. Dried fruit contains an essential oil, a trace of fixed oil, resins, traces of an alkaloid, quercitrin in large amount and ethereal salt of valeric acid. *Root* is diuretic;

fruit is carminative and stimulant "The drug is also an emmenagogue"—(Chopra) *Infusion of the fruit* (1 in 20); *decoction* of the root (1 in 20) are used in doses of 1 to 2 ounces, given in urinary diseases, gravel, strangury and dyspepsia also in dropsy and gonorrhoea

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2023 PREMNA ESCULENTA, Roxb

(N O —Verbenaceae).

Leaves are used medicinally (Chopra's "I D of I" p 519)

2024 PREMNA HERBACEA, Roxb

(N O —Verbenaceae)

(*Sans*—Boomi-Jambuka, Bhargi *Ben.*—Bhooi-jam, Bamanpati *Mah Hind & Guj*—Bharangi *Tam*—Shiruket. *Tel*—Gunta Bharinga *Can*—Nayit-yaga *Sinh*—Shiribekku) is found on the Himalayas and Deccan Root contains an orange brown acid resin (soluble in ether, alcohol and alkaline solutions), traces of an alkaloid, also a quantity of starch, but no tannin *Root* and *Leaves* are used in the form of *decoction* (1 in 20) in doses of 1 to 2 ounces *Fresh juice* of the root with the juice of ginger and warm water or root beaten in the form of a *pulp* with ginger and warm water is given in asthma It is also used in cough fever, dropsy and rheumatism Root is stimulant alterative and bitter stomachic tonic and used in catarrhal affections of the lungs, asthma, coughs, fever and scrofulous diseases Leaves are alterative and used in fever, cough, rheumatism etc. As a *poultice*, leaves are used in promoting the suppuration of boils The drug is used in scorpion-sting

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2025 PREMNA INTEGRIFOLIA, Linn.

or P. spinosa or P serratifolia

(*Sans*—Arani Agni mantha Hari mantha Gani karika *Hind.*—Arni Agetha *Bom*—Arni. *Ben*—Bhut bhiravi. Ganiari *Guj & Bom.*—Airanmula *Mal*—Chamari *Tam.*—

Munnay, Munni-vayz. *Tel*—Ghebunelli *Mal*—Appel *Can*—Takkile *Garhwal*—Bakorcha *Uriya*—Aguyabat *Nepal*—Gineri *Burm*—Toung-than-gyee *Sinh*—Karnikaj is growing on the sea-coasts of India, and Ceylon Constituents—resin, a bitter alkaloid and tannin It is cordial, stomachic, carminative, alterative and tonic Root and leaves are therapeutically active *Infusion of the leaves* (1 in 10) is used in eruptive fevers, colic and flatulence, in doses of 1 to 2 ounces, *decoction of the root* (1 in 10) 'or about 4 ounces in a pint of water and boiled for 15 minutes, is given in doses of 2 to 4 ounces twice daily as a stomachic and a bitter tonic"—(Chopra), and also in gonorrhoea and during convalescence from fevers, also in rheumatism and neuralgia "Leaves are also used for the same purpose"—(Chopra) Root forms an ingredient of *dasamula* and thus used in a variety of affections Root rubbed into a *paste* with water is recommended to be taken with clarified butter in urticaria and roseola for a week—(Chakradatta)

2026 PREMNA LATIFOLIA, Roxb

(*Hind*—Bakar) Leaves are diuretic and are externally applied in dropsy

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2027 PREMNA MUCRONATA, Roxb

(*Hind*—Baker) Useful in boils and colic

2028 PREMNA TOMENTOSA, Willd

(*Tam*—Kollay-cottaynellay), used in dropsy

2029 PRIMULA RETICULATA, Wall

(N O—Primulaceae).

(*Kumaon*—Bishcopra) Action—Anodyne Poisonous to cattle

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cultivated in cooler parts of India—in the Punjab and Kashmir and Afghanistan, whence the fruit (almond in shell) is brought in large quantities to India.

Parts Used —Sweet almonds, almond shell, ripe seed, bitter almonds, oil expressed from bitter or sweet almonds

Constituents —Sweet almonds contain a fixed oil 56 p c, an albuminous principle or ferment "emulsin" soluble in water, mucilage 3% sugar 6% proteids (proteins 18 58%) (more soluble than the gluten of wheat) 25% ash 3 to 5%, containing potassium, calcium and magnesium phosphates Bitter almonds contain a fixed oil 45%, amygdalin 3%, proteids 25%, emulsin sugar 3%, mucilage 3%, and ash 3 to 5% 'HCN—glucoside As—0,025 mg in 100 g fruit" —(Chopra) Amygdalin is a crystalline substance, a glucoside not found in sweet almonds In the presence of water the emulsion acts as a ferment on amydgalin producing benzoic aldehyde, prussic acid and glucose

Action —Sweet almonds are demulcent, "stimulant, nutritive, nervine-tonic" —(Chopra) and emollient Bitter almonds are emollient demulcent and laxative, and are used as sedative in coughs etc Bitter almonds are described by Hakims as attenuent, astringent, lithontriptic and diuretic Root is discutient and alterative

Uses —Expressed oil of sweet almonds is bland and slightly laxative Cake left after expression of the fixed oil is ground into powder and used to replace wheat flour as a food in cases of diabetes either alone or combined with the proteids of milk, to form cakes Almond nut *cream* is recommended for brain workers it is made as follows —Pound or mince finely, three blanched almonds two walnuts, two ounces of pine kernels and steep overnight in orange or lemon juice This cream should be made fresh daily and may be used in place of butter Almonds should always be blanched in hot water, the skins are indigestible Essential oil of bitter almonds (benzoic aldehyde) which is obtained by grinding these with water and steam-distilling, is used for flavouring custards etc, but great caution is necessary on account of the presence in it of a poison—the prussic acid The crude product is submitted to

a chemical process of purification to get rid of the poisonous prussic acid it contains *Bitter almonds* are recommended by Hakims both internally and externally for various purposes As a *plaster* made with vinegar they are used to relieve neuralgic pains, as a *collyrium* to strengthen the sight, in emulsion with starch and peppermint to allay cough They are also of use for removing obstructions of the liver and spleen Applied to the head they kill lice, as a suppository they relieve pain in difficult menstruation, as a *poultice* they are a valuable application to irritable sores and skin eruptions *Juice* of almonds mixed with sugar is used in coughs Almonds mixed with figs are laxative and relieve pain in the bowels when almonds soaked in honey at night, and taken early morning are a very nutrient food for all those who wish to build up a strong and healthy constitution Gum *Badam-i gond* which the tree yields is occasionally used in place of tragacanth An emulsion produced from the sweet almonds by triturating the powdered kernels with water or with orange or lemon juice is useful in bronchial diseases, hoarseness, tickling cough etc in dysentery and several urinary affections frequently lessening the acrimony of the secretions A *confection* made of sweet almonds together with several other ingredients, and called *Laboobat Saghir* is recommended as useful in polyuria due to kidney affection, in building up the kidney tissue and nervous tissue and also to increase and thicken the semen dose is ½ to 1 tola with 2 to 3 ounces of milk *Milk like emulsion* made by rubbing the powdered seeds of the bitter variety is useful in certain skin affections *but it is never given internally on account of the prussic acid formed therein Sweet almond meal* has been recommended as a suitable diet for diabetic patients as it contains no starch Burnt shell (almond shell charcoal) is used as a tooth powder

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2035 PRUNUS ARMENIACA, Linn, or Amygagdala vulgaris

Is another species (*Eng*—Apricot. *Himalaya*—Chulu, Chinaru *Bokh*—Baboor Kohani. *Arab*—Binkook Tuffa

armina. *Pushtoo & Hind.*—Jardalu; Khubani. *Pers.*—Mishmis. *Sutlej.*—Jaldaru. *Punj.*—Gardali; Shiran; Gurdlu. *Kash.*—Iser. *Kumaon.*—Chuaru) is met with on Himalayas, Deccan and Mysore also. Almost naturalised in N. W. India. Apricots are nutrient and tonic. It is stated that apricots form antidotes to hill-sickness. *Dried fruit* is used in fevers to allay thirst as refrigerant and laxative. *Seeds* form an ingredient in some of the nutritive confections. Apricot kernels contain from 40 to 45 p.c. of an almost colourless oil which becomes yellow on keeping. Apricot oil is almost similar to almond oil in its physical and chemical characters.

2036. PRUNUS AVIUM, Linn.

Leaves contain Ba

2037. PRUNUS CERASUS, Linn

(*U P. & Hind.*—Alu-balu. *Punj.*—Gilas; Olchi) is cultivated in the Himalayas, the Punjab and the U P. *Bark* is bitter, astringent and febrifuge. Kernel is a nervine tonic and is used for the same purposes as hydro-cyanic acid (HCN?) of which it contains a considerable proportion

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2038 PRUNUS COMMUNIS, Huds. P. institia

(N.O:—Rosaceae)

(*Sans.*—Arook. *Eng.*—Pear, Bokhara Plum; Cherry plum. *Pers., Arab., Kash., Duk., Guj., Hind. & Ben.*—Alubhokhara *Tam.*—Alpagoda-pazham. *Tel.*—Alpagoda pndu) is a tree growing on the Western temperate Himalayas. *Fruit* contains malic acid, citric acid, sugar albuminoids, pectin and ash. It is demulcent, laxative and nutrient. It is largely consumed by the rich in various forms of *chutney*. It acts also as a cooling laxative especially when taken on empty stomach; useful in bilous states, and heat of body, and in cases of torpid and enlarged liver, gonorrhoea, piles etc., and it is

regarded as suitable for all the purposes to which the English plum is put *Gum may be used as a substitute for* Gum Arabic *Oil* prepared from the seeds resembles apricot kernel oil and is edible Root is astringent

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2039 PRUNUS DOMESTICA, var

Juliana is a variety of the above species (*Eng*—Common plum prunes *Hind.*—Alu, Alucha Shanalu) found in Persia, Afghanistan and Kashmir Prunes are dried plums. Pulp or sarco-carp contains a little malic acid, sugar 25%, pectin, albumin and salts *Seeds* contain a fixed oil, amygdalin and emulsin *Sarcocarp* is laxative, demulcent and nutrient They may be taken at the morning meal by those who suffer from acid dyspepsia

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2040 PRUNUS INSITITIA, Linn.

(*Ind Baz*—Alu bokhara) Action—Acid, astringent, aperient and digestive

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2041 PRUNUS MAHALEB, Linn

(*Sans*—Priyangu) Action—Tonic stomachic, diuretic, Used in scorpion sting Constituents—Coumarin, salicylic acid amygdalin

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2042 PRUNUS MALUS Linn.

2043 PRUNUS PADUM, or P sylvatica or Cerasus puddum

(*Sans*—Padmaka Padmaksh *Hind.*—Paddam. *Punj*—Chamiari Amalguch *Mah*—Padma kastha *Guj*—Padma kathi) is a native of temperate Himalayas from Garhwal to Sikkim and Bhutan Fruit is acid and somewhat astringent. Kernel is used in stone and gravel *Bark* contains amygdalin and the smaller branches are sold in the bazaars as substitutes for hydrocyanic acid in Indian practice—(Watt)

2044. PRUNUS PADUS, Linn., or Cerasus Corunta

Is a species (*Eng*—Birdcherry. *Hind.*—Jamana *Nepal*—Likharu; Arupatai *Punj*—Paras; Kala-kat, Jamma *Kash*—Zamb chule) found in the temperate Himalayas from Murree to Sikkim and Bhutan *Seeds* yield a poisonous oil like oil of almonds and is much used in medicinal preparations and remarkable for its siccative properties Pressed cake and seeds distilled in water give considerable quantities of hydrocyanic acid, glucoside, and benzoyl aldehyde (oil of bitter almonds).

2045 PRUNUS PERSICA, Benth & Hook.

See Pygeum persica

2046 PRUNUS PUDDUM, Roxb.

(*Sans*—Padmaka *Hind*—Paddam *Bom*—Padma-kasta). Branches are substitute for HCN Contains amygdalin Used in scorpion-sting Kernel is used in gravel

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2047 PRUNUS SEROTINA

(*Eng*—Cherry) is a native of Europe But the fruits are available in India *Cherry* is valuable for its beneficial effect on the kidneys It is a very luscious fruit, easily digested if thoroughly ripe In France soup is made from dried cherries and eaten with bread, it is a chief food of the peasantry during the winter months *Bark* is mild, bitter and tonic containing tannin. Dose of the fluid extract is ½ to 1 drachm and of the concentrated extract "prunin" is 1 to 3 grains

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2048. PRUNUS UNDULATA, Ham

Fruits and leaves contain HCN.

2049 PSAMMOGETON BITERNATUM Edgw

(N O —Umbelliferae)

Pushtu —Gargira Action —Stomachic

2050 PSEUDARTHRIA VISCIDA, W & A

(N O —Papilionaceae)

(*Sans* —Sanaparni *Tam* —Neermali), used in biliousness, rheumatism excessive heat, intestinal poison, fever, diarrhoea asthma heart-disease worms and piles (Chopra's I D of I p 520)

2051 PSIDIUM GUYAVA, Linn

Var —P pyriferum (white) P pomiferum (red)

(N O —Myrtaceae)

Sans —Perala Amratafalam Amruta phalam *Eng* —Guava *Hind* —Lal sufrium (red) Amrut *Ben* —Lal peyara (red), Goachl phal Peyara Pyara Piyra *Bom* —Perala *Tel* —Jama Jam pandu Goyya pandu *Tam* —Koyapalam Koyya Goyya pazham (Segapu) *Mal* —Palamper *Can* —Perala hannu Jamna phala Shebe-hannu *Kas* —Paera *Sind* —Zetton jamphal *Mal* —Peru Jamba *Guj* —Jamrukh *Assam* —Madhuria *Nepal* —Amuk *Arab & Pers* —Amrud *Punj* —Amrut *Burm* —Malakalbeng

Habitat —This tree is cultivated nearly all over India and is common in Bengal

Varieties —*Khasi* (seedless) *Vanga* (elongate) and Gedi are the three grown in Sind.

Parts Used —Bark fruit and leaves

Constituents —Bark contains tannin 27 4 p c resin and crystals of Calcium oxalate There is a high percentage of carbohydrates and salts Leaves contain resin fat cellulose tannin volatile oil, chlorophyll and mineral salts "Root

stem-bark and leaves contain a large percentage of tannic acid"[1] Fat dissolves completely in chloroform, partially in ether or alcohol Greenish volatile oil (essential oil) contains eugenol and dissolves in chloroform ether or alcohol. Calcium and manganese are present in the plant in combination with phosphoric, oxalic and malic acids

Analysis of Guavas

About three dozen samples of Guavas have been analysed and in addition a few samples of different varieties The results have been given in different tables —

Results of analysis of some the varieties of guava —

	Guava fruits General	Guava fruits ripened on trees
With seed removed	per cent	per cent
Moisture	76 82 to 87 83	78 5 to 81 40
* Reducing sugars	8 85 to 12 64	5 48 to 13 96
* Non reducing sugars	8 15 to 15 65	9.54 to 20 10
* Total sugars	18 27 to 29 18	22 02 to 30 10

* calculated on dry matter

Results of analysis of some of the varieties of guava —

	Kothrud	Dharwar	Miraj	Dholka (white)	Dholka (red)
With seed removed	p c	p c	p c	p c	p c
* Moisture	75 4	76 76	77 46	82 0	75 77
* Reducing sugars	8 81	10 04	12.31	7 61	7 0
* Non-reducing sugars	10.36	18 46	17 30	11 94	10.37
* Total sugars	19 17	28 50	29 61	19 55	17.37

* calculated on dry matter

(Bombay Govt Agri Dept Bulletin)

Action —Stem, bark and root bark are astringent Unripe fruit is indigestible causes vomiting and feverishness

"Bark is astringent, febrifuge, antiseptic. Fruit is laxative. Leaves are astringent."-

Uses —This tree is much valued on account of its pleasant fruit which is largely eaten; *but its seeds are injurious. Fruit* forms, when stewed, the well-known guava jelly or preserve *Jelly* is tonic to the heart and good for constipation *Ripe fruit* is a good aperient. *Raw fruit* is also sometimes eaten. It should be eaten together with the rind; if eaten without the rind it causes costiveness. *Unripe fruit* is employed in diarrhoea. Fruits are recommended by Garrod for gout Water in which the fruit is soaked is good for thirst in diabetes. *Root-bark* is successfully employed in chronic infantile diarrhoea in the form of concentrated decoction (1 in 12), or "2 ounces of the bark in a pint of water boiled down to ½ pint."' Dose is 1 drachm or 1 to 2 teaspoonfuls two or three times daily" It is administered in cholera for arresting vomiting and diarrhoeic symptoms (especially those of the red variety) Locally, *decoction of the leaves* is applied with much benefit to the prolapsus ani of children, is employed in scruvy and for unhealthy ulcers, and "is an efficacious gargle for swollen gums and ulceration of the mouth"' *Leaves* when ground make excellent *poultice.*

2052. PSIDIUM POMIFERUM

(*Sans. & Hind.*—Anjira)—See Ficus carica

2053. PSOPHOCARPUS TETRAGONOLOBUS

See Dolichos lablab

2054. PSORALEA CORYLIFOLIA, Linn

(N O—Papilionaceae)

only redness of the leucodermic patches, but in a small number (5 per cent) there is extreme sensitiveness to the oil, so much so that blistering may be produced The strength of the oil should, therefore, be varied in such a way as not allow its action to go beyond the state of redness of the leucodermic patches The oil being an essential oil is able to permeate through the epidermis to the prickle cells of the lymphatics and so it finds its way to the subcapillary area and stimulates the cells situated there The advantage of this oil over the skin irritants (compounds of mercury, salicylic acid, etc) is that it does not produce desquamation or any change of Keratolytic nature resulting in loss of pigment of the epidermis So far as is known P corylifolia is the only drug that has a dual action, i e, action on both Rouget's cells and the melanoblastic cells of the skin In leucoderma the melanoblastic cells are not functioning properly and their stimulation by the oil leads them to form and exude pigment which gradually diffuses into the decolorised areas"—(Chopra). A fixed oil and a resin occurring in large quantities in the seeds, are not pharmacologically active"[1]

Action & Uses in Ayurveda & Siddha—Mathura tikta rasam, katu-vipakam, seetha veeryam, kapha-haram, rasayanam, ruksham, hrithyam, in meham, kushtam, jwaram, krimi, rakta-pittam—(Therapeutic Notes).

Action & Uses in Unani—Cold 1°, Dry 1°, skin conditions, particularly leucoderma, anti-souda, balgham fevers, anthelmintic, sedative for internal ulcers—(Therapeutic Notes).

Uses—*Seeds* are useful in bilious affections and are also used to make a perfumed oil, "and its powder is specially recommended by Vaidyas in leprosy and leucoderma internally, and are also applied in the form of paste or ointment externally. The drug has been considered to be so efficacious in leprosy that it was given the name of '*Kushtanashini*' (leprosy destroyer)[5] "Sen, Chatterjee and Datta found the unsaponified oil to be pharmacologically active and they used it with success in cases of leucoderma and psoriasis".[4] "The

oleo-resinous extract of the seeds given to non-syphilitic leucoderma patients has been found beneficial by Acton. In syphilitic cases it had no effect. The effect of the essential oil is purely local."[7] "If affections of the gastro-intestinal tract such as E. histolytica infections etc., are present, these should be treated at the same time—(Chopra).[8] Seeds are given in scorpion-sting, snake-bite, leucoderma and other skin diseases. J P. B. Rau advocates the use of P. corylifolia in leucoderma.

Dr. N C. Basu, M.B, L.T.M., D.P.H., Shambazar Market, 1st Floor, Calcutta, says that the oil *Bowchi* (oil psoralea) discovered by him in School of Tropical Medicines, Calcutta, changes white skin, grey hair, rough, scaly, discoloured skin, nails, hair etc., to normal colour within 3 months, and that it is well tried and prescribed by eminent doctors. ("Sunday Times", Madras, 27-10-1940). "*Oleo-resinous extract* of the seeds (containing most of the essential oil present in the seeds) diluted with chaulmugra oil, both internally and as a simple ointment externally, is recommended as an application, gently rubbing once or twice daily, in leucoderma, white leprosy, psoriasis, and other inflammatory skin diseases and febrile conditions.—(K. L Dey). *Ointment* may be prepared by combining one part of an alcoholic extract of the seeds with two parts of chaulmugra oil and two parts of lanoline. The proportion of the active ingredients may be increased if the action is delayed This plant is eaten by cattle in Bundelkhand

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2055. PSYCHOTRIA CURVIFLORA, Thw.

(N.O:—Rubiaceae)

Tam.—Vella-kurunji. Decoction of Root is used in rheumatism pneumonia, head-disorders, ear-and eye-diseases and sore-throat (Chopra's "I.D. of I." p. 520).

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(1), (3), (5) & (6)—Chopra's "I.D. of I." p. 368; (2)—p. 367; (4)—pp 369-372, (7) & (8)—pp. 370-371.

2056 PSYCHOTRIA IPECACUANHA, Linn.

Cephaelis Ipecacuanha, Naregamia alata

(N O —Rubiaceae)

Habitat.—This is a native of Brazil and is exported from Rio de Janeiro to different parts of the world Two other varieties of Ipecacuanha namely 'Minas ipecacuanha' (cultivated in Minas Geraes in Brazil) and 'Johore ipecacuanha' (cultivated in Jobore and Selangor in the Federated Malay States) are recognised by the British Pharmacopoeia. Another variety, 'Carthagena ipecacuanha' derived from an unidentified species of *Psychotria* in Columbia is also met with in commerce The root of this variety is thicker, darker and its annulations are less marked as compared to the official root which is slender and tortuous varying in colour from brick red to dark brown The Government of India have started ipecacuanha plantations in the Nilgiris, at Mungpoo near Darjeeling and in Burma

N.B —Several species of *Psychotria* are met with on the Hills of both Western and Eastern Ghats

Parts Used —Bark, dried root, the alkaloid emetine extracted from the root

Constituents —The comparative figures of the total alkaloids and emetine contents of the different roots on the market as given below, show that emetine content of the Indian root compares very favourably with the Brazilian root though the total alkaloids are not so high The Columbian root is very rich in total alkaloids, but the proportion of emetine is very small for commercial purposes.

	Total Alkaloids	Emetine
Brazilian root	2.7 p.c.	1.35 p.c.
Brazilian stem	1.80 „	1.18 „
Columbian root	2.20 „	0.89 „
Indian root	1.98 „	1.39 „

Emetine and cephaeline are the two principal alkaloids.

Action —Powerful emetic and expectorant.

Preparations—Emetine in a pure condition, obtained from the Indian ipecacuanha is now available in India but the quantity is insignificant compared to the demand

Uses—Large quantities of the crude drug and also its alkaloid emetine are imported every year into India and sold in the markets of India Ipecacuanha is not a native of India but from time to time a number of plants have been reported to possess similar properties and have been suggested as substitutes, e g, Naregamia alata Cryptocoryne spiralis Tylophora asthmatica Asclepias curassavica, Rhodendron paniculatum Calotropis gigantea Gillenia stipulacea, Euphorbia ipecacuanha, Boerhaavia decumbens, Sarcostemma glabra etc None of these contain emetine or its allied alkaloids, but in most cases contain irritant substances which are responsible for their emetic properties Some of these remedies have been actually tried in the treatment of amoebic dysentery but without success—(Chopra) Ipecacuanha is a drug of very great importance to India in view of the wide prevalence of amoebic dysentery in India Good quality of ipecacuanha root can be grown in India and sufficient quantities could be produced to meet the demand There are many species of Psychotria which are yet to be investigated

(This whole drug is from 'Chopra's I D of I')

2057 PTERIS AQUILINA, Linn

(N O—Polypodiaceae)

Punj—Kakhash Rhizome is astringent and anthelmintic (Chopra's "I D of I' p 520).

2058 PTEROCARPUS INDICUS, Willd

(N O—Papilionaceae)

Tam.—Erravegisa *Ben*—Padauk. Gum is used as a substitute for gum Kino

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2059 PTEROCARPUS MARSUPIUM, Roxb P indicus.

(N O —Papilionaceae)

(*Sans*—Pitasala *Eng*—Indian Kino, Malabar Kino *Arab*—Damula akhavena hindi *Pers.*—Khune Siyiavushane hindi *Duk*—Natka damula. *Hind*—Bijasar *Ben.*—Pit sal. *Bom.*—Chinai gond (gum) *Bom. & Mah* Bibla, Honne *Tel*—Peddagi *Tam*—Vengai maram *Can*—Hanemara, Bethonne) common in Central and Southern India, and Ceylon This tree is the source of the kino of the European Pharmacopoeas Kino is the juice obtained by incisions in the trunk inspissated without artificial heat The principal constituent of kino is a peculiar tannin kino-tannic acid 70 to 80 p c, usually believed o be identical with catechu tannic acid and distinct from gallo-tannic acid By boiling an aqueous solution of kino-tannic ac d a precipitate of kino-red is obtained, treated with dilute acid a similar precipitate occurs and crystals of kinoin separa e Other constituen s of Kino are pyro-catechin, gallic acid and gum It is partially soluble in water, more so in boiling water and almost entirely in alcohol, about 90 p c *Kino* is a simple astringent, administered in diarrhoea, somewhat m lder in action than catechu, therefore better adapted for females and children *Gum* is used for toothache *Bark* is used in *powder* or *decoction* in diarrhoea, pyrosis etc *Bruised leaves* are applied as *paste* to boils, sores and skin diseases 'Leaves and stalks which are succulent are fed to cattle, by chopping them and mixing with dry paddy straw in a proportion of 1 par leaves with 3 parts of straw This is a rich ration as the green foliage would leaven the whole A mixture of dry and green fodder gives a good relish and increases the food value" —(Bombay Govt. Agri Dept Bulletin)

2060 PTEROCARPUS SANTALINUS, Linn.

P lignum

(N O —Papilionaceae)

Sans Hind. Ben. Mah. & Can—Rakta-chandana. *Eng*—Red Sanders or Red Sandalwood *Fr*—Santal Rouge *Ger.*—

Dunkelroche Flugal frucht *Hind*—Lalchandana *Pers.* —Sandale surkh *Guj & Bom*—Ratanili *Tel*—Rakta gandhamu, Erra-gandamu *Tam.*—Shen-chandanam. *Mal.*—Chan-chandanam *Kon*—Rachandana

Habitat—This small tree is generally met with in the forests of Southern India

Parts used.—Wood

Constituents—Santalin or santalic acid, a crys alline red principle, santal pterocarpin, a white crystalline insoluble substance, homopterocarpin with the same general properties, but more soluble in carbon bisulphide, glucoside and colouring matter

Action—Mildly astringent, cooling and tonic

Uses—Heartwood of red sandalwood is called Santalum rubrum. It enters into the composition of numerous astringent remedies used in complaints like bleeding piles, haemorrhages, dysentery, e c Red Sandalwood is prescribed as a diuretic in fistula in ano when there is no fever. Powdered and mixed with milk it is taken for bleeding piles. Decoction of the legume is useful in chronic dysentery Wood is also an ingredient of cooling external applications for inflammations, scorpion sting, piles, headaches, etc *Wood* powdered or beaten up into a paste, is applied to eyes in opbthalmia and to sore eyes, rubbed with honey or with oil it is applied to boils and abscesses *Wood* rubbed on a piece of stone with water forms an excellent cooling application and purifier of skin after bathing like white sandalwood It is also employed as a wash in superficial excoriations of the genital organs In British Pharmacy the wood is generally employed as a colouring agent in the compound tincture of lavender and in Indian preparations, as an ingredient of several medicated oils.

2061 PTEROSPERMIUM ACERIFOLIUM, Willd.

(N O—Sterculiaceae)

(*Sans.*—Karnikara. *Hind.*—Kanlar *Ben & Bom.*—Kanak-champa *Ben*—Muchu kunda *Tam.*—Matsakanda

Ger —Abornblattriger Flugelsamen) is a species grow ing in Bengal, its yellowish fragrant flowers are used in leucorrhoea, suppura ing small-pox, gastralgia, and the tomentum of the leaves is employed as a haemostatic

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2062. PTEROSPERMUM GLABRESCENS

(Tam —Thaddo) is a species found in Mal abar where its leaves are used in epididymitis

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2063 PTEROSPERMUM HEYNEANUM, Wall

(Tel —Lolangu) is a species found on the Eastern coast of India where its flowers are used in leucorrhoea and the *powdered leaves* are smoked like tobacco in nervous head ache —(Chakravarthy)

2064 PTEROSPERMUM SUBERIFOLIUM, Lam ,

or P carescens

(Sans —Moochukunda *Hind & Ben* —Much kund *Ben* Muscunda *Bom* —Muchu kunda *Uriya* —Baelo giringa *Tel* —Lolagu *Tam* —Taddo *Hind. Ben & Mah* —Muchkand. *Burm* —Naji *Sinh* —Velenge, Venangu) is found growing on the Western Peninsula, Konkan and in many other parts, as far as Burma in the Eas and Ceylon in the South *Flowers* made into a *paste* with rice-vinegar or *Kanjika* forms a useful application for hemicran a, also for leucorrhoea In the Konkan, *flowers* and *bark* of this and P acerifolium are charred and mixed with Kamala and applied to suppurating small-pox —(Dymock)

N B —Several species of Pterospermum occur in the forests of low hills of Western and Southern India

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2065 PTYCHOTIS AJOWAN, DC,

Carum copticum, P. coptica, Carum roxburghianum or P. roxburghianum, (Benth), Ammi copticum.

(N O —Umbelliferae)

Sans—Yavanika, Ajmada, Agniverdhana, Deepyaka, Yamani *Eng*—Bishop s weed, Omum (seeds), Lovage, Ajawa Seeds *Ger*—Indisches Fal enohr *Pers*—Zin anas-Nankhvah *Arab*—Tolib-ul-khubza, Amusa, Kamumi-muluki, Kamue-muluki *Hind & Duk*—Ajowan *Ben.*—Jowan *Punj*—Ajawain *Kash*—Jawind *Mah & Bom*—Ajwan, Owa Vova. *Guj*—Yavan, Ajamo *Tel*—Omamu, Oman *Mal*—Homam, Ayamodakam *Can*—Voma *Kon.*—Vovo *Sinh*—Assamodagam *Burm*—Samhun Malay—Lavinju larmisi

Habi at—This plant (Carum copticum) grows and is largely cultivated in Eastern India particularly abundant in and around Indore and the Nizam's Dominions

Parts Used—Fruit

Const tuents—An aromatic volatile essential oil and a cry stall ne substance—s earoptin which collects on the surface of the distilled water, also cumene and terpene, 'thymene" The stearop in known as *ajwan ka phul* (crude thymol) or (flowers of ajowan camphor) is identical with English thymol contained in Thymus vulgaris 'The seeds of Carum copticum contain he antiseptic thymol and they yield 2 to 3 per cent of an essential o l which is offi- a' as 'oil of ajw n' which conta ns not less than 40 to 50 per cent of thymol "—(Chopra's 'I D of I ' p 82)

Action—Seeds possess diffusible stimulant, stomachic, carminative, tonic, aromatic pungent an ispasmodic and antiseptic properties The enthelm ntic properties of thymol extracted from ajowan seeds are well known War ng says that the seeds are considered o combine the stimulant quality of capsicum or mus ard with the bitter property of chiretta and the antispasmodic virtues of asafoetida Carpels are aromatic

Uses —Omum seeds are useful in flatulence, indigestion, colic, atonic dyspepsia, diarrhoea, cholera, hysteria and spasmodic affections of the bowels, and check chronic discharges such as profuse expectoration in bronchitis *Volatile oil* is also used in cholera, flatulent colic, atonic dyspepsia or diarrhoea, hysteria and indigestion It produces a feeling of warmth and exhilaration and relieves the sinking and fainting feelings which accompany bowel disorders Dose of the oil is from 1 to 3 drops on sugar or made into an emulsion with mucilage and water Externally it is applied to relieve rheumatic and neuralgic pains *Oil*, and the *distilled water* from the seeds, known as *Ajwan ka-arak* or omum water in doses of 1 to 2 ounces are useful in the early stages of cholera to check the vomiting and purging and to stimulate the system Omum water and lime water each 1 ounce with 5 minims of tincture of opium added is a good remedy for diarrhoea, and an ounce each of omum water and infusion of chiretta with a grain of sulphate of iron added to the mixture forms a nice general tonic, taken twice daily It is advantageously combined with other aromatics such as eucalyptus, peppermint, gaultheria etc, to make it an efficient carminative *Oil* and *flowers of Ajowan* combined with soda forms a nice remedy for acidity, dyspepsia flatulence, etc. Omum seeds, black pepper, ginger, each ½ drachm and cardamom 1 drachm all powdered and mixed forms a useful carminative for colic etc, dose is one drachm twice daily "The chief importance of ajowan seeds is for production of thymol, which is a very valuable anthelmintic."—(Chopra). *Seeds* are used also as spices along with betel nuts and *pan* leaves in flatulence, dyspepsia and spasmodic affections. A teaspoonful of the seeds with a little rock salt is a common domestic remedy for indigestion from irregular diet In cases of colic or pain in the bowels, Chakradatta recommends a compound powder, made up of equal parts of *Ajowan*, rock salt, *sonchal* salt, *Yavakshara*, asafoetida and chebulic myrobalans Dose is 10 to 20 grains taken with wine For stomach ache, colic, cough and indigestion or catarrh, omum seeds are masticated and swallowed, and followed by a drink of hot water For biliousness, vomiting, cold, etc., omum

seeds and gool mixed together are eaten For coryza, migraine, delirium, etc, omum seeds powdered tied up in a piece of thin clo h or muslin and smelt frequently or the powder may be used in cigarettes and smoked A *plaster* or *poultice* of the crushed seeds is used to relieve the pain of colic Omum seds made hot are used as a dry fomentation to the chest in asthma and to he hands and feet in cholera, fainting, syncope, and rheumatism A *compound decoction* made of the seeds, pipli Adhatoda leaves and poppy capsules, is used for internal administration in doses of ½ to 1 ounce In cases of difficult expectoration from dried up phlegm or its tenacity, bu ter milk with powder of seeds added is taken internally *Ajowan* of the variety imported from Khorasan province of Persia is good for ankylostoma, it is taken with rock salt on empty stomach early in the morn ng—(Dr Roy) The wild variety (*Vonajowan*) is also good and is an ingredient in several vermifuge combinations With astringen s the seeds are used as a topical remedy in relaxed sore throat they are further used to disguise the taste of disagreeable drugs especially castor oil and to obviate their tendency to cause nausea and griping In habitual drunkenness and dipsomania omum is useful On account of its biting or pungent, yet pleasant taste and the sensation of warmth it creates in the stomach, it has been constantly recommended of late years to those afflicted with the desire for alcoholic drinks I does not of course intoxicate, but it is no mean substitute for the ordinary stimulant, in removing almost immediately the sensation of gnawing or sinking at the pit of the stomach, which the frequent use of spirits so invariably brings on"—(Wood) He states that it has been the means of rescuing many otherwise sensible and useful men from slavery to the habit of spirit-drinking *Leaves* of the tender omum plant (before it begins to bear seed) are used as vermicide, *leaf-juice* is given for worms *Leaves* bruised into a mass or poultice are applied or rubbed over the bites of poisonous insects A compound oil made up of the leaf-juice of *Ajwan*, *Ispand* (Henna) and *Malkangni* each one part, and three parts sweet oil is recommended in *Haj ul Gurl a* for diseases of ear and nose 'Crude thymol popularly called '*ajowan ka phul*'

is sold extensively in India The large-seeded variety of Carum copticum is chiefly used for home consumption and grows in the Kurnool-Guntakal district of Madras Presidency." (Chopra). The carpels are used as a condiment.

2066 PUERARIA TUBEROSA DC or Hedysaram tuberosa

(N.O.—Leguminosae).

Is a large deciduous climber with woody tuberculated stem. (*Hind.*—Bilaikand; Bidari kand. *Ben.*—Shimeeya; Batrajee. *Punj.*—Siali; Sural *Tel.*—Daree; Goomodee; (Darigummadi). *Raj.*—Gorabel. *Guj.*—Karwai-nni, *Bom.*—Dari) found on the hills of the Konkan, Deccan, Kanara, Himalayas, Nepal, Orissa, Behar, etc. *Tuberous root* peeled and bruised into a *cataplasm* is applied to reduce swellings of the joints It is given as a demulcent and refrigerant in fevers—(Watt). In Nepal it is employed as an emetic and tonic and also as a lactagogue.

2067. PULICARIA CRISPA, Benth.

(N O —Compositae).

Hind.—Durlina; *Punj*—Bui Action—Antiseptic. (Chopra's "I. D. of I." p. 521).

2068 PUNERIA COAGULANS, Stocks

(N O —Solanaceae).

Action—Emetic, anodyne and sedative, used in colic and dyspepsia (Chopra's "I D of I." p 521).

2069. PUNICA GRANATUM, Linn

(N.O —Lythraceae)

Sans—Dadima-phalam; Kuchaphala, Shukadana, Darimba. *Eng*—Pomegranate *Fr*—Grenadier cultive *Ger*—Granat baum. *Hind.*—Anar; Dhalim; Anar ke-per; (dye) —Mangal

Ben. & Mah.—Dalimb *Bom.*—Anara, Dalimba *Sind.*—Anar-Dalum *Arab.*—Shajratur-rumman *Punj.*—Daru, Jaman. *Duk. & Ben.*—Darim, Dalim. *Pers.*—Gulnar; Darakte-nar *Kash.*—Dnaun *Guj.*—Dadam *Can.*—Dalimbay, Dalimbuhannu *Nah. & Kon.*—Dalimba *Tel.*—Dadima, Dalimba, *Tam.*—Madalu Madalam, Madalangkai *Mal.*—Matalam. *Sinh.*—Delumgaha *Burm.*—Sale-bin, Talibin *Malay.*—Dalima.

Habitat.—This tree is found wild in Persia, Arabia Afghanistan and Baluchistan and cultivated nearly all over India. The Indian fruit is inferior to the imported one

Varieties.—"Poona", "Dholka", "Muscat", "Cabul", are the four which are familiarly found in the Bombay Presidency, and (1) Bedano, (2) Kandhari, (3) Vanga, (4) Chiho, (5) Sona (6) Dandan (7) Multani chiho, (8) Sehwani, (9) Green Sehwani (10) Sindi Sehwani, (11) Jesalmeri, (12) Sindi Jesalmeri are the 12 varieties grown in Sind.—(Bombay Govt Agricultural Dept Bulletin)

Parts Used.—Flowers rind of the fruit fresh fruit-juice dried bark of the stem and root

Constituents.—Bark and the rind of the fruit contain tannin 22 to 25 p.c., and the root bark contains punico-tannic acid 20 to 25 p.c., mannite, sugar gum, pectin ash 15 p.c., an active liquid alkaloid 'pelletierine' and oil liquid 'isopelletierine' and two inactive alkaloids methyl pelletierine and pseudo pelletierine Punico-tannic acid when boiled with dilute sulphuric acid is resolvable into ellagic acid and sugar "The following table shows the general variation, when about a dozen samples were analysed in Agricultural College, Poona.—

Non-edible matter (rind and seed)	28 63 to 49 4	per cent
Seed only	10 10 to 16 80	-do-
Juice	57 47 to 71 37	-do-
On Juice		
Acidity (in grams of H_2SO_4)	0 37 to 0 78	-do-
Reducing sugars	5 11 to 14 56	-do-
Total sugars	5 11 to 14.56	-do-

Among these samples, a very good sample of pomegranate was received, the analysis results of which, being very striking, are given below The 'Muscat" type of pomegranate was also analysed and the results show the ingredients in a very marked degree —

	A typical good fruit of ordinary variety	Muscat Pomegranate
Non-edible portion	49 40 per cent	30.26 per cent.
(skin)	32 60 -do-	16 71 -do-
(seed)	16 80 -do-	13 55 -do-
Juice	50 60 -do-	69 74 -do-
On Juice —		
Acidity (in grams of H_2SO_4)	0 516 per cent.	0.27 per cent.
Reducing sugars	14 56 -do-	11.32 -do-
Non-reducing sugars	nil	nil
Total sugars	14.56 -do-	11.32 -do-

(Analysis taken from Bom Govt Agri. Dept. Bulletin)

Action.—Granatum grains and its alkaloids are astringent, anthelmintic and taenifuge Flowers, bark of the tree, and rind of fruit are astringent and stomachic. Juice of the fruit is cooling and refrigerant. Alkaloid "pelletierine" is anthelmintic and taenicide Leaf juice is styptic and astringent. Dried bark of the stems and roots is anthelmintic. "Fruit as a whole is acid and sweet when ripe Pulp is delicious, cooling and refreshing The tree is much valued for its fruit and for the healing properties of its root, leaves, bark, flowers and fruit rind" (Bom. Govt. Agri. Dept. Bulletin)

2070. PUTRANJIVA ROXBURGHII, Wall., or Nagea putranjiva

(N O —Euphorbiaceae)

Sans—Putra-jiva, Putranjiva, Garbhakara *Hind.* & *Ben*—Jaiaputa, Joti, Jaiputa *Mah.*—Jivan-putr, Puta-jan. *Tam*—Karupali, Karupale *Tel*—Kadrajuvi, Mahapu ra jiviyarala *Mal*—Pongalam) is found wild and cultivated throughout tropical India Constituents—Seeds yield an olive brown or pale yellow rather turbid oil, Seeds give about 28 86 p c of Kernels or the Kernels yield to ether 42 9% of a clear light yellow oil (Hooper) Oil from the seeds has been found to contain the glycerides of certain acids, together with sitosterol m.p 143°-145° (S Krishna & S V. Puntumbekar, Dehra Dun) *Leaves* and *stones of the fruit* are offic nal in certain parts of India, and are given in decoction in colds and fevers. —(Stewart) *Nuts* are hung round the neck of children as a charm to keep them in good health They are believed to be "productive of impregna ion and medicinal properties are also attributed to them, they are sometimes given internally in colds on account of their supposed heating properties."—(Pharm Indica)

2071 PYGEUM GARDNERI, Hook. f

(N O —Rosaceae)

Grown in the Western Gha's, in the Nilgiris, Pulneys and Travancore

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2072. PYGEUM PERSICA or Amygdalus persica or Prunus persica

(N O —Rosaceae)

(Hind—Aru Eng—Peaches) are native of Persia, cultivated in the Deccan. Fruit contains prussic acid When ripe it contains much sugar and gum and is a very wholesome fruit. Flowers are purgative. Ripe fruit is stomachic, demulcent and antiscorbutic, aperient and easily digestible

Kernels of the seeds are a good substitute for bit er almonds Decoction of the leaves is laxative, anthelmintic and sedative Peach-brandy is distilled from the fruit

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2073 PYGEUM WIGHTIANUM, Bl.

(N O—Rosaceae)

Grown in Western Ghats, the Nilgiris, Pulneys and Travancore

2074 PYRETHRUM INDICUM, DC.

See Chrysanthemum indica

(N O.—Compositae)

Eng.—Sweet Pellitory, *Hind & Bom*—Mitha akalakara, *Pers*—Bozidana). *Roo is devoid of the acridity of the true* pellitory root, though it resembles closely *akalakara.* Its taste is sweet It is aphrodisiac, tonic, alterative and deobstruent It is useful in rheumatism, gou and enlargement of the liver and spleen It is also an anthelmintic and abortifacient It is employed generally in the form of *paste* and *confection*

PYRETHRUM RADIX

See —Anacyalus pyrethrum

2075. PYRETHRUM UMBELLIFERUM, Boiss.

(N O—Compositae)

Hind—Mitha-akarkara Constituents—Pyrethrine Action—Aphrodisiac, tonic, abortifacient and anthelmintic. (*Chopra's* "I D of I" p 521)

2076. PYRUS AUCUPARIA, Gaertn.

(N O—Rosaceae)

Punj—Battal Constituents—Bark contains HCN glucoside (Chopra's "I D of I" p 521).

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malaria or splenic enlargement, though resisting quinine and other usual treatment—(Tukina). A *fluid extract* of the fresh bark in doses of half an ounce, repeated is equally effectual as anthelmintic Alkaloid, pelle ierine and its compounds—tannates and sulphates of the alkaloid, have also been used, the most suitable being the tannate, which is very difficult to dissolve and therefore not readily absorbed, it is administered in doses of 3 to 8 grains fasting and then followed by a purgative Bark of the roots is also used in several medicinal preparations, as a cure for worms *Juice* of the grain fruit in combination with cloves, g nger and galls is given in honey in piles *Acid saccharine juice* of the fresh fruit is much esteemed in dyspepsia and as a cool ng pleasant beverage in fevers and sickness quenching thirst, etc *Dried flowers* known as "goolnar" are used in a compound powder composed of these dried flowers 1 drachm, gum arabic 1 drachm, Dragon's blood (Sanguin draconis) 2 drs, and opium 8 grains This is useful in haematuria, haemorrhoidal flux, haemoptysis, dysentery, etc Dose is 10 to 15 grains *Flower buds* powdered and given in doses of 4 to 5 grains are useful in bronchitis "Unripe flowers are dried and pounded to make a snuff which is considered to be the best astringent in nasal haemorrhage, while internally it is very effective during infantile diarrhoea and dysentery *Green leaves* are made into a paste and applied on the eyes during conjunctivitis" Fresh unexpanded flower buds pounded and mixed with powdered cardamom seeds, poppy seeds and mastiche and made into a linctus with syrup forms a specific remedy in the treatment of chronic diarrhoea of children and chronic dysentery —(Tukina) *Juice of the flowers* with the juice of Cynodon dactylon equal parts is given to stop bleeding from the nose In relaxed sore-throat the above described decoction with the addition of alum (a drachm to a pint of decoction) is a very useful gargle, and also a good astringent injection in vaginal and uterine discharges such as leucorrhoea, passive haemorrhages, ulcers of the uterus and of the rectum, *in these cases the cloves or cinnamon should be omit ed Seeds* of rotten fruits are dried and sold as *khat* (sour substance used in curries) The drug is used in scorpion sting also

2070. PUTRANJIVA ROXBURGHII, Wall., or Nagea putranjiva.

(N O —Euphorbiaceae)

Sans—Putra-jiva, Putranjiva, Garbhakara. *Hind.* & *Ben*—Jaiaputa, Joti, Jaiputa *Mah.*—Jivan-putr; Puta-jan. *Tam*—Karupali, Karupale *Tel*—Kadrajuvi, Mahapu ra jiviyarala *Mal.*—Pongalam) is found wild and cultivated throughout tropical India Constituents—Seeds yield an olive brown or pale yellow rather turbid oil, Seeds give about 28 86 p c of Kernels or the Kernels yield to ether 42 9% of a | clear light yellow oil (Hooper) Oil from the seeds has been found to con ain the glycerides of certain acids, together with sitosterol m.p 143°-145° (S Krishna & S V Puntumbekar, Dehra Dun) *Leaves* and *stones of the fruit* are offic nal in certain parts of India, and are given in decoction in colds and fevers. —(Stewart) *Nuts* are hung round the neck of children as a charm to keep them in good health They are believed to be "productive of impregna ion and medicinal properties are also attributed to them, they are sometimes given internally in colds on account of their supposed heating properties."—(Pharm Indica)

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(N O —Rosaceae)

Grown in the Western Gha's, in the Nilgiris, Pulneys and Travancore

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2072. PYGEUM PERSICA or Amygdalus persica or Prunus persica

(N O —Rosaceae)

(Hind—Aru Eng—Peaches) are native of Persia, cultivated in the Deccan Fruit contains prussic acid When ripe it contains much sugar and gum and is a very wholesome fruit. Flowers are purgative Ripe fruit is stomachic, demulcent and antiscorbutic, aperient and easily digestible

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(N O —Rosaceae)

Grown in Western Ghats, the Nilgiris, Pulneys and Travancore

2074 PYRETHRUM INDICUM, DC

See Chrysanthemum indica

(N O —Compositae)

Eng —Sweet Pell tory, *Hind & Bom* —Mitha akalakara, *Pers* —Bozidana) *Roo* is devoid of the acridity of the true pellitory root, though it resembles closely *akalakara*. Its taste is sweet It is aphrodisiac, tonic, alterative and deobstruent It is useful in rheumatism, gou and enlargement of the liver and spleen It is also an anthelmintic and abortifacient It is employed generally in the form of *paste* and *confection*

PYRETHRUM RADIX

See —Anacyalus pyrethrum

2075 PYRETHRUM UMBELLIFERUM, Boiss.

(N O —Compositae)

Hind —Mitha akarkara Consti uents —Pyrethrine. Act on —Aphrodisiac, tonic, abortifacient and anthelmintic. (Chopra s 'I D of I ' p 521)

2076. PYRUS AUCUPARIA, Gaertn.

(N O —Rosaceae)

Punj —Battal Constituents —Bark contains HCN glucoside (Chopra's *'I D of I" p* 521)

2077. PYRUS CHINENSIS, Roxb

Used by Chinese medicinally (Chopra's "I D. of I." p. 521)

2078 PYRUS COMMUNIS, Linn.

(*Eng* —Pear *Sans* —Amritaphala *Hind* —Nashpati. *Punj* —Nak)—See Psidium guyava Action —Astringent, sedative and febrifuge

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2079 PYRUS CYDONIA, Linn or Cydonia vulgaris, Pers

(*Eng* —Quince *Port* —Marmelo *Hind* —Bihidana *Duk.* —Behidana *Kash* —Bamtsunt, Bamsulu *Arab* —Hubbus sapharjala *Pers* —Tukhm e abi *Tam* —Shimai-madalaivirai) is cultivated in North west India There are three kinds—sweet, sour and subacid Sweet and subacid quinces are commonly eaten as a fruit, are considered cephalic, cardiac, demulcent, astringent, restorative and tonic Seeds are demulcent *Leaves*, buds and *bark* of the tree are domestic remedies among the Arabs on account of their astringent properties *Seeds* are a popular remedy in gonorrhoea and in dysentery with inflammation of the mucous membrane which their mucilage protects from irritating fecal matter, mucilage is also prescribed in coughs, sore-throat, etc. Externally it is applied to scalds, burns and blisters —(Dymock) *Seed-coat* imparts to boiling water a peculiar kind of mucilage cydonin It is used as a hair-dressing The chief use of the fruits is for making jelly The name marmalade is said to be derived from 'Marmelo' the Portuguese name for quince *Dried fruit* is used as a refrigerant —(Wat). Constituents —Glucoside amygdalin Fresh seeds contain 15 3 p c of oil of a yellow colour and of a faint odour of oil of almonds Mucilage contained in the epithelial covering consists of a compound of gum and mucilage

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2080 PYRUS MALUS, Willd. & Linn.

(*Sans*—Sebhaphala, Shivinthaka. *Eng*—Crab-apple *Urdu*—Sev *Bom & Guj*—Sufferjang *Sind*—Soof Hind—Seb-Safargang *Mah*—Safarchand *Can*—Servu kittalay) Is cultiva ed in North west India and Kashmir Fruit apple consists of much water (80 p c), vegetable fibre, albumen, sugar, gum, chlorophyll, malic acid and lime German chemists state that the apple contains a large quantity of phosphates The Scandinavians called it the Food of he Gods" and believed it possessed virtue to renew both mind and body Apples are good for those disposed to gout and sluggish liver, and those who follow a sedentary life Two or three eaten at night—uncooked or baked—correc constipation Rotten apples used as a poultice is an old Lincolnshire remedy for sore eyes 'Root is anthelmint c, refrigerant and hypnotic" —(Chopra) *Juice* of apples without sugar will often reduce acidity of the stomach, becoming changed into alkaline carbonates and thus correcting sour fermentation It is stated that in countries where unsweetened cider is used as a common beverage, stone or calculus is unknown It may therefore be fairly surmised that the habitual use of natural unsweetened cider keeps in solution matter which is otherwise liable to be separated in a solid form by the kidneys How much better and more valuable the fresh ripe fruit must be! Apples are a good substitu e for alcohol, those who eat apples do not drink whisky and *vice versa*! Its juice is valuable as a blood purifier Organic acids such as malic acid etc contained in the fruit become alkaline carbonates in the blood and so help to neutralise the acidi y of the blood due to uric acid, they render the urates clogging the system, more soluble and thus assist materially in getting rid of them from the system Therefore the unfermented juice of the apple is a useful remedy in gouty and rheumatic disorders, lumbago, sciatica, neuralgia, neuritis, asthma and gouty eczema Apples may also be eaten raw, ripe or baked or stewed *Ripe sweet apples* may be taken raw if properly masticated in dyspepsia, if not they may be taken scraped In weak digestive power, they are taken baked or stewed. From one to two or even three pounds per day are taken.

They are a natural antidote to most forms of biliousness Many sick headaches are relieved or cured by adopting the apple-cure for a few days after first cleansing the bowels with a soap enema. Acids contained in the fruit act as a mild germicide and thus prevent auto-toxaemia which accompanies constipation, owing to the absorption into the blood of the poisonous matter containing in the long retained waste matter Apples therefore have a healing effect also on chronic catarrh of the mouth and throat caused by the presence and activity of germs. For the sick and convalescent juicy baked apple, sweetened if necessary with a little minced dates is an ideal appetiser Pickles are made by boiling well-developed berries for half an hour and putting them in sugar syrup. This kind of pickle is known as "*Murabo*" in Sind and Mahratta provinces As a vegetable the fruit is cooked in curries, especially mutton —(Chopra)

2081 PYRUS TOMENTOSA, Roxb

Fruit is tonic and febrifuge

2082. QUASSIA EXCELSA or Q. amara

Is a small branching tree of the genus Simarubeae (*Eng.*—Quassia wood *Vernaculars*—Koshia) found in Jamaica. Surinum of quassia obtained from Quassia amara was formerly used for medicinal purposes, but it has now been replaced by Jamaica quassia The wood is so called after Quassi, Coissi or Quass, a Negro of Surinum who first discovered its bitter tonic and febrifuge properties and used it in malignant fevers and malaria so prevalent in the moist tropical countries Quassia wood is in the form of yellowish white shavings chips, or rasp ings or large dense billets. Its constituents are (1) *quassin*—a mixture of *a* picrasmin and *b* picrasmin bitter principles (2) a volatile oil. Quassin when heated melts like resin both alkalies and acids increase its solubility in water Quassia is a bitter tonic without astringency and as it contains no tannin it can be ordered with iron preparations It invigorates the digestive organs It is

most suitable in dyspepsia and anorexia. A strong decoction of quassia is a good poison for flies and fish, similarly it acts in various diseased conditions of the blood destroying unhealthy organisms and acting as a poison to insects and the lower forms of animal life When injected into the rectum a strong *infusion* will destroy thread worms The infusion of the B P (1 in 240 of boiling water) is given in dyspepsia, loss of appetite and debility after fevers, etc The strength of the *cold infusion* is 1 in 120, and the dose of both is ½ to 1 ounce It may be used also in the form of *tincture* (1 in 10) in doses of ½ to 1 drachm It is given in bilious fevers, together with alkaline salts in gout with aromatics and ginger, in hysteria with camphor and tincture of valerian, in dyspepsia with sulphate of zinc or iron or with mineral acids. Dose is from 1 to 4 ounces.

2083. QUERCUS INCANA, Roxb

(N O —Cupuliferae)

(*Eng*—Kumaon Oak *Kash*—Sila, *Punj*—Ban.) Constituents—The percentage of tannin in the wood varies in a most capricious manner and the tannin is always on the low side—(H S Chaturvedi & E. R. Watson, Cawnpore) Action—Diuretic and astringent. Used in asthma (Chopra's 'I. D of I p 521)

2084 QUERCUS INFECTORIA, Oliv

Q tinctoria, Oliv

(N O —Cupuliferae)

Sans—Majuphul *Ben & Mah*—Majuphala *Eng*—Oak Galls Magic Nuts *Hind*—Majuphul Mazu Muphal *Bom. Guj & Kon*—Maiphala *Bom*—Maiphal *Pers*—Mazu. *Arab*—Uffes *Tel*—Mashikaya. *Tam*—Machakai *Can.*—Machikai *Burm.*—Pinza kani si, Pyintagar-ne-thi *Malay*—Manja kani

Habitat.—This is a tree bearing the oak galls of commerce, a native of Greece, Asia Minor, Syria and Persia, the galls

are imported into India They result from the puncture and deposit of an egg or eggs of an insect Cynips Gallae tinctoria on the leaves and buds of various species of oak and on a species of sumach They are darker in colour and known as the "black" or "blue", the "white" or perforated galls, these being lighter in colour are inferior in quality.

Parts used—Galls, bark

Constituents—The principal chemical constituent of galls is tannin or tannic acid (Gallo-tannic acid) 50 to 60 or 70 p c, and about 3 per cent of gallic acid "Oak-bark contains up to 16% tannic acid to which it owes its effect"—(Dr. Madaus's Book) Alleppo galls contain 50 to 60% of tannin (tannic acid) Chinese galls yield as much as 70% tannic acid Tannic acid is found to the largest extent in galls though it occurs in a moderate amount in numerous plants, e g, sumachs, valonia, dividivi and myrobalans—('Industry," April 1942, p 14) Characters—"Pure gallic acid assumes the form of white or nearly colourless feathery crystals of a beautiful silky lustre, the commercial acid, however, is usually of a pale yellow colour, it is soluble in alcohol, and also, sparingly in ether, its solution in water undergoes decomposition when exposed to air When strongly heated, gallic acid is converted into meta-gallic acid

Action—"Though oak-bark contains tannic acid it would be an error, however, to administer pure tannic acid in place of the entire drug Tannic acid is absorbed in the small intestine, whereas it is protected by cellulose in the drugs containing tannic acid so that it reaches the lower intestinal sections unchanged—(Dr Meyer-Gottlieb) Tannic acid, contrary to a wide-spread assumption, has not the mechanical action of tanning the mucous membranes, it unfolds its action only after absorption into the lymph-stream, influencing and contracting the smooth musculature—(Dr Schulz)"—(Dr Madaus's Book) Galls are powerfully astringent and styptic

Uses—Galls are used as *powder* in doses of 10 to 20 grains, or in the form of *infusion* or *decoction* (1 in 13) Decoction is usually employed as an astringent wash, gargle, enema or

injection It may also be given internally in doses of 1 to 2 ounces thrice daily or oftener, powder is given in diarrhoea, gleet and long-standing gonorrhoea, thrice daily, also in leucorrhoea and other vaginal discharges in addition to the injections of the decoction at the same time In the advanced stages of diarrhoea and dysentery the decoction seems to answer better, given in doses of 1½ to 2 ozs, thrice daily with the addition of opium (10 to 20 minims of laundanum) to each dose for adults only "Dr Boek and Dr Matthiolus praise oak-bark for its contracting powers in all diarrhoeas, bloodspitting, hematuria, profuse menstruation, gonorrhoea Drs Osiander, Hufeland and Kobert regard it as indicated in stomatitis, scurvy and dysenteric diarrhoeas Oak bark is used in popular medicine in chronic gastric catarrh, menstruationimia and enuresis nocturna Chronic catarrh is a special domain of the tannic acid therapy, but tannic acid has a favourable action also in chronic nephritis where it heightens diuresis and reduces albumen excretion Apart from its property to diminish albuminuria, good results have also been observed in renal hemorrhage and obstinate spleen-swelling after intermittence (Dr Schulz) —(Dr Madaus's Book) Used in intertrigo, impetigo and eczema In prolapsus (descent) of the rectum the daily use of an enema of decoction of galls proves useful and in the case of children a pad saturated with the decoction may be kept over the parts after the protruded bowel has been returned The same treatment is applicable in cases of prolapsus of the uterus, the decoction being used as a vaginal injection As a gargle in relaxed sore-throat, enlargement of the tonsils and stomatitis, the decoction of galls is used with the addition of 7 grains of alum and 1½ drachms of honey to every ounce of the decoction An ointment of the powdered galls (1 in 4 or 5 of ghee or vaseline or benzoated lard) is applied to haemorrhoids unattended by increased heat or inflammation, if there is much pain "in anal fissures and ulcerating haemorrhoids" (Col Chopra), opium (1 in 16 parts of the ointment) may be added It should be applied twice daily *Enemas* of the decoction may also be used with benefit Tannic acid in its pure form, as well as gallic acid, derived

from nut galls are valuable styptics and astringents, useful in all internal haemorrhages, in excessive secretions from different parts of the body and for cutting short local inflammations as in various forms of sore- throats, nasal catarrh and gonorrhoea Tannic acid is used in poisoning by nux vomica, datura, opium and aconite root, after the stomach has been emptied by emetics (the first thing to be done), decoction of galls in doses of 3 to 4 ounces is given every quarter hour for five or six times in succession

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2085 QUERCUS LAMELLOSA, Smith.

(*Nepal*—Shalshi) Parts Used—Bark and acorns.

2086 QUERCUS PACHYPHYLLA, Kurz.

(*Nepal*—Barakatus) Parts Used—Bark and acorns. Action—Astringent

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2087 QUINETUM

Is an amorphous powder prepared from the red cinchona bark grown at the Government cinchona plantations in India. Quinetum contains all the febrifugal alkaloids of the Cinchona succirubra viz—quinine 25, cinchonidine 50, and cinchonine 20 p c It is a valuable febrifuge, but takes a longer time to act Although it has the same apyretic effect as quinine, yet it is less powerful larger doses are, therefore, required at longer intervals before the paroxysms It has its disadvantages, however, being apt to create nausea, vomiting, with a burning sensation at the pit of the stomach, extending in some instances to the throat and occasionally diarrhoea Like quinine, if given in sufficient doses to produce its specific effect, it gives rise to headache, singing in the ears, giddiness and other symptoms included under the term "quinism", but all these pass away on the discontinuance of the remedy, leaving no after ill-effects It is, in fact, a thoroughly safe and efficacious remedy in ordinary simple intermittents, in chronic cases and as a tonic, although not so effective in the

severer forms and remittent fevers as quinine The dose is from 5 to 10 grains twice or thrice daily during the in ermission or before the paroxysms Fresh lime-juice is recommended as an eligible vehicle for its proper use Or it is administered in the form of pills with an effervescing mixture, with the object of obviating the ill effec s, such as the irritability of the stomach which it frequently produces In debility after fevers it is recommended as a tonic given in small doses In enlargement of the spleen it is also recommended in combination with sulphate of iron In neuralgia, face-ache, Tic-Douloureux (neuralgia of the head or face) recurring periodically it should be given in full doses (10 grains) thrice daily for adults

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2088 QUININE

See—Cinchona cortex, is an alkaloid which exists in the cinchona bark, and which is extracted by a chemical process and, being afterwards combined with sulphuric acid, forms the crystallized disulphate of quinia or quinine as it is commonly called For internal administration this is decidedly much superior to cinchona or quinetum As a tonic and antiperiodic it stands unrivalled, in agues and intermittent fevers of all kinds it is indispensable, in neuralgic affections and those arising from debility its good effect is generally marked and decided It has been recommended as an antipyretic remedy in typhoid, typhus, small pox, pneumonia and acute rheumatism It has also been employed with marked benefit in various septic states and in pyaemia and all exhausting suppurative conditions The theory that it acts beneficially in disease by destroying minute organisms has led to its advocacy in whooping cough, intermittent haematuria, hay fever, chronic suppurative bronchit s, etc The common dose is one or two grains three times a day, it is best given in solution in dilute sulphuric or hydrochloric acid or citric acid It is often given with some bitter infus on such as gentian or calumba, sometimes in infusion of roses the acid of which readily dissolves it In regard to intramuscular injections of Quinine Majors H W Acton and R N Chopra, I.M.S have found

a bruised fruit is thrown into the water It is a useful substitute for ipecacuanha, and described by Sanskrit writers as the best or safest of emetics It is also used in combination with other medicines as for instance with what is called *Pancha Kashaya*, which is made thus —Take of Justicia adhatoda. Acorus calamus, nim bark, leaves of Tricho santhes dioica and bark of Aglaia roxburghiana equal parts half a seer in all water 8 seers, boil them together till reduced to one-fourth This decoction is given with the addition of the pulp of Randia dumetorum for causing emesis A compound powder called *Madanadhivamana* composed of Randia dumetorum, calotropis gigentia and Glycerrhiza glabra is an efficient expectorant in doses of 5 to 15 grs , and emetic in 20 to 60 grain-doses, useful in bronchitis and chest affections as emetic in colic headache, orchitis, indigestion etc It was tested by Dr Koman in cases of acute bronchitis and asthma and found very beneficial — (Indigenous Drugs Report, Madras) Tho drug is used in scorpion sting

(1)—Monographs and Thesis on Rauwolfia serpentina by Dr S. Siddiqui and R H. Siddiqui also Chopra s I.D of I p 374 (2)—Chopra s "I.D of I" p 374 (3) p 373 (4) p 375 (5) pp 373 and 376 (6) p 374 and (7) pp 375 & 376

2092 RANDIA LONGIFOLIA

Is a species found in Bengal, the bark of which is used in intermittent fever

2093 RANDIA TETRASPERMA, Benth & Hook

(*Kumaon* —Bara garri)

2094 RANDIA ULIGINOSA, DC

(*Sans* —Pindaluka *Hind* —Pindalu *Ben* —Pedalu, Piralu *Guj* —Pinglu *Mah* —Pendari *Tam* —Vagata *Tel.* —Guaku, Peddamrangu) is met with in moist places in India. Unripe fruit is used as astringent Roasted in hot ashes they are used in diarrhoea and dysentery, their stones and seeds

being rejected *Root* boiled in ghee is also sometimes given in similar cases.

2095. RANUNCULUS ARVENSIS, Linn.

(N.O :—Ranunculaceae).

Punj—Chambul. Constituents—Leaves contain HCN. Used as fodder, but frequently produces symptoms of irritant poisoning (Chopra's "I.D of I" p 521)

2096 RANUNCULUS SCELERATUS, Linn, R. indicus

(N C —Ranunculaceae)

(*Kumaon*—Shim *Tirhut*—Polica *Pers*—Kabiraj *Arab*—Kaf-es-saba) is a glabrous annual herb found on the river banks in Bengal and North India, marshes of Peshawar, warm valleys of the Himalayas The whole plant possesses a very powerful principle, Anemonin Action—Emmenagogue and galactagogue *Fresh plant* is poisonous if taken internally *Bruised leaves* applied externally raise blisters, may be used to keep open sores caused by vesication or by other means also used discriminately in skin diseases

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2097 RAPHANUS CAUDATUS Alef

(N O —Cruciferae).

Mah & Guj—Mogari, a variety grown in Gujarat of Bombay Presidency, and used as a vegetable

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2098 RAPHANUS SATIVUS, Linn

(N O —Cruciferae).

San—Moolaka *Eng*—Radish Indian radish, Garden radish, long podded radish *Fr*—Raifort cultive, Rave *Ger*—Rubenrettig *Sind*—Muro *Hind, Ben, Bom. & Mah* Mula, Mulabeeja *Hind*—Mulı *Ben*—Moola *Bom*—Muro. *Guj*—Muri *Pers*—Turbe *Arab*—Phujal *Tel., Tam. & Can.*—Mullangi. *Mal.*—Kankapal *Kon.*—Mulo

(Practical Medicine) that the bihydrochlorides of quinine, quinidine cinchonidine and cinchonine when injected in the usual strengths into the muscles of rabbits cause edema, irritation and necrosis of the tissues Contrary to the usual belief there was little difference in the action of cinchonine as compared with quinine They go so far as to say that the injection of these alkaloidal salts into the muscles of man should be considered as malpraxis and that there is only one method of administering the cinchona alkaloids and that is by the mouth Very rarely in grave cases quinine base should be injected intravenously But the editor of Practical Medicine says that this method should be reserved for cases in which there are good and sufficient reasons such as persistent vomiting or failure to absorb the drugs The proportion of cases in which serious consequences follow in practice from intramuscular injections is small and that the method may be reserved for those cases in which there is a real necessity for the procedure

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2089 QUISQUALIS INDICA Linn Q villosa

(N O —Combretaceae)

(*Eng*—Rangoon creeper Chinese honey suckle *Hind & Duk*—Rangan ki bel *Mah*—Vilati Chemeli *Tam*—Irangun Malli Rangoon malli *Tel*—Rangunu malli chettu *Malay*—Sunsung) is a creeper commonly cultivated in gardens in Malaya and India the *seeds* of which have anthelmintic properties and are useful in cases of round worms Four or five seeds are crushed and made into an electuary with honey this is given to children to cause expulsion of the worms Larger doses are apt to cause spasms and other ill effects in some constitutions *Ripe seeds* are roasted and given in diarrhoea and fever Gum is used in medicine *Leaves* are given in a compound decoction for flatulent distension of the abdomen *Fruits* are found to contain a fixed oil 15 p c , of a yellow color and a peculiar odour a sugary substance similar to

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(1) (2) & (3)—Bombay Govt Agri Dept Bulletin

Habitat—Cultivated throughout India in gardens and plains for culinary purposes

Constituents—"Fresh vegetable contains 91 00 p c. moisture, and the completely dried material contains Ether extract 4 00 p c, albuminoids 18 00 p c (cont'g Nitrogen 2.88 p c); soluble carbohydrates 52 66 p c, woody fibre 9.34 p.c and ash 16 00 p c (cont'g sand 0 33 p c) respectively. As—0,01 mg in 100 g root"[1] *Seeds* and *root* contain a fixed oil, essential oil, a sulphuretted volatile oil resembling mustard seed oil *Oil* contains sulphur and phosphoric acid

Action—*Seeds* are *leaves* are diuretic, laxative and lithontriptic Seeds are believed to have also emmenagogue properties *Juice* of fresh roots is considered powerfully antiscorbutic

Uses—*Seeds* are useful in gonorrhoea, in one drachm doses *Root* is a reputed medicine for piles and gastrodynic pains, also given in urinary and syphilitic complaints, relieve dysuria and strangury "Root is eaten as an important vegetable both raw and boiled"[2] *Juice* of the fresh root in 1½ to 3 ounce doses is given and repeated as often as necessary. Eaten before a meal the radish improves appetite and increases the digestive power "*Young radish (pods)* is a diet for fistula in ano when there is no fever *Leaves* are boiled as a pot-herb and raw as salad"[3] Dose of the juice of leaves is ½ to 1 drachm and of the infusion of seeds (1 in 10) is 4 to 6 drachms

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2099 RAUWOLFIA SERPENTINA, Benth

(N O—Apocynaceae).

Sans—Chandrika, Sarpa-gandha *Hind.*—Chota-chand. *Ben.*—Chandra *Gwalior*—Naya. *Bihar & Orissa.*—Dhanmarua or Dhan barua *Bom*—Harkai, Chandra *Tel*—Patalagandhi *Tam*—Chivan melpodi, Covannamilpori *Mal*—Chivan Avelpori *Can*—Sutranabi *Kon*—Patalagarud *Tulu.*—Patala-garudada-beru

Habitat—A climbing shrub found in the tropical Himalayas and at moderate altitudes in Sikkim, North Bihar, Patna, Bhagalpur, Assam, Pegu and Tenasserim, Deccan Peninsula along the ghats to Travancore and Ceylon, Java and Malay Peninsula

Constituents—*Root* contains an alkaloid "Ophioxylin" an orange-coloured crystalline principle, resin, starch and wax [1] The total alkaloidal yield is 0 5% Five crystalline alkaloids isolated are —

* (1) Ajmaline ($C_{34}H_{42}O_2N_2$), M.P 158°-160°, (0 1 per cent)

* (2) Ajmalinine ($C_{32}H_{40}O_4N$), M P. 180°-181°, (0 05 do)

* (3) Ajmalicine do M.P 250°-252°, (0 02 do)

** (1) Serpentine ($C_{21}H_{22}O_4N$), M.P 153°-154°, (0 08 do)

** (2) Serpentinine do M P 263°-265°, (decomposes)

* These three are white crystalline bases of Ajamaline Group

** These are two bright yellow crystalline stronger bases

Other constituents identified are —(a) phytosterol, (b) Oleic acid and (c) unsaturated alcohols of formula $C_{27}H_{44}O_2$

[1] Sen & Bose (1931) have found two alkaloids in the root with different melting points The quantity of the total alkaloids has been estimated to be fairly high amounting to about 1 per cent of the dried roots The root also contains a lot of resin and starch, and when incinerated leaves about 8% of ash consisting mainly of potassium carbonate, phosphate, silicate and traces of iron and manganese

In the Dept of Chemistry of Calcutta School of Tropical Medicine, only one alkaloid had been isolated in a pure state It had a melting point of 202°C and was fairly soluble in all organic solvents, viz alcohol, ether, chloroform, benzene, but

was insoluble in petroleum ether It crystallised from methyl alcohol in tufts of colourless prisms and had an extremely bitter taste It was very slightly soluble in hot water The hydrochloride of the base crystallised from water in colourless boat-shaped or prismatic needles, slightly soluble in cold water but fairly soluble in bot water It melted at 135°C and bad a very bitter taste It gave a green fluorescence in watery solution (1932—further work was in progress, and whose results have to be called) [2] Ash contains iron and manganese

Action —Root is a bitter tonic and possesses well-marked sedative properties It acts also as febrifuge 'The hypnotic and sedative actions of the drug were known to the poorer classes in Bihar and the practice of putting children to sleep by this drug is still present in certain parts of that province"[3]

"The Ajamaline group acts as a general depressant to the heart, respiration and nerves, and the Serpentine group paralyses the respiration and depreses the nerves but stimulates the heart (These observations were drawn from experiments carried out on frogs and, therefore, cannot be interpreted *in toto* in higher an mals) The lethal dose of the Ser pentine group of alkaloids was found to be the same as that of the Ajamaline group, viz 0 5 gm per kilogram of frog The lethal dose for rats was found to be four times higher Sen & Bose (1931) studied the pharmacological action of the drug on bigher animals, e g , cats They found that the watery extract of the whole drug when injected intravenously in ani mals produces no appreciable effect The resins have also been separately tried but without much effect on the system excepting a slight stimulation of the uterine musculature The alkaloids isolated by them, however, showed very definite results. The blood pressure showed a slight fall and the respiration was slightly stimulated The heart muscle was depressed and the plain muscle like that of the small intestines, uterus etc., was relaxed The drug is not an irritant when taken by the mouth or when introduced into the system by bypodermic or intramuscular injections. Roy (1931) finds that the reflexes and the sensation of pain are not affected by

ordinary doses of the drug, if, however, the dose is large it produces deep sleep, the reflexes and sensation of pain are diminished and death may result from asphyxia due to paralysis of the respiratory centre The heart goes on beating for some time after failure of respiration"[4] Further research work should be called for from the Dept. of Pharmacology, School of Tropical Medicine, Calcutta.

Uses.—*Decoction* of the *root* is employed to increase uterine contractions and promote expulsion of the foetus. *Juice of leaves* is instilled into eyes as a remedy for the opacities of the cornea. *Root* is used as a remedy for poisonous snake-bites and stings of insects, it is also a valuable remedy in dysentery, painful affections of the bowels, "and recently it has attained prominence as a remedy for insomnia hypochondria and irritative conditions of the central nervous system."[5] With Aristolochia indica it is given in cholera in colic one part of the root with two parts of the root of Holarrhena antidysenterica and three parts of Jatropha curcas is given in milk. In fever the root with Andrographis paniculata, ginger and black salt is used Dose of the combined drugs is from 1 to 2 tolas "In the U.P and Bihar, the drug is sold in large quantities as *'pagal-ka-daua'* (insanity specific) and it is commonly used by the practitioners of the indigenous medicine' [6] "The drug has been tried by Sen & Bose in cases of insanity with violent maniacal symptoms nd in cases of high blood pressure Doses of 20 to 30 grains of the powdered root twice daily produce not only sedative effects but also a reduction of the blood pressure Within a week the patient's senses are restored though in certain cases the period of treatment has to be prolonged. In high blood pressure without marked atheromatous changes in the vessels, Sen & Bose found the drug very satisfactory".[7] Also used in hyperpyrexia and in scorpion sting.

N.B —About 7 species of Ranwolfia are uninvestigated.

2100. RAVENALA MADAGASCARIENSIS,

(N.O:—Scitaminaceae).

Eng.—Traveller's Tree. Often planted in gardens of South India.

2101. REAUMURIA HYPERICOIDES—Willd

(N.O:—Tamariscineae).

Bom.—Lanisah.

Uses:—Used in prurigo and itch.

2102. REINWARDTIA TRIGYNA,—Planch

(N.O:—Lineae):

Punj —Karkun.

Uses —Used as a cattle-medicine.

2103. REMUSATIA VIVIPARA.—Schott

(N.O:—Aroideae).

Bom.—Rukh-alu. Parts used:—Root.

Uses:—Root is a remedy for itch.

2105 RHAMNUS DAHURICUS, Lawson.

(N O —Rhamnaceae)

Hind—Chandua, *Punj*—Chetain Action—Emetic and purgative Constituents—Oxymethyl anthraquinones, rhamnose Used in affections of spleen.

2106 RHAMNUS JUJUBA—See Zizyphus jujuba

2107 RHAMNUS PURPUREUS, Edgew

(N O —Rhamnaceae),

(*Punj*—Batsunjal, Karu, Mimarura, Kunji) is of the Western Himalayas from Murree to Kumaon *Fruit* is used as a purgative

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2108 RHAMNUS TRIQUETER Lawson,

Is another species met with in the Punjab and Western Himalayas known as *Rangret* with properties and uses similar to R wightii (Punj—Gardhan, Hind—Ghant)

2109 RHAMNUS WIGHTII

W & A, of the same genus (*Bom*—Raktarohida, Raktazoar) is found on the highest hills of the Konkan, southwards to the Nilgiris and on the Western Ghats from Mahableshwar southwards Constituents—A crystalline, bitter substance, cathartic acid *Bark* is reputed to be tonic, astringent and deobstruent.

2110 RHAPHIDOPHORA PERTUSA, Schott.

(N O —Araceae),

(*Bom.*—Ganesh Kanda Used in snake-bite and scorpion sting (Chopra's 'I D of I" p 522)

2111. RHAZYA STRICTA, Dcne.

(N O —Apocynaceae);

Hind—Sunwar *Punj*—Wena, Gandera *Sind*—Sehar *Pushtu*—Vargalum Is found in Sind, Salt Range and Peshawar. *Juice of the leaves* is given with milk to children for eruptions and an *infusion* of them is very useful for sore-throat, low fevers and general debility as a good cooling bitter tonic Leaves contain a large quantity of alkaloids one of which is a volatile and has the odour of conine the alkaloid of hemlock *Fruits* and *leaves* are considered efficacious in boils and eruptions In Afghanistan the *root, stems, leaves* and flowers are dried and used in *infusion* for the treatment of syphilis in all its stages and of chronic rheumatism, old joint affections and pains of every kind—Duthie in Watt)

2112 RHEUM ACUMINATUM, Hk. f & T

(N O —Polygonaceae)

Uses same as R emodi

2113 RHEUM EMODI, Wall, R officinale, R. acuminatum, R speciforme, R webbianum, R. moorcroftianum; R australe.

N O —Polygonaceae)

(*Sans*—Amlavetasa *Eng*—Himalayan rhubarb Indian rhubarb *Hind. & Punj*—Revand-chini *Fr.*—Rhubarb de Perse *Ger.*—Rhabarber *Ben*—Bangla Revanchini, Rheu-chini *Bom, Mah. & Guj*—Ladakirevanda-chini. *Pers.*—Tursak *Tel*—Nattu ireval chinni *Tam*—Variyattu *Can*—Reval-chini) are Himalayan species of rhubarb found wild at altitudes of 4,000 to 12,000 feet, and in Kashmir, Nepal, Sikkim and Bhutan "The drug consists of the dried rhizome or underground stem of the plant, either whole or cut into pieces of suitable length The 'roots" are dug up, cut transversely into short pieces (rounds and flats) which are threaded on a string, and dried in the sun or by artificial heat.

hence it is well fitted for use in simple diarrhoea, hut not in constipation or any affection in which a continuous aperient action is necessary; it is not fitted for inflammatory or febrile cases although it seldom acts as an irritant. Its stimulating combined with its aperient properties render it valuable in atonic dyspepsia. Generally speaking it suits in the ailments of children and aged persons best, "and is very commonly used. In fact, it is one of the every-day nursery remedies".[2] Combined with ginger, it may be given in the form of pill in cases where the bowels are sluggish. Ordinary dose of the powder is from 5 to 20 grains. Some persons chew the root, and to them this is a very good way of taking it. Rhubarb forms an important ingredient of a large variety of compounds. Mixed with Grey Powder it is an excellent remedy for irritation of the bowels, common among children when teething and in chronic dysentery, duodenal catarrh or catarrh of the biliary ducts with jaundice and in certain skin diseases. For the errors in the diet of children or for the diarrhoea set up by undigested food, it is best given combined with sodium bicarbonate or magnesia. "Rhubarb grown in certain parts of Assam, is used mostly by the local people as food and not as medicine".[4] It communicates a deep tinge to the urine, which need not cause alarm and misconception. *Rhubarb like sorrel and tomato, should never be eaten by those who have a tendency to gout, rheumatism, epilepsy or any uric acid disease, owing to the oxalic acid it contains.*

(1), (2), (3) & (4)—Chopra's "I.D. of I." pp. 235 & 236.

2114. RHEUM MOORCROFTIANUM.—Royle.

(N.O:—Polygonaceae).

Vernaculars same as for R. emodi.

Uses:—Same as of R. emodi.

2115. RHEUM NOBILE.—Hk. f & T.

(N.O:—Polygonaceae).

Vernaculars same as for R. emodi.

Uses:—Same as of R. emodi.

2116 RHEUM OFFICINALE.—Baillon

(N O —Polygonaceae)

Constituents —Chrysophanic acid, rhein, emodin

2117 RHEUM PALMATUM.—Linn

(N O —Polygonaceae)

Ind Bazar —Rewand chini

Constituents —Chrysophanic acid, emodin

2118 RHEUM WEBBIANUM —Royle

(N O —Polygonaceae)

Vernaculars same as for R emodi

Uses —Uses are alo same as of R emodi

2119 RHINACANTHUS COMMUNIS, Nees,

(N O —Acanthaceae)

Is a small shrub (*Sans* —Yuthikapurni Juthikapurni. *Hind* —Palak juhi *Ben* —Jui pana. *Bom & Mah*.—Gajakarni, Gach karan *Tam* —Nagamalli *Tel & Can* —Negamuli *Mal* —Purukolli) cultivated in many parts of West and South India and in Ceylon *Leaves* and *root* act as antidotes to bites of poisonous snakes The active principle is a red resinous substance named *Rhinacanthin* which is believed to be allied to Chrysophonic and frangulic acids. *Root* powdered and made into o *paste* with lime-juice is applied with much benefit in eczema and ring worm, especially that variety which is known os *Dhobie itch*

2120 RHIZOPHORA MANGLE, Linn.

(N O —Rhizophoraceae)

Action —Astringent.

2121 RHIZOPHORA MUCRONATA, Lamk.

(*Ben*—Bhora, *Bom*—Kamo, *Tam*—Upupona) Action—Astringent Constituents—Tannin Used as a cure for diabetes

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2122. RHODODENDRON ANTHOPOGON, D. Don.

(N O—Ericaceae).

(*Jhelum*—Nichni, Rattankat, Nera *Kash*—Tazaktsum; Talsfar) is met with on the alpine Himalayas from Kashmir to Bhutan *Leaves* are aromatic and stimulant and their smoke is considered useful in some diseases Leaves are administered as errhine to produce sneezing "This is one of the species which is thought to excite the headache and nausea which attends ascents to the high elevations of the Eastern Himalayas—(Sir J D Hook) The other species are R. setosum and R lepidotum—((Honningberger)

2123 RHODODENDRON ARBOREUM, Sm.

(*Punj*—Ardawal) Constituents—Ericolin Action—Poisoneus

2124. RHODODENDRON BARBATUM, Wall.

(*Nepal*—Guras) Constituents—A toxic bitter substance—andromedo toxin Used as a fish poison

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2125 RHODODENDRON CAMPANULATUM, D. Don.

(N O—Ericaceae).

(*Hind*—Cherailu *Kash*—Gaggar *Kumaon*.—Chimul *Himalayas*—Surngar, Shinwala *Nepal*—Cherailu) is found in the Alpine Himalayas from Kashmir to Bhutan *Leaves* are poisonous to goats Mixed with tobacco they are made into a medicinal stuff useful in colds and hemicrania *Leaves* are also used in chronic rheumatism, syphilis and sciatica. *Dried twigs* and *wood* are used in Nepal as a medicine in phthisis and chronic fevers—(Watt)

2126. RHODODENDRON CINNABARINUM, Hook.

(*Nepal.*—Bulu). Constituents:—A toxic bitter principle. Leaves are poisonous to cattle.

2127. RHODODENDRON FALCONERI, Hook.

(*Nepal.*—Kurlinga). Constituents:—A toxic bitter substance; a glucoside ericolin. Used as a fish-poison.

2128. RHODODENDRON LEPIDOTUM, Wall.

(*Bhutia.*—Tsalsuma). Uses are similar to R. anthopogon.

2129. RHODODENDRON SETOSUM, Don.

(*Bhutia.*—Tsallu). Uses are similar to R. anthopogon.

N.B:—About 40 species of Rhododendron are uninvestigated.

2130. RHUS CORIARIA, Linn.

(N.O:—Anacardiaceae).

(*Eng.*—Sumach. *Pers.*—Samaka. *Arab.*—Timtima. *Hind.*—Tatrak. *Ben.*—Sumok. *Bom.*—Sumak), the *fruit* of which is a powerful astringent; also an acid and a styptic, tonic and duretic. It is useful in dysentery. It checks bilious diarrhoea, allays vomiting and purging of blood (haemoptysis) and checks leucorrhoea and diuresis. It is generally used in the form of *powder* or *extract;* dose of the powder is 20 to 30 grains. A gargle prepared of fruits is used in catarrhal affections of the pharynx. Locally the *paste* mixed with charcoal powder is applied to unhealthy ulcers and suppurating piles. "The drug is also used in conjunctivities."—(Chopra).

2131. RHUS INSIGNIS, Hook.

(*Nepal.*—Khagphulai). Action:—Vesicant. Used in colic.

2132. RHUS KAKRASINGI—See pistacia integrifolia.

2133. RHUS ODINA—See Odina wodier.

2134. RHUS PARVIFLORA, Roxb

(*Hind*—Raitung).

2135. RHUS SEMI-ALATA., Murr.

(*Hind*—Tatri). Fruit is used in colic

2136 RHUS SUCCEDANEA, Linn , R acuminata.

See—Pistacia integerrima

(N O —Anacardiaceae)

(Col. Chopra has dealt this drug under the latter name).

Sans—Karkatashringi *Eng*—Galls *Hind*—Kakra-singi. *Guj. & Mah*—Kakadsingi *Bom*—Takada-singi *Kash. & Ben.* Kakrasringi *Punj*—Sumak *Tel*—Kakarashingi *Tam*—Kakkata-shingi

Habitat—Himalayan mountain ranges on the north-west from Kashmir to Simla

Characters—The galls are horn-like excrescences caused by a kind of insects (aphis) on the leaves, petioles and branches of Rhus succedanea They are hard, hollow, thin-walled, generally cylindrical, tapering to either extremity.

Constituents—Essential oil 1 21 per cent, crystalline hydrocarbon 3 4 per cent, tannin substances 60 0 per cent; and gum mastic 5 0 per cent The essential oil is of a pale greenish-yellow colour with a turpentine-like odour and taste The specific gravity of the oil is 0 8885 at 15 C The crystalline principle obtained is insoluble in water, soluble in nearly all the organic solvents, is tasteless and has a sharp melting point of 146°C. The tannins are of a yellowish crystalline appearance'[1]

Action—Astringent, tonic, expectorant, and stimulant. Gall is also a cholagogue "The taste of powdered galls is very astringent and slightly bitter and they have a terebinthine odour."[2]

Uses —*Galls* are useful in cough, phthisis, asthma, fever, want of appetite, irritability of stomach, and conditions of the respiratory tract Dose is about 20 grains, combined with demulcents and aromatics It is much used in combination with other astringents in diarrhoea, as the drug by itself contains a large amount of tannins Following are a few useful combinations of the drug —(1) Take of *Karkatashringi*, root of Clerodendron siphonanthus, raisins, ginger, long pepper and Curcuma zedoaria equal parts, powder and mix. Dose is about 30 grains with treacle or honey, in dry cough —Chakradatta) (2) In catarrhal fever with difficulty of breathing a powder composed of equal parts of *Karkatashringi*, bark of Myrica sapida and long pepper is recommended in doses of about a drachm with honey —(Bhavaprakasha) (3) *Sringyadi Churna*—Take a *Karkatashringi*, *atis* and long pepper, equal parts, powder and make into a linctus with honey, dose is 1 to 5 grains of the powder This is much esteemed as a cough linctus for children —(Sarangadhara) This is also useful in infantile diarrhoea and gastro-intestinal troubles during teething This was recently tested by Dr Koman, he says— "This powder was administered to infants suffering from diarrhoea resulting from teething and other causes and to infants with bronchial troubles Many of the little ones were very much benefitted by it —(Indigenous Drugs Report, Madras) Externally a *paste* of the galls is recommended as application in psoriasis Galls are used in the form of *decoction* or *lotion* as gargle to suppress heamorrhage from gums, also used to suppress bleeding from the nose, discharges from mucous membranes such as gleet, leucorrhoea etc 'Hakims consider galls useful in pulmonary affections (due to the presence of a fair amount of essential oil), diarrhoea and vomiting' Galls are also used as antidote to snake-venom and scorpion sting

1(), (2) & (3)—Chopra's "I.D of I" pp 352 353.

2137 RHUS WALLICHII, Hook.

(*Nepal*—Chosi, *Hind.*—Akoria) Juice of leaves is corrosive

2138. RHYNCHOCARPA FOETIDA, Schrad.

(N.O:—Cucurbitaceae).

Tam.—Appakovay. Action:—Demulcent. Used in piles and asthma.

2139. RHYNCHOSIA MINIMA, DC.

(N.O:—Papilionaceae).

Grows wild in Southern India.

2140.—RHYNCHOSPERMUM VERTICILLATUM, Rein.

(N.O:—Compositae).

Punj.—Hukmandaz.

2141. RIBES GROSSULARIA, Linn.

(N. O:—Saxifragaceae).

Eng.—Gooseberry. *Scotch.*—Grozet. *Fr.*—Groseille. *Ger.* —Krausel-beere; Stachel-beere. *Dutch.*—Kruisbes; Kruisbezie. *Danes & Swedes.*—Krusbaar. *Punj.*—Amlanch. *Kumaon.* —Baikunti), is a herb of mountainous and temperate regions of Western India. Constituents:—Fresh leaves contain HCN. French people use the fruit for making a sauce for mackerel. (Chopra's "I.D. of I." p. 523, and Bombay Govt. Agri: Dept Bulletin).

2142. RIBES NIGRUM, Linn.

(N.O:—Saxifragaceae).

(*Eng*—Currants; *Punj*—Nabar). These and gooseberries are herbs of mountainous and temperate regions of Western India. Action:—Laxative and cooling. Constituents:—Essential oil. As currants contain salicylic acid they are indicated in rheumatism. The virtue of *black currant* jelly as a remedy for quincy, colds and sore-throat have long been familiar. A teaspoonful two or three times a day may be given with advantage to children with thrush. White and red cur-

rants contain similar properties They contain malic and citric acids Jelly made from them is excellent in fevers. Fruit relieves constipation and purfies the blood.

2143 RIBES ORIENTALE, Poir.

(*Punj*—Nyai pbulanch *Hind.*—Gwaldakh). Action—Purgative

2144. RIBES RUBRUM, Linn

(*Eng*—Red currants, *Punj*—Dak) Both red and black currants are natives of nothern Asia. *Fresh leaves contain* HCN. Note—Red currants and Black currants must not be confused with the dried currants of the shops, which are the fruits of a kind of grape (Chopra's "I.D of I" p 523).

2145. RICINUS COMMUNIS, Linn.

R. d coccus.

(N O.—Euphorbiaceae),

Sans—Eranda, Vatari, Gandharva hasthah; Panchangulam *Eng*—Castor-oil plant *Fr*—Ric n *Ger*—Ricinus; Cemeiner Wunderbaum *Hind*—Endi *Sind*—Ayrunkukri, Heran *Punj*—Arand, Erand *Arab*—Khirva *Pers*—Bedanjir *Ben*—Verenda, Aranda, Bherenda Sadabherenda. *Assam*—Eri *Bom. Guj*—Diveli *Bom & Mah*—Erendi. *Uriya*—Gab *C.P*—Grudi *Tel*—Eramudapu, Amidamu; Amudam, Erandthailam *Tam*—Amanakku Chittmani, *Amanakkam chedi Mal*—Chittamanakku *Can*—Haralu; Audla *Sinh*—Endaru *Burm.*—Kesusi *Malay*—Miakjarah

Habitat—This plant is common and quite wild in the jungles in India nnd is by far the largest producer It is cultivated throughout India chiefly in the Madras, Bengal and Bombay Presidencies Two varieties of this plant are known—(1) A perennial bushy plant with large fruits and large red seeds which yield about 40 pc of oil, and (2) a much

smaller annual shrub with small grey (white) seeds having brown spots and yielding 37 per cent of oil.

Parts Used—Oil, leaves, roots and seeds

Chemistry & Constituents—Seeds contain fixed oil 45 p c to 52 p c (yielding 40 to 42 per cent of oil in the country ghani), soluble in alcohol, proteids 20 p c, starch, mucilage, sugar and ash 10 p c 'The oil chiefly consists of ricinoleate of glycerol, or tri ricinolein (i e, a mixture of glycerides of ricinoleic and isoricinoleic acids) with a small quantity of palmitin and stearin Apart from the oil which is contained in the kernels a very toxic substance "Ricin", an albuminoid poisonous body is present in the seeds, but not present in the oil to any extent, a viscid oil, the purgative principle (3) Tristearin (3) glyceride of dihydroxy stearic acid Unlike most fixed oils, castor oil possesses the remarkable property of mixing with absolute alcohol and glacial acetic acid in all proportions The glycerides of ricinoleic acid $C_{17}H_{32}$ (OH) COOH (which is a hydroxy acid) are mainly responsible for the purgative effect [1] 'Some varieties of castor seeds analysed gave the following results —[2]

	Moisture p c	Oil p c
Castor (general)	2 97 to 6 97	38 57 to 57 40
„ (big variety)	2 97 to 6 25	46 63 to 55 43
„ (small „)	3 17 to 6 06	43 39 to 57 40
„ (without awns)	4 24 to 5 20	48 28 to 51 86

"The fixed oil of the commerce is obtained from the seeds by two processes —[3]

(1) *Cold drawn* When extracted without the aid of heat it is colourless or faintly yellow or straw-coloured, practically odourless, with a bland and slightly acrid taste

(2) *Hot drawn* In India this is done by boiling the seeds with water and skimming off the oil. The hot pressing process commonly in use in India consists of burning a slow fire under the mill this liquefies the oil and increases the yield. The oil is bleached by exposure to the sun and is clarified by

to dysuria "Ricin" is a powerful poison having a definite effect on the coagulation of blood, it has no purgative effect but produces haemorrhagic inflammation of the gastro-intestinal tract even when given subcutaneously."[5] Root-bark and leaves of this plant have also purgative properties Leaves are used as galactagogue Seeds are counter-irritant.

Action & Uses in Ayurveda & Siddha —Mathura rasam, ushna veeryam, vata kapha haram, guru, in colic, swelling, jwaram, swasam, kasam, kustam, amavatham *Leaves* —in krimu, mootrakrichram, rakta pittam *Tender Shoots* —gulmam, vasthi soolam, krimi, vriddhi. *Fruits* —Ushnam, katurasam, vathaharam, gulmam, soolam, in enlarged liver, spleen, arsas, udaram *Oil* —Purgative, vathakapha, udara haram —(Therapeutic Notes).

Action & Uses in Unani —Hot 2°, Dry 2° Purgative of all akhlaths, cures muscular rheumatism, paralysis, tremor, asthma, cough, colicky pains, carminative, absorbs inflammations, emmenagogue —(Therapeutic Notes)

Uses —"Castor oil is derived chiefly from the seeds of R. communis, and from certain allied species like R virides etc.[6] It was used as an ointment and pomatum by the Egyptians a thousand years B C The better and purer quality oil, clear, odourless and almost colourless and known as cold-drawn castor oil, i e , drawn from the small grey seeds by expression instead of by heat (decoction) is used for medicinal purposes, in considerable quantity all over the world The best oils so far for medicinal purposes are said to be the Italian and French oils prepared by cold expression The Italian and French oils are expressed from the seeds after they are decorticated and the husks removed they are, therefore milder in taste as compared with the Indian oils"[7] The oil is administered (plain or in emulsion with mucilage) in inflammatory conditions of the bowels, in the diarrhoea of childhood and often combined with opium, in simple diarrhoea of adults, it is also useful in irritable conditions of the system among debilitated persons and young children, after child-birth to the lying-in women and before child-birth to

facilitate delivery in operations for lithotomy, in peritonitis, dysentery and in inflammatory disease of the urinary organs. The usual dose is, for a child, about one teaspoonful, gradually increased according to age to two or three tablespoonfuls, which is the full dose for an adult It is best given floating on milk, strong coffee or in dry ginger—water or omum water. In painful affections of the rectum, in piles and to prevent the patient straining at stool, castor oil in small doses is often of great service to soften the faeces and lubricate the passages. As a purgative castor oil is recommended to be taken with cow's urine or an infusion of ginger or a decoction of the combination called *dasamula*—(Chakradatta) In short, castor oil is one of the cheapest, simplest and most important and useful purgatives of the Pharmacopoeia, in all delicate conditions for children and old people For sore nipples, they are smeared over freely with it each time the child is removed from the breast In constipation, it is useful as an *enema*, two ounces of castor oil emulsified with a pint of soap suds and water often causes a copious evacuation of the bowels In cases where a foreign body such as a small particle of steel has become imbedded in the eye a few drops of castor oil instilled between the lower lid and the eyeball relieve the pain and irritation, though temporarily, so also into ears if they are invaded by insects etc It may be dropped into the eye in conjuctivitis and is especially useful for dissolving cocaine, homatropine and other alkaloids used in eye cases It may be repeated often until medical aid is obtained for the removal of the foreign body In case of any foreign body such as glass in the stomach castor oil in purgative doses is useful For *Peenesh* (maggots in the nose) castor oil heated to concentration is sniffed into the affected nostrils Castor oil is much praised for its efficacy in chronic articular rheumatism in which it is used in various combinations A compound medicated oil which is composed of 10 parts of castor oil and a watery paste made of Indian madder 5, the three myrobalans *(triphala)* 5 turmeric 4, dry ginger 4 and *daruhalad* 3 parts all boiled together to the consistence of a thick embrocation and strained is a good application to the abdomen in colic to the back in lumbago, to the thigh in sciatica etc The root of the plant is also useful as

an ingredient of various prescriptions for nervous diseases and rheumatic affections such as lumbago, pleurodynia and sciatica. In pleurodynia or pain in the sides, a decoction of *the root* is given with the addition of impure carbonate of potash—(Sharangdhara) Dried root is used as a febrifuge. *Seeds* freed from impurities and rubbed into a *paste*, boiled in milk and water and the decoction is given in lumbago and sciatica—(Bhavaprakash) Seeds are used as counter-irritant in scorpion-sting *Leaves* warmed over a fire and applied to the breasts of women act as a galactagogue, *i e*, increase the secretion of milk For this purpose a decoction (1 in 20 to 30) is also used, the breasts are bathed with it for quarter of an hour and then the boiled leaves, in the form of a poultice are spread over them Also a *fluid extract* or *juice* of the leaves given internally increases the flow of milk Cattle are fed with the leaves with the same object Leaves of castor oil plant and leaves of Phyllanthus niruri ground together and rubbed into a bolus of the size of a small lime and administered in the mornings for three days consecutively in milk and followed on the fourth morning by a purgative like *Triphal Churnam* is a remedy recommended for catarrhal jaundice Leaves applied to the abdomen promote menstrual discharge They are applied to painful joints with much benefit, and also as a guinea-worm poultice In affections of the eyes a decoction of *the bark, leaves and root* of the plant in goat's milk and water is recommended for use as a wash—(Chakradatta) A *poultice* of the crushed seeds is used to promote suppuration, to mature boils and to reduce gouty and rheumatic swellings.

"*Castor* oil cake is used as manure alone, and its quality is very variable according to the amount of husk left in the cake in pressing When well-decorticated it gives white castor cake containing about 6 to 7 per cent of nitrogen *Castor cake cannot be fed to cattle as it causes first purging and then death* Stalks and the husk of the capsules are of no use except for fuel"[8]

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(1) & (4)—Chopra's "I D of I" p 238 (2) Bom Govt Agri Dept Bulletin (3), (5) & (6)—Chopra's "I.D of I" p 237-238, (7) p.239 and (8) Bom Govt. Agri Dept Bulletin.

2146 RIVEA ORNATA, Chois.

(N O —Convolvulaceae)

(*Indian languages & Mah* —Phand) is met with in Bengal, from Assam to Belgaum and Mysore In the Konkan, *juice* is made with Borneo Camphor and butter into an *ointment* for pityriasis For piles one tola of juice with half a tola of *Babul* pods and a little sugar is given in a quarter seer of cow's milk every morning —(Ph Indica)

2147 ROMERO SANTA—See Lavandula stoechas.

2148 ROSA ALBA, Linn., R Indica

(N O —Rosaceae)

(*Sans* —Sevati *Hind* —Gulchini *Hind. & Ben.*—Sweet Gulab *Eng* —Indian White Rose *Punj* —Gul seati) are varieties cultivated in India. Flowers are large, white, pale or bluish double *Flowers* are used as a cooling medicine in fevers, also in palpitation of the heart. *Petals* yield the precious Indian *attar* of rose which is employed to disguise the bad odour of certain ointments etc. It is a generative of the secretion of semen. Petals are made into *gulkand* which is a popular laxative

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2150. ROSA DAMASCENA, Mill. R gallica.

(N.O.—Rosaceae).

Sans—Satapatri *Eng*—Damask or Persian Rose *Hind*—Gulab-ke-phul *Ben.*—Golap-phul. *Guj.*—Gulabnu-phul. *Mah*—Gulab *Bom.*—Gul *Pers*—Gulsurkh *Tel.*—Roja-puvu *Tam*—Golappu, Rojappu *Mal*—Pannuruppu. *Can.*—Gulabihuvu *Kon*—Gulabshavante.

Habitat—Several species and forms are cultivated in India. R damascena with its red double flowers is the most important, and it is cultivated in rose gardens in several places in Bengal, Kashmir, the Punjab and chiefly near Patna and Ghazipur "Enormous quantity of wild hill roses grow throughout the North-West Himalayas and Kashmir".—(Chopra)

Parts Used—Flowers, flower-buds, petals, stamens, and a volatile oil (oleum Rosae), *attar* or Otto of Rose

Constituents—Volatile essential oil, fat, resin, malic, tartaric and tannic acids Red rose petals contain an aromatic volatile oil, a glucoside quercitrin, gallic acid quercitannic acid and red colouring matter

Action—Mildly astringent, aperient, carminative, and refrigerant, cardiac tonic

Uses—*Petals* of the flowers are employed for the production of rose water and *attar* (otto or oil) of roses *Rose water* is distilled in simple stills, a thousand roses being reckoned to produce a pint-bottle of rose water The average yield of good *attar* from a lakh of roses has been estimated at one tola weight or 192 grains *Rose oil* or otto or *attar* of roses is freely used as perfume by rich classes "*Rose oil* is used as a flavouring agent to mask the taste of many obnoxious preparations."—(Chopra) *Rose water* which is generally prepared from dried petals, forms an agreeable vehicle much used in lotions and collyria, from the petals also a *syrup* is sometimes made, and a conserve named "*gulkhand*" which have mild laxative properties It is most useful for sore throat or enlarged tonsils; also fattening to women and old people Petals are cooling and

astringent and used to relieve uterine haemorrhages Locally they are applied to cure aphthae *Confection* made up of *gulkhand* 5 tolas, anisi seeds 6 *mashas* (70 grains) and *Sikanjbin sirka* 2 tolas, is recommended for urticaria in *Tib-i-Unani*. Above is to be divided into two doses Otto is seldom used medicinally except for perfuming emollients and medicinal soaps

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2151 ROSA GALLICA, Linn

Hind & Ben—Gulap is the Red or French Rose whose petals are slightly tonic and astringent and useful in debility They are used for making the *infusion* which is given in 1 to 2 ounce-doses in the sweats of phthisis and with additional acid and nitrate of potash in uterine and pulmonary haemorrhages and used topically as a gargle in throat affections which require an astringent application *Honey of Roses* is also prepared from the leaves or fresh buds of this species which mixed with borax, is a good application for the mouth in aphthae or thrush Officinal in Pharmacopoeias of Europe and India

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2152 ROSA MOSCHATA, Mill, or R pubescens or R glandulifera

(*Sans*—Kubjaka *Eng*—Musk scented Rose *Hind*—Kujai *Ben*—Kuja Fr—Rosier Musque *Ger*—Bisamrose) is a shrub and a variety indigenous to north western India and cultivated for the production of *attar* It is aphrodisiac and beneficial in bilious affections and burning of the skin. Root called *Rajatarini* is beneficial in eye diseases

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2153 ROSCOEA PURPUREA, Royle.

(N O —Scitaminaceae)

Used in veterinary medicine

2154 ROSEBAY:—

"This is not the sweet scented oleander Rosebay grows in some valley of Mt Everest In medicine, it was introduced long ago and is known as the beautiful Siberian rose. *Dried leaves* and *flower-buds* are used in medicine It contains "Andromedotoxin" which resembles aconitina It is anti rheumatic and is a highly reputed remedy for gout and rheumatism and in neuralgia of the extremities Chronic affections of the testes as orchitis and hydrocele have also been cured by it It is also useful in constipation, where the stools are loose but require much pressure for their expulsion Regarding its action on Filariasis, it helps where antimony fails, and it should be at least an adjunct to antimony treatment, if it cannot displace antimony in the treatment of Filariasis As an accessory method, a neem steam bath or a steam-bath seems to me, very promising as well 'A remarkable cure of filariasis has been brought to notice by a letter from Mr G A Vaidya Raman, B A , of Madras, by adopting the *neem* steam-bath after the best medical treatment The patient has remained free from the disease for 30 years, as reported"—(Dr Ashutosh Paul, Medical Practitioner, Puri).

2155 ROSMARINUS OFFICINALIS, Linn

(N O —Labiatae)

Hind—Rusmari Action —Oil is carminative and stimulant

2156 ROTALA LEPTOPETALA, Koehne

(N O —Lythraceae)

Is common on the East Coast of India

2157 ROTALA VERTICILLARIS, Linn

Is quite common on the East Coast of India

2158 **ROTTLERA AURANTIACA**; *R* affieuis; *R* mollis, *R. tinctoria*—See *Mallotus phillipinensis*

2159. **ROTTLERA INDICA & R HOOPERIANA**—

See Trewia nudiflora

2160. **ROUREA SANTALOIDES**, W & A

(N O —Connaceae)

(*Bom*—Vardara *Mah*—Wakeri *Can*—Hulesbal iballi *Sinh*—Kirindi-wel) *Root* is used as a bitter tonic in rheumatism, scurvy, diabetes and pulmonary complaints It is believed to promote the growth of a foetus in utero, the development of which has been arrested Root is used also as an alterative and tonic for the same purposes as sarsaparilla in syphilis etc Externally it is applied to ulcers and other skin diseases

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2161. **ROYLEA ELEGANS**, Wall

(N O —Labiatae)

Hind—Patkarru, *Pun*—Kauri Action—Bitter and febrifuge

2162. *RUBIA CORDIFOLIA*, Linn

R. manjishta; *R secunda*

(N O—Rubiaceae).

Mountains, Eastern and Western Ghats from Bombay southwards

Constituents.—*Bark* and *leaves* contain tannin 10 p.c. *Fruit* contains malic and citric acids, pectin and albumen.

Action.—Astringent, emmenagogue, abortifacient. Bark and leaves are considered astringent. Leaves are a powerful emmenagogue and abortifacient.

Uses.—*Young shoots* eaten as a salad are said to fasten loose teeth. *Root, leaves* and *fruit* are all good for diarrhoea. Fruit is considered a valuable remedy for the nocturnal micturition of children, also for dysentery as powder. *Decoction of leaves* (1 in 70 concentrated to 20) in doses of a teacupful and that of the bark in half teacupful is good for diarrhoea.

2167 RUBUS WALLICHII

(*Eng.*—Raspberry) grows wild in Britain, also grows in the North-West of India. Raspberry is fragrant and sub-acid. It is cooling in all feverish conditions. When fresh it allays thirst better than any fruit, except strawberry. Eaten alone it is not liable to acetous fermentation in the stomach. *Raspberry jam* is one of the most wholesome of preserves. *Infusion* of raspberry leaves is a remedy for severe laxity of bowels, dysentery, cholera, infantum or summer complaints and passive haemorrhage from stomach etc. Raspberry contains a volatile oil, sugar, pectin, citric and malic acids, mineral and colouring matter, some mineral salts and water.

2168 RUELLIA PROSTRATA, Poir

(N.O.—Acanthaceae)

Is common in South India, and used in gonorrhoea.—(Chopra's "I. L. of I." p. 524.)

2169. RUELLIA SUFFRUTICOSA, Roxb.

(Santhal.—Chaulia), used in gonorrhoea, syphilis and renal affections.—(Chopra's "I.D. of I." p. 524).

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den lands at any time of the year, in Bombay Presidency. Constituents—The fresh vegetable contains 92 00 p c moisture, and the dried material contains Ether extract 4 62 p c., Albuminoids 16 27 p c (cont g Nitrogen 2 62 p c), soluble carbo-hydrates 57 86 p c, woody fibre 10 50 p c, and Ash 10 75 p c (cont'g sand 0 75 p c) respectively Action—Stomachic, diuretic, astringent Uses—*Leaves* and *tender stems* are used as vegetable They have a pleasant sour taste *Chuka* is used like sorrel and much esteemed for its medicinal properties. Juice allays pain of toothache, checks nausea and promotes appetite The *plant* is an antidote to scorpion stings and *roasted seeds* are prescribed for dysentery, also used in snake-bite—(Chopra s "I D of I' p 524, and Bom Govt Agri Dept. Bulletin)

2177 RUNGIA PARVIFLORA, Nees.

(N O—Acanthaceae)

(*Sans*—Pindi *Tam.* Punaka pundu) *Leaves* are cooling, aperient and febrifuge (Chopra s 'I.D of I" p 524)

2178 RUNGIA REPENS, Nees.

(Tam—Kodagasaleh) Action—Diuretic and vermifuge, given in snake-bite (Chopra's I.D of I" p 524)

2179 RUTA GRAVEOLENS Linn.,

R angustifolia (N O.—Rutaceae)

2172 RUMEX DENTATUS, Linn

(*Sans*—Changeri *Hind*—Ambaveti, Amrule) Action—Antiscorbutic

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2173 RUMEX MARITIMUS, Linn

or *R acutus R nepalensis*

(N O—Polygonaceae)

(*Hind*—Jangli palak Jal palak *Ben*—Bun palung Banpalang *Punj*—Bijband Khattican Hulaobul) is found growing in marshes in Assam Sylhet, Cachar and Bengal Plant has cooling properties *leaves* are applied to burns and seeds are sold as bijband of the bazaars and as an aphrodisiac—(Atkinson) Tuberous *roots* of R nepalensis variety, which grows abundantly in India are used as a substitute for rhubarb and are sold under the name of *Revandchini* in the bazars of Bengal they are given in constipation in doses of 10 to 20 grains as they have purgative properties similar to rhubrb—(Irvine) The three substances crystalline constituents of R nepalensis are—Rumicin Nepalin and Nepodin In these Nepalin greatly preponderates Rumicin is chrysophanic acid

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2174 RUMEX NEPALENSIS, Spreng

Roots are purgative and are a substitute for rhubarb

2175 RUMEX SCUTATUS Linn

Sans—Changeri *Ben*—Amrula *Hind*—Ambaveti *Fr*—Oseille ronde *Ger*—Schildblattriger Ampfer) is a species found in the tropics whose succulent acidulous *leaves*, which contain potassium binoxalate are eaten fresh or its pressed juice is drunk as an antiscorbutic—(Chakraverthy)

2176 RUMEX VESICARIUS, Linn.

See R crispus

(*Sans*—Chukra *Eng*—Bladder-dock *Ben Hind & Mah*—Chuka *Tam*—Shukkan Keerai) is a species grown in the

hysteria and in flatulent colic administered by the mouth or as *enema*. It is found useful in infantile convulsions and also bronchitis and pneumonia as a vermifuge. *Leaves* are made into a bundle and hung round children's neck in cases of worms. Leaves dried and burnt are used as fumigation in cases of catarrh and cough in children. Fresh leaves bruised and mixed with brandy are used as an external application in the first stages of paralysis. Powdered and combined with aromatics, dried leaves are given as a remedy for dyspepsia, By distillation with water the fresh herb yields a small quantity of *volatile oil*. It is a valuable resolvent, diuretic and emmenagogue. It is found to be a powerful anaphrodisiac and abortifacient to pregnant women. Externally it acts as rubefacient. Pure oil of rue consists of 90 p.c. of methylnonylketone. Oil of rue acts as a vermicide; it is ineffective for the removal of ascarides. But the *juice* of rue is given to children as a remedy for worms, as rue is commonly regarded as anthelmintic. Oil is the best form of internal administration, but rue tea is a popular remedy. Dose of the powdered *leaves* is from 10 to 20 grs. *Fresh leaves* are more active and their expressed *juice* may be given in ½ drachm doses. Dose of the oil is from 1 to 5 minims rubbed up with sugar and water; of the confection, 20 to 60 grains; of the tincture from ½ to 1 drachm. The drug is also used in scorpion sting

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2180. SACCHARUM ARUNDINACEUM, Retz.

(N.O:—Gramineae)

Punj—Sarkanda; *Ben.*—Teng; *Tam.*—Adava. (Chopra's "I.D. of I." p. 524).

2181. SACCHARUM CILIARE, Anders.

(*Sans. & Tam.*—Gundra. *Hind*—Ramsar. *Ben. & Bom.*—Ser). Action:—Refrigerant and aphrodisiac. Useful in dysentery, dysuria and boils. N B:—This drug is officinal in the Punjab. (Chopra's "I.D. of I." p. 524).

2182 SACCHARUM OFFICINARUM, Linn.

(N O —Gramineae)

Sans—Ikshu, Rasalah *Eng*—Sugar-cane *Fr*—Canne a Sucre *Ger*—Achtes Zuckerrohr *Hind*—Ganna *Sind*—Kamand *Ben*—Uukh, Kajali, Ak *Punj*—Shakir surkh *Lom & Mah*—Uus *Guj*—Sherdi *Tel*—Cheruku *Tam*—Karumbu *Mal*—Karimbu *Can*—Kabbu

Habitat—Extensively cultivated throughout India in several varieties

Parts Used—Juice from sugar cane and a crystallized sugar obtained from the juice

Varieties—These are numerous in India The following are the principal ones in Bombay Presidency—(1) Pundya (pale yellow) (2) Kabirya (stripe), (3) Malbari (pale yellow), (4) Kavangiri or Kala Kalbari (thick red cane), (5) Kandya (6) Wansi—(Bombay Govt Agri Dept Bulletin)

Constituents—Juice contains saccharine matter (cane sugar), water, mucilage resin, fat, albumen, etc guanine in small quantities is found in sugarcane, it is a white crystalline powder insoluble in water and very sparingly soluble in ammonia Ca-oxalate

Action—Preservative demulcent antiseptic, cooling laxative and diuretic Sugarcane increases the solubility of lime in water It acts as food and nutrient to adipose tissue, hence sugar or sugar-forming food is necessary to health, absence of it leads to rapid emaciation Sugar is antiseptic, demulcent and pectoral It produces heat and energy Root of sugarcane is demulcent, stimulant and diuretic Vinegar stimulates appetite promotes digestion and assuages thirst.

Preparations—Preparations of the sugarcane described by Sanskrit writers are as follow—(1) *Ikshurasa* or sugar-cane juice (2) *Phanita* or sugarcane juice boiled down to one-fourth it can be drawn out in threads (3) Gool (crude sugar) or jaggery, also known as raz, which is prepared by boiling the juice down to a thick consistence "molasses" or "treacle", the uncrystallizable portion, invert sugar, of the saccharine juice which is drained off and sold as a distinct pro-

duct. "If sugarcane juice is allowed to overboil it cannot make the *gul*, it remains the boiled juice of sugarcane which is called "*kakvi*" in Marathi —(Bom Govt Agri Dept Bulletin) When the better qualities of *gool* have been more or less completely drained of molasses they constitute the (4) coarse brown sugar known as 'country" sugar which consists of a soft, moist, partly crystalline mas From this coarser description of *gool* the crystalline forms of white sugar known as (5) *Sarkara* in Sanskrit and *Chini* or *Safed Sukkar* in Hindi are directly prepared Double refined and crystallized sugar, called (6) *misri* or *Khand*, is also prepared in several forms including *kusa misri*, sugar candy (*Sitopala* in Sanskrit) Other preparations of sugar cane are (7) *Matsyandika* which is made by boiling the juice down to a solid consistence, but which still exudes a little fluid on drawing, (8) *gaudy* or fermented liquor obtained from treacle, and (9) *sidhu* or fermented liquor obtained from sugar-cane juice Properties of of these preparations are mostly those of sugar Syrup which is a B P preparation of sugar contains 56 parts of sugar in every 70 parts of syrup It is prepared by adding 5 lbs of refined sugar to 40 ounces of boiling distilled water and heating until dissolved and adding more boiling distilled water so that the product weighs 7½ lbs, and sp gr of 1 330

Uses —The thin, tender portion of the stem is largely consumed raw as sweetmeat, being simply chewed Young growing part of sugar-cane can be eaten with advantage by patients ailing from fistula in ano, when there is no fever Sugar cane juice freely drunk or *gool* with a little of dry ginger rubbed into it, and taken relieves hiccup Sugar-candy mixed with curds is a nice drink to relieve the heaty sensation in the body For spermatorrhoea a mixture of sugar-candy and borax (1 dr to every tola of the sugar candy) is taken daily for seven days Sugar-candy dissolved in water and given for drinking stops purgation Sugar is considered useful in heat, delirium and disorders of the "bile" and "wind' (*pitta* and *vata*) Sugar is used in catarrhs as a vehicle to nauseous medicines, to preserve foods etc, it protects active ingredients from fermentation and certain iron preparations from oxida

sore eyes, etc) a solution of sugar (1 in 3 of water) dropped into the eye every hour or so affords relief and if applied early cuts short the disease at once At bedtime, in these cases, it is good to apply to the eyelashes a little sweet oil or grease, and in the morning to wash the eyes carefully with hot milk and water The solution is also useful for removing small foreign substances from the eye Diluted vinegar (1 in 5 parts of water) is given in lead colic after a free purge "In nervous headache, faintness, tendency to drowsiness in sore throat, and commencing cold, its fumes are snuffed into the nose In haematuria it is very useful when locally applied to the pubes In local inflammatory pains as from scorpion bites, bees or gnats, in irritation produced by *Chuna*, its local application gives relief It relieves mammary abscesses A mixture of one part of vinegar, one part of Eau de Cologne, and two parts of water, is very often applied to the chest of consumptive patients to check profuse sweats As a detergent or antiseptic it is sprinkled round the sick bed for disinfecting the room Prof. Trilbert, of the Pasteur Institute of Paris, says that the burning of sugar develops formic acid, which is an excellent antiseptic He believes it to be a very practical and effective mode of cleansing sick room *It is* a good thing to burn a little sugar in a sick room, especially if the patient has been ill for a long time and the means of admitting ventilation and sunlight have been limited—(Columbus Medical Journal) Regarding the use of sugar, especially internally, Dr M L Kundu, Civil Surgeon, Burma, has recently discovered from laboratory experiments as well as from long experience as a Medical Practitioner, that the use of unboiled sugar is dangerous to health He calls attention to the fact that "from the time it is manufactured right up to the time that it reaches our cups of tea or coffee, it has been contaminated by every insect pest and specially the flies which are the most dangerous of all the insect carriers" He has made cultures from sugar obtained from grocer's shop and has been able to grow numbers of organisms of coli group from apparently harmless looking stuff He has grown a profuse culture of a bacilli very much like Shigas though it was not identified as such. He states that all the bacillary dysenteries

of our country are not Shigas or Fexner's but are of different varieties He has "come across cases of virulent dysentery in epidemic form in very well-appointed (ventilated?) houses lived in by educated and monied people, who are naturally very clean in their habits and food" where every article of food, receptacles, plates, water supply etc, were scrupulously examined and found quite pure and satisfactory. He, therefore, concludes that unboiled sugar was the sole source of mischief He says that even putting sugar in *boiling* water is not safe, as it (boiling water) cannot kill all the germs. He advises that precaution should be taken in every household of never taking sugar unless it is boiled, in order that the chance of bowel complaints, especially in times of epidemics of diarrhoea, dysentery or cholera, may be appreciably diminished "The green tops of the cane are fed to cattle"—(Bombay Govt Dept Agri Bulletin)

2183 *SACCHARUM PROCERUM*

(Urdu—Sarkanda) is a species the roots of which are used in decoction for the suppression of urine and in urinary diseases

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2184. SACCHARUM SARA; S. arundinaceum; S ciliare.

(N O—Gramineae)

(Sans—Gundra, Tilanaka *Eng*—Pin Reed Grass *Hind.*—Kanra, Ramsar. *Punj*—Garba ganda, Karkana, Palawar *Ben*—Sara *Tel.*—Bellu-ponik) Indigenous to North-West India It is refrigerant and aphrodisiac If used daily it prolongs longevity It is beneficial in dysentery, strangury, boils, eye diseases etc Root is official in the Punjab It is burnt near women after delivery and near burns and scalds so that its smoke may come in contact with them, as it has a beneficial effect on them

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2185. SACCHARUM SPONTANEUM

(*Sans.* & *Hind.*—Kasa. *Ben.*—Chhote-kase. *Eng.*—Thatch grass) is a species found in Bengal and its root is used as a galactagogue and diuretic. "It is sweet in taste, refrigerant and alleviative of bile, burning of the skin and phthisis".—(N. N. Sen Gupta).

2186. SACCOLABIUM PAPILLOSUM—Lindl.

(N. O:—Orchideae)

This is a plant allied to sarsaparilla and grows largely in India. *Bom.*—Nakuli. *Tam.*—Rasna.

Constituents:—Alkaloid, bitter resin. Action:—Bitter, tonic. Uses:—Used in rheumatism.

2187. SACCOLABIUM PRAEMORSUM Hook.

S. Wightianum

See.—S. papillosum

Uses:—Uses are similar to S. papillosum.

2188. SAGITTARIA SAGITTIFOLIA.—Willd.

(N. O:—Alismaceae)

Uses:—Used to induce flow of lochia, in retention of placenta and in skin diseases.

2189. SAGUERUS RUMPHII.—Roxb.

(N.O:—Palmeae)

Parts used.—Fruits. Action:—Fruits are anticoagulant.

2190. SAGUS LAEVUS.—See Metroxylon rumphii

(*Eng & Indian languages*—Sago) is the tree from the pith of which the starchy food is obtained. It is obtained from several other species of palms and cycads. It is an excellent food for invalids when completely softened by boiling.

2191 SALACIA OBLONGA, Wall

(N O —Celastraceae)

(Tam.—Ponkorantı) Root-bark ıs used ın gonorrhoea, rheumatısm and skın dıseases —(Chopra's 'I D of I" p 524)

2192 SALACIA RETICULATA, Wight

(Sans —Ekanayakam, *Tam.*—Korantı) Root bark ıs used ın gonorrhoea, rheumatısm and skın dıseases —(Chopra's I D of I" p 524)

2193 SALIX ACMOPHYLLA—Boiss

(N O —Salicaceae)

Bom —Budha Punj —Bada Parts used —Bark

Action —Bark ıs a febrıfuge

2194 SALIX ALBA ,—Linn

Punj —Bıs Kash —Vuir

Constituents —Glucoside

Action —Antiseptic antipyretic antiperiodic

2195 SALIX BABYLONICA —Linn

Nepal —Tıssı *Kash* —Guir

Constituents —Salicine

Action —Anthelmintic, antiseptic tonic

2196 SALIX CAPREA Linn

(N O —Salicaceae)

Eng —Sallow Willow bark *Hind & Punj* —Bed mushk *Indian languages* —(flowers) Bedmushk Bedmishee *Pushtu* —Khwagawala *Arab* —Khilaf *Pers* —Bede-mushk) ıs a speeies of willow cultivated ın Persıa Kashmır, N W.F Provınce and the Punjab Fragrant flowers on distillation yield an essential oil or *attar* and a perfumed water *(ma-el*

khilaf) which is much used in Northern India, chiefly by Persians and in Western India by Parsis

Constituents—'Bark contains between 4 & 10 per cent tannic acid (sometimes 8 to 12% tannin) besides wax, fat & gum, and crystalline glucoside from 2 to 7%, salicin or salicine—(Dr Wasicky) Salicine splits up into saligenin and sugar under the influence of the salivary ferments, the former partly changing into salicylic acid—,Dr Kobert)[1] *Leaves* of this and several other Indian willows are occasionally covered with a syrup exudation which dries up in thin, white flakes to a sugar or manna.

Action—'Cardiac tonic Bark and decoction of leaves are febrifuge Decoction of bark and stem is astringent"[2] Salicin is used as a tonic and antirheumatic The drug is also regarded as stimulant and aromatic

Uses—*Bark* of S caprea or Cortex salicis is used as a febrifuge Oil is distilled from the *leaves* Salicin is used with benefit in influenza *Decoction* of *bark* and *stem* is used as astringent application in piles "Decoction of *bark* is used for cataplasms against obstinate dermatopathies and ulcers—(Drs. Bentley & Trimen)) Cortex salicis, represents a salicyl preparation created by nature herself and to which the biological physician should without doubt give the preference over the chemical product, especially since the bark, through its contents of tannic acid, has the advantage of being non irritant to the mucous membranes, in contra distinction to the chemical'[3] Salix bark (willow bark) is a good substitute for Cinchona bark."[4] "An oil distilled from the leaves is used for making perfumed waters and as a tonic and aphrodisiac."[5] Nocturnal emissions so often seen in young persons suffering from spermatorrhoea yield remarkably to *liquid extract* of S nix nigra, 20 minims of the drug diluted with one ounce of water given half an hour before going to bed *All sources of sexual irritation should be removed*

(1) & (3)—Dr Nair's Book (2) & (4)—Chopra's "I D of I p 574 (5)—p 576.

bark is used as a vesicant —(Dymock) *Leaves* resemble the lanceolate senna and are purgative —(Honnigberger) They are made into a *decoction* and given as a purgative to horses —(Watt) *Fruit* is sweet in taste and has aphrodisiac properties Fruits eaten singly cause tingling and small ulcers in the mouth "Used in enlarged spleen, rheumatism, low fevers and snake-bite" —(Chopra)

2203 SALVADORA PERSICA, Linn, S wightiana

(*Sans & Mah* —Pilu *Eng* —Tooth Brush Tree *Fr* —Salvadore de Persa *Ger* —Persische Salvadore *Hind & Ben* —Chhota pilu *Pers* —Darakht-i-miswak *Bom* —Pilva Kakham, Pilvu *Sind* —Khabhar *Tel* —Varagogu *Tam* —Ughaiputtai *Can* —Goni-mara) found in the arid tracts of Sind, in the Punjab and in North-Western India and Persia *Root bark* contains resin, colouring matter and traces of an alkaloid called "Salvadorine', trimethylamine and ash containing a large amount of chlorine *Fruit* contains a large amount of sugar, fat, colouring matter and an alkaloid *Seeds* contain a white fat and yellow colouring matter Oil-cake from the seed contains nitrogen 4 8% potash 2 8% and phosphoric anhydride 1 05% Pieces of the root are used as tooth brushes *Bark* is also used as a tooth brush to strengthen the gums

Fresh *root-bark*, bruised and applied to the skin acts as stimulant in some cases it acts as vesicant and raises blisters *Bark in decoction* is useful in low fever and as a stimulant and tonic in amenorrhoea dose is half a tea cupful twice daily *Shoots* and *leaves* are antidote to poisons of all sorts *Juice* of the leaves is given in scurvy *Decoction of leaves* is used in asthma cough etc Leaves heated and tied up in thin cotton cloth are applied in rheumatism A *poultice* of the leaves is a useful application to painful tumours, piles etc *Flowers* yield an *oil* which is stimulant and laxative and "beneficial in wind phlegm, worms, leprosy, gonorrhoea and headaches' —(N N Sen Gupta) It is applied to painful rheumatic affections *Fruits* (small red berries) have a

strong aromatic smell and are eaten; they are described as deobstruent, carminative, lithontriptic, alterative, purgative and diuretic, they are administered in snake bites and as an antidote to poisons, both in the fresh and in the dried state combined with borax They are useful in enlarged spleen, rheumatism, tumours and lithiasis

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2204 SALVIA AEGYPTIACA, Linn.

Var Pumilla.

(N.O —Labiatae)

(*Punj*—Tukhm malanga) is found in the Punjab plains and hills from Delhi westward and Sind. *Seeds* are used in diarrhoea, gonorrhoea & heamorrhoids (Stewart). In Mexico and some parts of the United States a drink is made from the seeds of several of these Salvia It assuages thirst and improves the taste of water It is invaluable as a demulcent in cases of gastro-intestinal disorders Like flax-seed, a grain of the seed placed in the eye forms a mucilage by means of which a foreign body may be removed from the organs. It is also of great service as a *poultice*. *Seeds* of Indian species of Salvia may be put to the same uses as those of Mexico and California. The seeds are collected, roasted and ground and mixed with water and enough sugar to suit the taste It soon develops into a copious mucilaginous mass several times the original bulk. It is used as a food. The taste is like that of Linseed meal One soon acquires fondness for it and eats it in the way of a luxury. It is besides exceedingly nutritious

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2206. SALVIA MOORCROFTIANA, Wall.

(*Punj.*—Kallijarri). Seeds are emetic. Roots are used in cough. Seeds are used in haemorrhoids.

2207. SALVIA OFFICINALIS.,—Linn.

(N.O:—Labiatae)

Eng.—Sage; common sage; Garden-sage; Red-sage. *Hind:*—Salbia-sefakuss. Habitat:—Grown in some Indian gardens. Parts Used:—Fresh leaves. Constituents:—Essential oil.

Action:—Dr. BaimaKoff describes the effects of sage as an antihidrotic as distinctly favourable. The secretion-checking action is no doubt ascribable to the content of ethereal oil with its 1—2½% of thujone and that of tannin (Dr. Poulsson). The oil may, however, also cause epileptic seizures. (Dr. Kobert). Its occasional popular use as an abortifacient is probably likewise based on the activity of the oil. (Dr Kobert). Intravenous injection of sage extract increases the secretion of bile. (Dr. Chabiol). Freshly tonic. astringent aromatic.

Uses:—According to the ancients, salvia procured immortality, relieved fatigue, and preserved the teeth. In Europe it was used in alpine regions and formerly also by the visitors to Karlsbad against the influence of the mineral spring waters. It was given to improve the general condition as a whole Salvia has always been a greatly esteemed medicinal herb in view of its multifarious curative effects. It is praised by Hippocrates, Paracelsus, St. Hildegarde & by the "Fathers of Botany" of the Middle Ages, Lonicerus, Bock, Matthiolus and others. These authors describe it as relieving cough, as a diuretic promotor of menstruation, as a blood-purifying, blood-stilling, wound-healing agent; a remedy of sequels to catarrhs, especially of the throat and pharynx; against festering ulcers and as preservative of the teeth. Dr. Oslander and Dr. Hufeland have also made much use of Salvia. According to Dr. Schulz the leaves have been used in popular medicine in angina, aphthae, menstruation disorders, fluor albus, ten-

dency to habitual abortion, cystitis, chronic liver and kidney diseases and for checking the secretion of the mammary glands. Dr. Schulz himself gave sage against night-sweats in phthisis, achieving results on a par with those produced by atropine. Intravenous injection of sage extract is given against exhausting attacks of perspiration, tickling coughs, especially in tuberculosis, lability of the sympathetic sweat gland innervation in vegetatively stigmatised individuals suffering from attacks of perspiration on the slightest occasion, also in relapsing stomatitis aphthosa (Dr. Heinigkes); habitual abortion (the treatment must be continued for some time), and during night sweats during convalescence from serious infectious diseases. (Dr. Madaus).

2208. SALVIA PLEBEIA, R. Br., S. brachiata.

(*Sans.*—Shati. *Ben.*—Kokaburadi; Bhui-tulsi. *Sind.*—Kinro. *Punj.*—Sumandarsaka; Sathi. *Guj.*—Kammar-kas; Bijabuda. *Bom.*—Kammar-kas (seeds). *Tam.*—Nurvisham; Kasturi manjal. *Tel.*—Kachoralu; Kichili-baddalu. *Mal.*—Pulam-kizhanma. *Can.*—Knchora. *Pers.*—Jadvar. *Burm.*—Tham-wen. *Chin.*-Chin-khing-kai) is found throughout India in the plains and ascending the hills to 5,000 feet. *Seeds* contain albuminoids 12%, oil 18.6%, gum, fibre 44% and ash 15%, No alkaloid. Seeds are demulcent and nutritive.

Action & Uses in Ayurveda & Siddha. Stimulant, carminative, expectorant, demulcent, diuretic and rubefacient, katu vipaka, ushna veeryam, kapha-haram.—Therapeutic Notes).

Action & Uses in Unani.—Hot 3°, Dry 3°, refrigerant, for liver, brain, and heart, antipoison, piles, palpitation, diuretic and abortive.—(Therapeutic Notes).

Uses.—*Seeds* are used in gonorrhoea and menorrhagia, and diarrhoea; also given to promote sexual powers; and useful in leucorrhoea, seminal weakness and haemorrhoids.

2209. SALVIA PUMILA, Benth.

Uses same as S. plebeia.

2210. SALVIA SPINOSA, Linn.

(*Punj.*—Kanocha). The triangular seeds of this plant are available in the Punjab bazars. Seeds soaked in water form a thick mucilaginous drink much used in gonorrhoea and urethritis.—(Chopra's "I.D. of I." p. 593).

2211. SAMADERA INDICA, Gaertn., S. pentapetala.

(N.O:—Simaroubaceae).

(*Eng.*—Neepa-bark. *Mal.*—Karinghola. *Tam.*—Nicpa *Burm.*—Kathai. *Sinh.*—Samadara) is indigenous to Western Peninsula throughout the South Konkan and Malabar, moist low country and Ceylon. Its constituents are a fixed oil, a bitter principle glucoside "Samaderin" also called quassin *Bark*, which is bitter, is used as a febrifuge in fevers. *Oil* extracted from the kernels of the fruit forms a good application in rheumatism. *Bruised leaves* are externally applied in erysipelas. *Seeds* are worn round the neck as a preventive of asthma and chest affections. *Infusion of the wood* is also taken as a general tonic.—(Rheede and Drury). *Infusion of leaves* is a good insecticide and destructive to white ants.—(Trimen). *Infusion* of the wood is taken as a general tonic, as a substitute for Quassia.

2212. SAMADERA LUCIDA, Wall.

(*Burm.*—Kathay). Uses same as S. indica.

2213. SAMBUCUSEBULUS—Linn.

(N.O:—Caprifoliaceae)

Punj.—Mushkiara. Parts used:—Roots. Action:—Roots are purgative. Constituents:—Cyanogenetic glucoside, essential oil.

Uses:—Roots are used in dropsy.

2214 SAMBUCUS NIGRA., Linn

(N O —Caprifoliaceae)

Eng —Elder tree Parts used —Fresh leaves, fresh flowers, inner bark, root Constituents —The main active principle in the leaves 'sambunigrin' a cyanogenetic glucoside which splits off hydrocyanic acid, benzaldebyde & oxalic acid in young leaves Flowers contain large amount of ethereal oil —(Dr Thoms)

Action —Inner bark is hydrogogue cathartic and antiepileptic; flowers are diaphoretic sudorific, laxative, and stimulate the secretion of the sweat glands the berries increase the renal function and the root and interior central bark are aperient (Dr Bohn) The diaphoretic action of the flowers rests largely on its content of ethereal oil Dr Thomas) The watery extract of the flowers kills the coli bacillus (Dr Madaus)

Uses.—Greatly esteemed from antiquity onwards and much used by Hippocrates and Paracelsus. In more recent times elder has been much prescribed by Drs. Osiander and Hufeland According to Dr Bentley and Trimen the inner bark was formerly used as a hydragogue cathartic, and they advocate closer investigation of the medicament which is known to them also as an antiepileptic Dr Hahnemann recommended S nigra in dropsy, since, as stated by Dr Haller, its exterior application already produces edemata. S Nigra is a favourite diaphoretic and as such is given in liberal dosage (Dr Madaus)

2215 SANDORICUM INDICUM,—Cav

(N O—Meliaceae)

Burm —Thitto Action —Carminative Constituents —Toxic bitter substance and alkaloid.

Uses —Used in diarrhoea and dysentery

2216. SANSEVIERIA ROXBURGHIANA, Schult.

See—S. zeylanica, Willd.

(N.O:—Haemodoraceae)

(*Sans.*—Muruva. *Hind.*—Murahri; Murva. *Ben.*—Murba. *Bom.*—Morwa. *Guj.*—Murvel. *Tam.*—Marul-kalang. *Tel.*—Ishaura-koda-udr. *Mal.*—Katukapel. *Can.*—Heggurutike) is found on the Coromandel Coast. Constituents.—An alkaloid 'sanservierine'. Action:—It is described as "purgative, heavy, sweet, pungent, tonic, expectorant, febrifuge, and cardiacal, a remedy for heat of blood, gonorrhoea, *tridosha* thirst, heart-disease, itch, leprosy, fever, rheumatism and glandular enlargements". Uses.—Root is prescribed in the form of an electuary in consumptive complaints and coughs of long standing, in doses of a small teaspoonful twice a day. Juice of the tender shoots of the plants is administered to children to clear their throats of viscid phlegm.—(Ph. Ind).

2217. SANTALUM ALBUM, Linn.

(N.O:—Santalaceae)

Sans.—Srigandha; Swet Chandan; Chandanam; Gandashrah; Bhadra Shree. *Eng.*—White Sandalwood Tree. *Fr.*—Santal blanc. *Ger.*—Weisser Santelbaum. *Hind., Duk. & Punj.*—Safed Chandan; Sufeed Sandal. Ben.—Chandan; Sadachandan; Pitchandan. *Kash., Bom. & Mah.*—Safed chandan. *Guj.*—Sukhada. *Tel.*—Gandhapu-chekka; Srigandhapu-manu. *Tam.*—Shandanak-kattai; Sandanamaram; Chandanam: Chandana-kattai. *Mal.*—Chandena-maram; Chandanam; *Can.*—Shrigandhada-mara. Malay.—Miniak Chandana.

Habitat.—This small evergreen tree grows wild or is cultivated in Mysore State and Coorg; grown also in Coimbatore, Salem, and the Southern parts of Madras. " When grown away from its natural habitat, it tends to lose much of its essential oil for which it is esteemed in medicine. The trees growing on hard, rocky, ferruginous soils are richer in oil than those growing on fertile tracts."[1]

Parts Used:—Wood & volatile oil.

Chemistry & Constituents.—"Heartwood formation is accompanied by a large deposition of alcohol soluble constituents, resins and the essential oil in the case of sandalwood Evidence has also been obtained that the precursors of the sandalwood oil do exist in the sapwood in combination with organic acids as esters, which get easily hydrolysed to yield Santalol, which constitutes the main constituent of the essential oil —(Dr H B Sreerangachar, Dept of Biochemistry, Indian Institute of Science, Bangalore) "The essential oil of sandalwood is distilled from small chips and raspings of the heartwood of the tree Roots are also used and they are considered to yield a larger and a finer quality of oil Oil is extremely viscid, of a light yellow colour and possesses a characteristic roseate and penetrating odour and a bitterish slightly acrid taste It is soluble in from 3 to 6 volumes of 70 per cent alcohol (by volume) at 20°C and has got the following characters —Specific gravity 0 973 to 0 985, optical rotation— 14° to —21°, refractive index 1 5040 to 1 5100, acid value 0 5 to 6, ester value 3 to 17, sesquiterpene alcohols (mostly santalol) 90 to 96 per cent "[2] Heartwood contains a volatile oil 2 5 to 6%, a dark resin and tannic acid Oleum Santali (B P) obtained from the wood is soluble in alcohol Constituents of oil are —Santalol, a body or a mixture of isomers or sesquiterpene alcohols with different boiling points, is the principal constituent of the oil, occurring therein to the extent of 90% or more It is a mixture of two isomers known as A-Santalol and B-Santalol. The rest is composed of aldehydes Santalol and ketones, e g, isovaleric aldehyde, santonone, santalone, esters, free acids etc

Action —Wood is bitter, cooling, sedative and astringent Oil is astringent and disinfectant to the mucous membranes of the genito-urinary and bronchial tracts, also diuretic, expectorant and stimulant

Action & Uses in Ayurveda & Siddha.—Tikta rasam seetha veeryam, pitta kapha haram, lagu, ruksham, in sramam, sosham, visham, trishna, raktapittam, daham.—(Therapeutic Notes)

Action & Uses in Unani.—Cold 3°, Dry 2°. Tonic to heart, stomach, liver, antipoison, resolvent, in palpitation, hot-fevers, good for memory, blood purifier. (Therapeutic Notes).

Adulterants.—"The oil of commerce is frequently mixed with cedar-wood oil to the extent of 10%; castor-oil is also used as an adulterant in India. Both adulterants are easily detected by alteration in the physical charncters, in the former by the decreased solubility in alcohol and in the latter by high ester value. Glyceryl acetate, benzl alcohol, terpineol etc., are some of the other adulterants met with".[3]

Uses.—"The bark, the white outer sapwood and branches which are odourless are rejected"[4] and drying of the heart-wood improves its aroma; the fragrant, cleaned, heartwood dried in a closed warehouse, has been used in India from a very early period and occupies an important place in Hindu ceremonials, religious and social. It was regarded as the most durable because it is not touched by white ants which destroy so many other varieties of timber. The Brahmins used a paste made from the wood for their sectarial marking. The so-called "West Indian Sandalwood Oil" is not a true sandal wood oil at all, as it is not derived from Santalum album but is the product of Fusanus acuminatus (Santalum preissianum). "East African Sandalwood Oil" is obtained from a species of Osyris, probably Osyris tennifolia. The "West Australian Sandalwood Oil", though derived from Fusanus spicatus, resembles the Indian oil very closely and in recent years has come to be regarded as a serious competitor of the true "East Indian Sandalwood Oil" both in commercial and in medicinal uses".[5] It has been shown by chemical analysis that the Australian oil contains about 95% of santalol. It does not possess the sweet odour of the Indian oil and its optical rotation differs markedly from that of the Indian oil. By fractional distillation of Australian Sandalwood oil, however, a fraction is obtained which has an odour like that of Sandalwood oil and this can be adjusted so as to come just within the British Pharmacopoeia limits. [The B.P. minimum is 13°; Mysore oil has got a rotation of not less than—17½; if the priginal Australian oil

Henderson of Glasgow was the first to direct the attention of the European physicians to the use of the oil as a remedy for gonorrhoea and since his time it has been employed internally in many cases where copaiba and cubebs had previously failed. It is preferable to copaiba as it does not communicate an unpleasant odour to the urine nor does it so readily produce untoward effects."[6] The famous German medicine "Salvarsan" is said to be a preparation of the essential principles of sandal oil! Sandal oil is a popular remedy in gonorrhoea, chronic foetid bronchitis & cystitis, gleet, urethral haemorrhage and kindred affections and in pyelitis and chronic cystitis. It is given in 5-drop doses gradually (but carefully owing to the baneful effects of large doses on the kidneys) increased to 10 to 20 minims, commonly in capsules or in emulsion with mucilage; it is good to accompany it with a drop or two of liquor potassae. Oil is valuable also in bronchial catarrh. It is best given in a little omum water or infusion of ginger. A mixture of the oils of sandal, of cubebs, and copaiba is generally recommended for gonorrhoea: dose is 7 drops on sugar. In remittent fevers the oil acts as a diaphoretic. It diminishes the rapidity of the heart's action. *Externally* the oil is an excellent application in scabies in every stage and form. Sandal oil mixed with its double the quantity of mustard oil is a good application for pimples on the nose. *Haj-ul-Gurba* recommends a paste made of equal parts of sandal oil and borax, with sufficient quantity of water as useful application in pityriasis, versicolor and similar affections. The bark is applied in erysipelas and prurigo.

2218. SANTALUM RUBRUM—See Pterocarpus santalinus

2219. SAPINDUS TRIFOLIATUS, Linn.,

S. emarginatus; S. laurifolia; S. rubiginosus; S. mukorossi S. detergens.

(N.O:—Sapindaceae)

(*Sans.*—Arishta; Phenila. *Eng.*—Indian Filbert; Soapnut Tree. Hind., *Mah. & Duk.*—Ritha. *Ben.*—Bara-Ritha.

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(1)—Chopra's "I.D. of I." p. 245; (2) & (5) p 213; (3) & (6) p. 244 (4)—p. 242.

Tel.—Kunkudu-chettu; Kungitikaya. *Tam.*—Ponnan-kottai; Punnangkottai; Poongan-kottay; Poongankottai: Puvandi. *Mal.*—Chavakayimaram. *Can.*—Kookatakayi; Noorekayi; Kudale-kaye; Urvanjik-kaya. *Kon.*—Rintya-rooku. *Pers.*—Rathob. *Arab.*—Finduk-i-hindi) are species common in Southern India and cultivated in Bengal. "The fruit grows in clusters on a large tree and consists, when ripe, of a black seed, resembling Indian Shot, with a reddish brown fleshy covering which when bruised and mixed with water forms a soapy lather." Fruits contain about 11.5% of saponin, besides glucose and pectin. The thick cotyledans contain white fat 30%. It saponifies readily. Seeds yield a thick viscous oil. Action:—Tonic, expectorant, emetic and purgative. Seeds are narcotic and acrid poison. Uses:—Fruits are employed as emetic in doses of 1 to 2 drachms; as purgative in larger doses; nauseant and expectorant in doses of 10 to 20 grains of the pericarp or pulp and kernel of the fruit. In four-grain doses it is useful in colic, and is given with *sherbet*. Pulp is given in small doses as anthelmintic. Pulp is given to people bitten by venomous reptiles, also to those suffering from severe diarrhoea or cholera. It is administered as follows:—Pulp is rubbed in water until it soaks and is then strained and given by the mouth. *Root* also has expectorant property. A thick watery solution of the drug dropped into the nostrils relieves hemicrania, hysteria and epilepsy by irritating the mucous membrane and increasing its secretions. "Three or four grains may be given by the nose in all kinds of fits producing insensibility".—(Dymock). *Fumigations* with it are useful in hysteria and melancholia. Made into *paste* with vinegar it is *externally* applied to bites of reptiles and of centipedes, scorpion-sting, etc., and to lessen scrofulous swellings. *Pessaries* made of the kernel of the seeds are used to stimulate the uterus to child-birth and in amenorrhoea. *Seeds* pounded up with water and introduced into the mouth cut short the paroxysm of epilepsy. Fragrant *leaves* are used in baths for painful joints and the root in gout, rheumatism and paralysis.

2220. SAPIUM INDICUM, Willd.

(N.O:—Euphorbiaceae).

(*Ben.*—Hurua; *Bom.*—Hurna). Seeds are a fish-poison.

2221. SAPIUM INSIGNE, Benth.

(*Hind.*—Khinna; *Bom.*—Dudla). Action:—Acrid and vesicant.

2222. SAPIUM SEBIFERUM, Roxb.

(*Sans.*—Toyapippali; *Hind.*—Pippalyang; *Ben.*—Momchina). Action:—Diuretic. Used in snake-bite and boils.

2223. SAPONARIA VACCARIA, Linn., Gypsophila vaccaria,

(N.O:—Caryophyllaceae)

(*Arab.*—Elsabuniyeh. *Ben.*—Sabusie; Sabuni. *Eng.*—Perfoliate Soap-wort. *Hind.*—Sabuni; Musna) is a species found throughout India. Root contains "saponin" a white amorphous substance in crystals. Action:—Febrifuge; root is alterative, stimulant, purgative, diuretic and sternutatory. It stimulates the mucous membranes in the form of *infusion* (1 in 20) and may be used in cough, chronic bronchitis, pleurisy, asthma, etc. It is also used in liver diseases, jaundice, syphilis, gout and chronic skin diseases; dose is ½ to 1 ounce. Sap is used in itch.

2224. SARACA INDICA, Linn.

(N.O:—Caesalpiniaceae):

"This is one of the sacred trees of the Hindus and is found plentifully along the road-side in Eastern Bengal, South India, Aracan and Tenasserim, U.P. near Kumaon."—(Chopra's "I.D. of I." p. 376).

Sans.—Asoka; Kankelli; Vichitrah; Gandapushpa. *Eng.*—Asoka Tree. *Hind. & Ben.*—Anganapriya. *Bom. & Mah.*—Ashoka. *Guj.*—Asupala; Ashopalava. *Tel.*—Asok. *Tam. &*

Mal—Asogam *Can*—Asokada or Kenkalimara *Burm*—Thawgabo *Uriya*—Asoka

Habitat—Cultivated in gardens throughout India for its handsome flowers

Constituents—"Abbot (1887) stated that this contained haematoxylin The dry powdered bark was extracted with different solvents in the Dept of Chemistry, School of Tropical Medicine, Calcutta, with the following results—petroleum ether extract 0 307%, ether extract 0 235%, and absolute alcoholic extract 14 2% The alcoholic extract, which was mostly soluble in hot water, showed the presence of a fair amount of tannin and probably an organic substance containing iron No active principles of the nature of alkaloid, essential oil, etc, were found'—(Chopra s "I D of I" p 377) Further investigations should be called for Bark contains a fair amount of tannin and catechin—(Hooper)

Action—*Bark* is strongly astringent and uterine sedative It acts directly on the muscular fibres of the uterus It has a stimulating effect on the endometrium and the ovarian tissue

Uses—*Bark* is much useful in uterine affections, especially in menorrhagia due to uterine fibroids and other causes *Decoction of the bark* prepared by boiling 4 ounces of the bark in 4 ounces of milk and 16 ounces of water till the latter is evaporated and this quantity is given with milk in two or three divided doses during the course of the day in menorrhagia—(Chakradatta) It must be commenced from the 4th day of the monthly period and continued till the bleeding ceases *Asoka ghrita* is prepared with a decoction of the bark and clarified butter with the addition of a number of aromatic substances in the form of a paste Decoction of the bark in water with dilute sulphuric acid is also used *Bark* is useful in internal bleeding haemorrhoids and also haemorrhagic dysentery *Liquid extract* of the bark was tried in "cases of menorrhagia and found to do considerable good'—(Indigenous Drugs Report, Madras) *Flowers* pounded and mixed with water are useful in haemorrhagic dysentery Dose of the fluid

extract is from 15 to 60 minims. The drug is also used in scorpion sting.

2225. SARCOCEPHALUS CADAMBA—

See Anthocephalus cadamba.

2226. SARCOCEPHALUS HORSFELDII, Miq

(N.O:—Rubiaceae).

Constituents:—There is an alkaloid.

2227. SARCOCEPHALUS MISSIONIS, Wall.

(*Sans.*—Jalamdasa; *Tam.*—Nirvanji). Powdered bark or decoction is used in leprosy, ulcers, rheumatism and constipation.

2228. SARCOSTEMMA BREVISTIGMA, W. & A., or Asclepins acida.

(N.O:—Asclepiadaceae).

(*Hind. & Ben.*—Somalata. *Sans. & Bom.*—Soma. *Tam.*—Kondapala. *Tel.*—Jigatshumoodoo. *Smd.*—Thorinjal. *Mah.*—Ranshcr) met with in the Deccan, common in dry rocky plains. Water passed through a bundle of *Somalata* and a bag of salt will exterpate white ants from a field watered by it. The ancient Hindus, says Birdwood, used to prepare an intoxicating liquor from the juice of the plant mixed with barley and ghee. But this does not seem to be the *Soma* plant of the Vedic period.

2229. SARCOSTEMMA BRUNONIANUM, W. & A.

Indian languages names and uses are same as of S. brevistigma.

2230. SARCOSTEMMIA INTERMEDIUM, Dene.

Indian languages names and uses are same as of S. brevistigma.

2231. SARCOSTEMMA STOCKSII, Hook.

Indian languages names and uses are same as of S. brevistigma.

2232. SARCOSTIGMA KLEINII, W. & A.

(N.O:—Icacinaceae).

(*Tam.*—Puvenagah). Used in rheumatism.

2233. SASSAFRAS OFFICINALE, Nees.

(N.O:—Laurineae)

Contains an essential oil. Root is used in rheumatism and skin diseases.—(Chopra's "I.D. of I." p. 526).

2234. SAUROMATUM GUTTATUM, Schott.

(N.O:—Araceae)

A stimulating poultice of tubers is used.—(Chopra's "I. D. of I." p. 526).

2235. SAUROMATUM PEDATUM, Schott.

(*Bom.*—Lot). Tubers are acrid, poisonous and stimulant. Tubers are externally used as a stimulating poultice.—(Chopra's "I.D. of I." p. 526).

2236. SAUROPUS QUADRANGULARIS

See Phyllanthus rhamnoides.

2237.—SAUSSUREA CANDICANS, Clarke.

(N.O:—Compositae).

(Punj.—Batula). Action is carminative.—(Chopra's "I.D. of I." p. 526).

2238. SAUSSUREA HYPOLEUCA, Spreng.

This drug is used as a substitute for S. lappa.—(Chopra's "I D. of I." p. 526).

2239. SAUSSUREA LAPPA, Clarke.

See:—S auriculata; Aplotaxis lappa or auriculata; Aucklandia costus; S. hypoleuca.

(N.O:—Compositae).

Sans.—Puskara; Kushta; Kashmirja; Kushtha; Kashtam; Kushtam; Utpalam. *Eng.*—Costus; Kut root. *Fr.*—Costus elegant. *Ger.*—Practige Kostwurz. *Hind.*—Kut; Kust; Pokharmul. *Ben.*—Pachak; Kur. *Bom. & Guj.*—Upalet; Ouplate. *Kash.*—Patalapadmini. *Arab. & Pers.*—Kust. *Tel.*—Kustam; Chengulva; Kostu. *Tam.*—Gostan; Goshtam; Koshtam; Jathi koshtam; Chagal koshtam; Kottam. *Mal.*—Seppudday. *Can.*—Koshta; Kosuta.

Habitat.—These herbs grow abundantly on the Himalayas and Valley of Kashmir.

Parts Used.—Roots only are used in medicine.

Constituents.—Roots contain odorous principle composed of two liquid resins, an alkaloid, a solid resin, salt of valeric acid, an astringent principle and ash which contains manganese. "The oil of the root was found to have the following approximate composition:—Camphene 0.04%, phellandrene 0.4%, terpene alcohol 0.2%, a-costene 6.0%, B-costene 6.0%, aplotaxene 20.0%, costol 7.0%, di-hydrocostus lactone 15.0%, costus lactone 10.0%, costic acid 14.0%. (Semmler & Feldstein)." Active principles of the root are (a) an essential oil of a strong aromatic penetrating and fragrant odour 1.5%; (b) a glucoside and (c) an alkaloid Saussurine 0.05%. Alkaloid Saussurine in

leaves 0 025%, resin 6 0% traces of a bitter substance, small quantities of tannins, inulin about 18 0%, a fixed oil, potassium nitrate, sugars, etc, but the leaves do not contain the essential oil "—(Sudhamoy Ghosh, Nihar Ranjan Chatterjee & Ashutosh Dutt, Calcutta)

Action —Essential oil and the glucoside are pharmacologically active bodies The alkaloid is less active *Essential oil* has carminative and strong antiseptic and disinfectant properties especially against the streptococcus and staphylococcus, and is an expectorant and a diuretic, it relaxes the involuntary muscle tissue and is a cardiac stimulant "In such dilutions as 1 in 10,000, the essential oil kills paramoecium caudatum in 10 minutes Internally, oil has a pungent, bitter taste and gives rise to a feeling of warmth in the stomach when taken in small quantities When the extract made from the root is given by the mouth in such large doses as 10 to 20 c c, it gives rise to a certain amount of irritation and a feeling of discomfort in the abdomen which may last for several hours, the patient at the same time feeling somewhat drowsy On the lungs, intravenous injections of the essential oil had a broncho-dilator action It is absorbed from the gastro-intestinal tract and is partly excreted by the lungs producing an expectorant action and partly by the kidney producing diuresis. (The essential oil is excreted in the urine and during its passage through the urethra It may produce a certain amount of irritation giving rise to aphrodisiac effects) On the central nervous system the effect of the essential oil resembles that of other volatile oils Large doses of the extract produce giddiness, headache and drowsiness, which cannot be attributed to any of the other active principles. Inhalation of smoke of the powdered root produces a marked depression of the central nervous system and for that reason it was smoked as a substitute for opium "[3]

does The action was not so powerful as that of adrenaline, takes longer to develop but persists for a much longer time. The alkaloid appears to act chiefly through the vagus centre in the medulla, though direct action on the involuntary muscle fibres of the bronchioles has also some part to play. Saussurine also has a general depressing action on the other involuntary muscle tissues in the body It decreases the tone of the intestine and stops the peristaltic movements of the gut, if it is given intravenously in animals The action is partly on the vagus but chiefly on the muscle fibres themselves. Intravenous injections of the alkaloid produce a slight rise of blood pressure in animals due to stimulation of the myocardium. The effect is much more marked on the ventricles than on the auricles. The administration of saussurine revives a failing heart, the beats becoming regular and forceful "[4] The alkaloid and the glucoside have little or no effect in this direction *Glucoside* causes a small but a persistent rise of blood pressure, essential oil does this to a lesser degree Both the glucoside and the essential oil have a slight but a definite broncho-dilatory effect. The alkaloid is inactive in this respect General action — carminative and stimulant

Action & Uses (combined) —*Powered root* and *alcoholic* extract are expectorant and are beneficial in bronchial asthma, especially those of the vagotonic type 'The paroxysms are cut short by the combined action of the essential oil and the alkaloid present in the root" [5] They cut down attacks and reduce their frequency —(Ind Med Gaz Nov 1924) "The root has a pungent taste, a peculiar fragrant aromatic odour resembling that of the orris root Hakims describe the root as a diuretic and anthelmintic. In indigenous medicine in India the root is used as an aphrodisiac and as a tonic."[6] Ayurvedic physicians describe the drug as bitter, acrid, stimulant and alleviative of wind, phlegm, fever, phthisis, cough and loss of the inclination for food (dyspepsia), pains in the sides, dropsy, skin diseases and jaundice, and disease arising from deranged air and phlegm, and asthma Root has been used as a carminative, antiseptic, prophylactic, anthelmintic, astringent, sedative, insecticidal, tonic, alterative, antispasmodic and aph-

rodisiac; and as aromatic stimulant, in the form of *infusion* (1 in 10) with a little cardamoms it is used in cough, asthma, chronic rheumatism and skin diseases, fever and dyspepsia. "As a stimulant in cholera, an *infusion* made of cardamoms 1 dr., fresh *Kut* 3 drachms, water 4 ounces. One ounce every half hour. This is doubtless a powerful aromatic stimulant, and would be serviceable in any spasmodic disease."[7] *Agnimukha Churna*, a compound of Asafoetida 1 part, Acorus calamus 2 parts, long-pepper 3 parts, ginger 4 parts, Ajowan 5 parts, Chebulic myrobalan 6 parts, plumbago root 7 parts and root of Aplotaxis auriculata 8 parts, all powdered and passed through a cloth, is recommended by Chakradatta for administration in doses of 20 to 40 grains with whey or wine in dyspepsia with loss of appetite Root is used as an ingredient in stimulating mixtures for cholera "Hakims and Vaidyas use the roots in the treatment of quartan malaria, leprosy, persistent hiccough and rheumatism".[8] Root enters into the composition of some pastilles and incense for fumigation "In China the root is extensively used as a spice and as an incense, and it is said to have the power of turning grey hair black. The Chinese apply the root with musk to aching tooth."[9] *Dried* and *powdered root* is a useful hair-wash, and is "an astringent stimulant ointment"[10] applied to wounds and severe ulcerations, other skin diseases and for resolving tumours, with benefit. *Liniment* composed of the root, *kanjika* and castor oil is recommended to be applied to the forehead in cephalalgia —(Sharangadhara) Dried root mixed with mustard oil, is applied to the scalp in prurigo Equal parts of the powdered root and of rock salt, mixed with mustard oil and fermented paddy water (kanjika) are rubbed on joints affected with chronic disease.—(Bhavaprakash) *Root* is smoked as stimulant "in parts of India and in China as a substitute for opium."[11] The drug is used in scorpion sting Root is used in asthma, and is narcotic when smoked. Now it is chiefly used as a perfume closely resembling the violet perfume, and for protecting cloth from insects, moths and vermins. "An alcoholic extract prepared from the *powdered root* of S. lappa (containing the essential oil as well as the alkaloid) (40 mesh) is percolated 6 to 8 times with 90 per cent alcohol in the cold till nearly exhausted. The

major portion of the alcohol is distilled off and the residual extract is concentrated so that 1 c c of the extract corresponds to 1 gm., of the air-dried drug, given in ½ to 2 drachm doses, three to four times a day This mixture was extensively tried by Col Chopra, in the treatment of bronchial asthma The patient is advised to keep a dose by his side when he goes to bed at night, and which should be taken immediately the premonitions of an attack are felt, the paroxysm is usually aborted and the patient goes to sleep again The disturbance of sleep produced is comparatively much less than if an injection of adrenaline has to be taken or an asthma cigarette has to be smoked The depressant action of the drug on the central nervous system further helps the patient to fall quickly to sleep It is better to give the extract by itself when the drug is being administered to cut short a paroxysm The drug has no cumulative effect and therefore it can be continued for long periods without producing ill effects No marked tolerance to the drug is observed so that there is no necessity for the dose to be increased It is preferable to give it for 10 days or a fortnight and then to stop it to see if the attacks recur In many patients in whom the paroxysms are merely due to irritation through some temporary and not a deep-seated cause, the extract combined with general treatment frees the patient for months or years from attacks and the paroxysms do not recur till these factors operate again It should be understood, however, that the treatment of this symptom-complex is not so easy as would appear The cause giving rise to the attacks should be discovered and remedied, but this often is not an easy matter and may take considerable time Unless this is done, a permanent cure cannot be expected —(Chopra)" [12] Saussurea hypoleuca is sometimes used as a substitute for S lappa "The roots due to heavy demand are frequently adulterated with the roots of Salvia lanata or Ligularia and one of the aconites!"[13]

Action & Uses in Avurveda & Siddha —Katurasam, mathura vipakam, ushna veeryam, vata kapha haram, in rakta diseases, kasam, visarpam, kushtam —(Therapeutic Notes)

2243. SCHIMA WALLICHII, Chois.

(N.O:—Ternstroemiaceae).

(*Hind.*—Makriya; Chilauni) is found in Eastern Himalayas, Nepal, Assam and Burma. The Parenchyma contains starch and a red colouring matter, Saponin. *Bark* is a mechanical irritant of skin and vermicide given in tapeworms; dose is 1 to 3 grains followed by castor-oil.

2244. SCHIZIUM JAMBULANAE—See Eugenia jambolana

2245. SCHLEICHERA TRIJUGA, Willd

(N.O:—Sapindaceae).

(*Punj. & Hind.*—Kosum; Kosumba. *Gwalior.*—Kusuma. *Bom.*—Kosam. *Mah.*—Karadayi. *Tel.*—Pusku: Roatanga. *Tam.*—Pumaram. *Mal.*—Puva. *Can*—Sagdi; Chakota. *Sinh.*—Kong) growing in the lower Himalayas towards the North-West and also in central and southern India, Burma and Ceylon Bark contains tannin, ash, and a syanogenetic glucoside. The pulpy arilla is subacid. Bark is astringent and mixed with oil it is applied to cure itch and other skin eruptions. *Oil* expressed from the seeds is also used for the cure of itch and acne. It is a stimulating and cleansing application to the scalp and promotes the growth of hair. A fine quality of *lac* is produced on the young branches. *Kernel* of the seed which yields oil, is composed of fat 70 5 p c., proteids 12 p c., fibre and ash 14 p.c.

2246. SCHREBERA SWIETENIOIDES, Roxb.

(N.O.—Oleaceae).

(*Tam.*—Mogalinga-maram). Used in the preparation of an oil for burns and boils.—(Chopra's "ID. of I" p. 526).

2247.—SCHWEINFURTHIA SPHAEROCARPA, Braun

(N.O:—Scrophulariaceae)

(*Sans., Hind. & Bom.*—Sanipat). Action:—Diuretic. Constituents:—Alkaloid. Used in fever.

2248. SCILLA COROMANDELIANA, Roxb.

(N O.—Liliaceae).

Used as a substitute for Squill.

2249. SCILLA HYACINTHINA

Is a remedy for strangury and fever in horses.

2250 SCILLA HOHENACKERI, Fisch et May.,

is closely allied species to S. indica, Urginea scilla and U. maritima, met with in the Punjab. The bulbs of this are whitish brown in colour, scaly, about the size of a nutmeg and composed of very smooth and fleshy scales which are so imbricated that they may be mistaken for coats if not carefully examined They are roundish and ovate in shape; sometimes slightly compressed on the sides.

Scilla bulbs are imbricated, and Urginea bulbs are tunicated The scilla bulbs though smaller than the imported variety are equally nauseous and bitter. Although a useful and potent drug, on acount of its irritable effects on the gastro-intestinal tract it has not been possible to use it to any large extent in therapeutics as a cardiac tonic. Efforts made recently to isolate its active principles and to see if it is possible to separate them from irritating substances contained in the bulbs, have resulted in isolating two substances —(1) an apparently pure crystalline glucoside named Scillaren A, and (2) an amorphous complex constituent, probably a mixture of two glucosides, which has been named 'Scillaren B". The latter substance is easily soluble in water while the former is practically insoluble.

tract. Stehle, Ross & Dreyer (1931) have shown that scillaren B produced a rise of blood pressure owing to its vaso-constrictor action in animals, the amplitude of ventricular beats is increased and that the cardiac output is improved.

For many years the Indian varieties have been used as a substitute for the official varieties by the Govt. Medical Store Dept. in Bombay, for the manufacture of galenicals and the results obtained clinically have been quite satisfactory. The Indian variety was even made officlal in the British Pharmacopoeia in 1914.

Some of the drug manufacturers in Calcutta are using the combined bulbs of S. indica and U. indica obtained from the Chittagong hill tracts for the preparation of tinctures etc.

The biological assay of tinctures of scilla made from the imported and Indian varieties, carried out by Col. Chopra and De, gave good reduction in heart-beat, and have shown that the Indian squills are in no way inferior to the imported varieties of U. scilla and U. maritima.

(Chopra's "I.D. of I." pp 252/254).

2251. SCILLA INDICA, Baker.,

See.—Urginea indica

Is a bulbous plant of the genus Liliaceae. (*Eng.*—Indian Squill; Small Wild Squill. *Hind., Guj. & Duk.*—Chhoti jungli pyaz. *Hind. & Ben.*—Suphadiekhus. *Bom.*—Pahadi kanda. *Mah.*—Bhuikanda. *Tel.*—Adavi-tella-gadda. *Tam.*—Shirunari-vengayam. *Mal.*—Kantena. *Can.*—Kadu bellulli. *Kon.*—Lahan kolkando) very common in sandy soil, especially near the sea, in the Deccan Peninsula, Bundelkhand, and from the Konkan and Nagpur southwards. The small bulb is a substitute for the official U. scilla and U. maritima. It is used as a cardiac, stimulant, expectorant, tonic and diuretic, to relieve cough, strangury, dysuria, dropsy etc.

2252 **SCINDAPSUS OFFICINALIS, Schott,** or **Pothos officinalis**—See also **Piperchaba** (**N O**—**Araceae**), is a large climbing plant.

(*Sans*—Kari pippuli, Gajapippali *Hind*—Badipipli, Gajapipal, Maidah *Ben*—Gaj pipal. *Bom. & Mah*—Thora pimpli *Guj*—Moto pipar *Santal*—Darejhapak *Tel*—Enugapippalu/Gaja pippallu *Tam.*—Attitippili *Mal*—Anaitippali) growing throughout the plains of India The sliced and dried fruit is obtainable in the bazars Fruit contains an alkaloid, gum and ash Sliced and dried fruit is used as carminative, stimulant, tonic, anthelmintic and as an aromatic adjunct to other medicines It is useful in the form of decoction (1 in 10) in doses of 2 to 6 drachms in diarrhoea, asthma and other affections supposed to be caused by *Kafa*.

2253 **SCIRPUS ARTICULATUS, Linn** (**N O**—**Cyperaceae**)

(*Sans & Hind*—Chichora *Ben*—Laghu kesura) is a species found in eastern India and the root of which is a mild purgative

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2254 **SCIRPUS GROSSUS, Linn**—See S kysoor

(*Sans*—Kasheruka *Hind & Ben*—Keshur *Punj*—Kaserudila *Tel*—Gundatiga gaddi *Tam.*—Gunda tunga-gaddi *Bom.*—Kachera) is very common in the Konkan principally Salsette *Root* is astringent *Conjee* made of *root* and *tubers* with milk is a suitable form of nourishment in diarrhoea and vomiting It has bland and soothing properties also To disguise the taste of medicines and to check sickness, root is chewed

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2255 **SCIRPUS KYSOOR, Roxb**—See S grossus.

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rootlets starchy edible tubers (water or ground-chestnuts), which are regarded as laxative and aperient.—(Chakraverthy).

N.B:—Several species of Scripus occur in South India.

2257. SCOPARIA DULCIS, Linn.

(N.O:—Scrophulariaceae).

Constituents:—Alkaloid.

2258. SCOPOLIA ACULEATA—See Toddalia aculeata.

2259. SCOPOLIA LURIDA, Dunal.

(N.O:—Solanaceae).

Constituents:—Hyoscyamine, hyoscine. Used as substitute for belladonna.

2260. SCOPOLIA PROEALATA

Dunal. Action:—Poisonous and narcotic. Used like belladonna. Leaves dilate the pupils.

2261. SCUTELLARIA GALERICULATA, Linn.

(N.O:—Labiatae).

Constituents.—Glucoside Scutellarin.

2262. SCUTELLARIA INDICA, Linn.

Constituents:—Glucoside Scutellarin.

2263 SEBASTIANA CHAMAELEA, Muell.

(N.O:—Euphorbiaceae).

Juice is astringent.

2264. SEBEFERA PROPER—See Litsaea sebifera.

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ble in ether and which blackens on exposure to the air. Fruit yields 2.14 p.c. of ash. Root-bark contains an acrid, viscid juice similar to that found in the pericarp. "By extracting the crushed seeds (pericarp and kernel) successively with light petroleum, alcohol and water it has been found possible to isolate the following products:—a fixed oil; a monohydroxyl compound, to which the juice owes its corrosive properties; catechol; two monobasic acids, the potassium salt of an acid with strongly reducing properties".—(D. Satyanarayana Naidu, in the Proceedings of the 12th Indian Science Congress 1925). Other constituents are—"Diacetyl of Hydrobhilawanol m.p. 51°; Dibenzoyl hydrobhilawanol m.p. 59°-60°; Mononitrohydrobhilawanol Methyl Ether m.p. 71°-72°; Dinitrohydrobhilawanol Dimethyl Ether m.p. 83°. "Pillay & Siddiqui (1931) have isolated the following constituents from the juice of the pericarp:—(1) a monohydroxyphenol, which forms 0.1 per cent of the extract. This has been named 'semecarpol' (B.P. 185-190°); congealing below 25° to a fatty mass. (2) An o-dihydroxy compound forming 46 per cent of the extract (15 per cent of the nut). This has been called 'bhilawanol' (this distills at 225-226° and congeals below 5°). (3) A tarry non-volatile corrosive residue forming about 18 per cent of the nut"[2]

Action.—Juice of the pericarp and the oil are powerful escharotics. Oil is a powerful antiseptic and cholagogue. Ripe fruits are regarded as stimulant, digestive, nervine and escharotic. Marking nut is a gastro-intestinal irritant when taken by the mouth. Kernel is a good nutritive food; also appetiser, digestive and carminative. It is a good cardiac tonic, and a general respiratory stimulant.

Action & Uses in Ayurveda & Siddha.—Mathura kashaya rasam, mathura vipakam, ushna veeryam, kapha vata haram, lagu, snigdam, tikshnam, chedanam, bedhanam, medhyam, improves agni, in kushtam, gulmam, grahani, krimi archas. Equal to mercury in action.—(Therapeutic Notes).

Action & Uses in Unani.—Hot 3°, Dry 1°. Balghami diseases of the brain, paralysis, polyuria, improves memory, aphrodisiac.—(Therapeutic Notes).

Usese —In Goa the nut is used internally in asthma after having been steeped in butter-milk and is also given as vermifuge. In the Konkan a single nut is heated in the flame of a lamp and the oil allowed to drop into a quarter-seer or 1¼ pint of milk This draught is given daily in cough caused by the relaxation of the uvula and palate Bruised nut is applied to the os uteri by women to procure abortion The black corrosive juice of the pericarp is occasionally used internally in small doses (1 to 2 minims) diluted with ten times its volume of some bland oil or ghee or honey or cream, and swallowed in a mass in scrofulous affections, syphilis rheumatism, piles dyspepsia, also in palsy, epilepsy and other diseases of the nervous system It is most beneficial in "phlegmatic disease, any disease connected with suppressed secretions and excretions *But caution in internal administration should be employed, the appearance of a rash or redness of the skin or any itchy or uneasy sensation in any part of the body is a signal to stop it at once* Aromatic spirit of Ammonia with demulcent drinks and emollient applications are the remedies in such conditions *Externally* it is sometimes used in small quantities and *with a great caution* as a vesicant in rheumatism, sprains, eczema lepra and other skin diseases 'The powerful irritant properties of the juice of the pericarp of the nut have frequently been made use of by malingerers in producing ophthalmia and skin lesions and also in procuring abortions." The vesicant oil is similarly employed to a small extent Even the external application of the oil causes painful micturition with reddish-brown urine and painful and bloody stools The oil mitigated with butter or ghee (1 in 32 of butter) is used in scaly skin eruptions such as psoriasis, leucoderma etc. Mustard oil in which the fruits are fried is used for this purpose

Marking-nuts enter into the composition of some caustic applications for warts and piles. A paste containing equal parts of the juice of marking nut, Plumbago zeylanica, Balospermum montanum, Euphorbia neriifolia, Asclepias gigantia, Sulphate of iron and molasses, is used as an application to scrofulous glands of the neck. *Ripe fruits* for internal use are first boiled with cow dung, washed and mixed with butter before

are used in dyspepsia, nervous debility, skin diseases etc. They are also given to relieve asthmatic attacks. In rheumatism and for the relief of painful joints, a pill containing Marking-nut, Garlic, Sesamum indicum, Apium graveolens, dry Kernel of Cocoanut, and Jaggery. Mix and make a pill mass. Dose—grains 10 to 20. The fruit heated in a flame and the oil allowed to drop in a quarter seer of milk is a popular remedy for relaxed uvula and palate. Equal parts of marking-nuts, chebulic myrobalans and sesamum seeds are made into a *confection* with treacle and administered in doses of 40 to 60 grains. Kernal is not irritant. It is used in th epreparation of household eatables, sweetmeats etc. It is used with advantage in simple chronic enlargement of spleen without any hepatic complication or fever. It is useful in many neurotic cardiac troubles; the rate of the heart-beat is usually increased, under its influence. It is useful in cases of pneumonia etc. A powerful restorative called *Amrita Bhallataki*. useful in haemorrhoids and other diseases of the rectum is recommended by Chakradatta, and it is made as follows—Take of ripe marking-nuts divided into halves, 8 seers, boil them in 32 seers of water till the latter is reduced to one-fourth and strain. Again boil the nuts in 16 seers of milk with the addition of 4 seers of clarified butter till reduced to a thick consistence Then add sugar 2 seers and set aside for 7 days, when the preparation will be ready for use. Dose is about 20 to90 grains twice a day with milk. This is recommended also for leprosy, scrofula and syphilis. This was tested in scabies and psoriasis and found useful. An *electuary* of the marking nuts tried in cases of acute rheumatism affecting the large joints. in the General Hospital, Madras, and in cases of ulcers of the stomach and chronic gastritis, was found efficacious—(Indigenous Drugs Report, Madras). "*Amrita Bhallataka Lehyam*. half a tola per dose, given with hot milk and sugar or coffee rich in milk, acts well in cases of chronic rheumatism."[4] A compound pill has been recommended for chronic glandular enlargements of syphilitic and scrofulous origin. It is made as follows:—Take of S. Anacardium and Ptychotis ajowan each 2 tolas and mercury 1 tola. Cut the fruits into pieces, using blotting to suck the oil; then rub them all into a pill mass; divide

it into pills of the size of a pea Dose is one pill twice a day taken with *Dahi* A decoction of the bruised fruits (1 in 8) in ounce-doses has been tried and found beneficial—(Dr H C Sen). Treatment with this drug continued for a month or so in the winter is highly beneficial for asthmatics It has been found to be very beneficial in all forms of neuritis, including beri-beri The decoction with milk and ghee in gradually increasing doses has been very satisfactory in such cases, also in the peripheral neurites of chronic arsenical poisoning In cases of sciatica and facial paralysis it acts like a charm, also paralysis (both the spasmodic and flaccid varieties of the disease), spastic and simple, and many other cases of hemiplegia have been successfully treated with the decoction It is also one of the most powerful emmenagogues and produces good effects in dysmenorrhoea and amenorrhoea In inflammation around the uterus (Pelvic cellulitis and peritonitis) it has been used with much benefit To remove the invetrate irritability in fevers with meningeal complications, it has been found useful In syphilitic, rheumatic and gouty complaints it is one of the best remedies It is believed that the drug taken in small but gradually increasing doses in the winter, makes one free from cough and colds and senile degenerations Dr H C Sen states that he has seen a man 108 years old who has been using a *confection* of the drug for many years during winter and that "the man is yet fairly strong, his hairs have not turned grey and his teeth have not fallen out, although his power of hearing is very deficient" A brownish gum exuding from the bark of S anacardium is regarded as valuable in scrofulous venereal and leprous affections The following are some very useful compound preparations containing the drug —(1) Take equal parts of each of S anacardium fruit, *Gulancha*, Ginger, *Devadaru*, *Haritaki*, *Punarnava* and *Dashamul*, to make 2 tolas altogether Boil in half a seer of water and reduce to one-fourth Strain and administer in one dose This and the following preparations are prescribed for paraplegia (2) Take of long pepper, root of the long pepper and S anacardium fruit equal parts to make 2 tolas altogether and boil as before (3) Take of the pulpy portion of the peduncles of ripe Anacardium fruits and Sesamum seeds, 1 tola of each sweetened to taste

kidneys and chronic constipation Toxic symptoms of over medication with S anacardium are —High coloured and scanty urine sometimes tinged with blood irritable and loose bowels with griping erythomatous skin eruptions with itching and burning

Season of administration —Winter is the best season for the use of S anacardium It being a very heaty remedy its dose cannot be pushed to any length in summer Of course in suitable cases it may be used in every season

(1) (2) & (3)—Chopra's "I.D of I" pg 736 237
(4)—Andhra Medical Journal

2270 SENECIO DENSIFLORUS Wall

(N O —Compositae)

(*Punj* —Chitawala) Uses —Applied to boils

2271 SENECIO JACOBAEA Dm

Constituents —Alkaloid

2272. SENECIO JACQUEMONTIANUS Benth

(*Kash* —Poshkar) This is an adulterant for Kut roo

2273 SENECIO LACINIOSUS W

This is collected in Kashmir

2274 SENECIO QUINQUELOBUS Hook

(*Punj*—Mort ...)

2275 SENECIO TENUIFOLIUS Burm.

(*Punj* —Sarggar) Officinal in Kashmir

2276. SENECIO VULGARIS, Linn.

Constituents:—An alkaloid. Uses:—Induces hepatic cirrhosis when administered to animals.

2277. SENNA ALATA—See Cassia alata.

2278. SENNA AURICULATA—See Cassia auriculata.

2279 SENNA INDICA—See Cassia lanceolata.

2280 SENNA OBTUSA—See Cassia obovata.

2281 SENNA OCCIDENTALIS—See Cassia occidentalis.

2282. SENNA SOPHORA—See Cassia sophora.

2283 SENNA TORA—See Cassia tora.

2284. SERRATULA ANTHELMINTICA, Roxb

(N.O:—Compositae).

See Vernonia anthelmintica.

2285. SESAMUM INDICUM, DC.

S orientale; S. trifoliatum; S. luteum.

(N O:—Pedaliaceae).

(Seed:—*Sans.*—Tila; Snehapahla; Tilaha. *Eng.*—Gingelly Seed; Sesamum; Sesame. *Fr.*—Sesame. *Ger.*—Sesom. *Hind. & Kash.*—Til. *Hind.*—Til; Tir. *Ben.*—Tel; Til; Kala-til; Sumsum; Chadu-til; Rakta-til; Sanki-til. *Bom.*—Til; Tal; Krishna-til; Barik-til; Ashadi-tal (white); Kala-katwa (black): Purbia (red) *Guj.*—Tal. *Sind.*—Thirr. *Punj.*—Til; Tili; Kunjad (red). *Kumaon.*—Bhunguru; Til. *Santal.*—Tilmin. *Mah. & Kon.*—Teel. *Tel.*—Nuvvulu; Nuvvu; (seed) Pollanuvvulu; Guvvulu. *Tam.*—Ellu; Yellu-cheddic. *Mal.*—Karuellu. *Can.*—Uruellu; Yellu. *Pers.*—Kunjad.

(Oil):—*Hind. & Punj.*—Til-ka-tel; Krishna-tel; Mitha-tel. *Sans.*—Tila-taila. . *Guj.*—Mitho-tel. *Mah.*—Chokhota tela.

2287. SESBANIA AEGYPTIACA, Pers.

(N.O:—Papilionaceae).

Aeschynomena Sesban (*Sans.*—Jayantika. *Hind.*—Jetrasin. *Hind. & Ben.*—Jayanti. *Duk.*—Ravasin. *Bom.*—Jait *Punj.*—Jaintar. *Bom. & Mah.*—Janjan; Shevari. *Tel.*—Jalugu; Somanti; Nallasominta. *Tam.*—Champai; Sithagathi; Karumsembai. *Mal.*—Kedangu. *Can.*—Karijeenangi-mara) is a small tree found wild and cultivated in almost all parts of India, especially in Southern India. Parts Used:—Seeds, bark and leaves. Seeds contain fat 4.8 p.c., albuminoids 33.7 p.c., carbohydrates 18.2 p.c., cellulose 28.3 p.c., ash 4.2 p.c. *Seeds* are described as stimulant, emmenagogue and astringent: *seeds* and *bark* are useful in checking diarrhoea, excessive menstrual flow and to reduce enlargements of the spleen, and in skin diseases. In the form of *ointment* the drug is used for the cure of itch and various other cutaneous eruptions, for which the juice of the bark is also given internally. *Leaves* in the form of *poultice* promote suppuration of boils and abscesses and absorption of hydrocele and inflammatory rheumatic swellings. *Juice* of fresh leaves is given in Dacca as an anthelmintic. *Root* well bruised and made into a *paste* is an excellent application for scorpion stings.

2288. SESBANIA GRANDIFLORA, Pers.

See Agati grandiflora.

2289 SESELI INDICUM, W. & A.

(N.O:—Umbelliferae).

(*Sans.*—Vanayamam; Vanayamani. *Ben.*—Banjowan *Mah.*—Kirmanji-ajwan) is met with on the plains of India, frequent in Central Bengal. *Seeds* act as a good anthelmintic for round worms and they are also stimulant, carminative and stomachic. Dose of simple powder is 20 to 60 grains. *Seeds* are also used as a medicine for cattle.—(Watt).

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combined with a warm hip-bath containing a handful of the bruised seeds is very beneficial In China, Asia Minor, and Siam seeds are used to flavour bread and cake *Alsir-ul-Imra-* gives the following decoction for amenorrhoea —Take of S indicum, black, dry ginger, black pepper, long pepper, *bharangi* and jaggery, of each equal parts Make a decoction, to be used for 15 days A poultice of the seeds is applied to ulcers, burns and scalds Dr Lisboa says "Til or Gingelly oil which was used in Europe in the days of Pliny, instead of olive oil, has a light yellow colour or nearly colourless, a mild agreeable taste, scarcely any smell or without smell, and is used in lamps and cookery If carefully prepared it keeps sweet for years without becoming rancid and in Japan and India it substitutes butter in frying fish and other purposes Til oil is not only eaten raw after the manner of other oils but is also commonly used in the manufacture of sweetmeats and the adulteration of ghee Anointing the body is another use to which it is applied either in the crude state or scented The oil is used as a base for floral oils and many perfumed oils meant for the hair The perfuming is effected by keeping the seeds between alternate layers of strong scented flowers such as *Chameli* (species of Jasminum) and *Kevda* (Pandanus odoratissimus) By this means, the scent becomes communicated to the oilseed and fixed in the oil which is subsequently pressed out in the ordinary manner In Europe the product of the first expression forms a fine table oil that approaches most nearly to olive oil for which it furnishes a substitute or adulterant Til oil was previously held to be a good application in cutaneous lesions of leprosy The oil may be employed medicinally for all the purposes to which olive oil is applied, as for lime liniment as an oil-dressing for ulcers, suppurating wounds etc Equal parts of the sesame oil and lime water is a popular dressing for burns and scalds A mixture made up of a ½ seer of sesame oil and 1 tola each of camphor, sandalwood oil and cinnamon oil is a cure for head-ache *Oil* is rubbed on the lids or dropped in the eyes for eye complaints and heaty sensation in eyes *Internally* the oil is used in gonorrhoea, a mixture containing 20 minims each of the oil and aqua Calcis and a drachm of pure water is recommended for gonorrhoea in

preference to copaiba or liquor potassae — (Dr Morris —Watt) The cake (containing over 30 percent of albuminoids) left after the extraction of oil from the seeds is largely used as an important cattle feed and for manures "The oil-cake is reported to be even occasionally used a human food by the poorer classes in times of distress"[1] Stalks of *til* are eaten by cattle" *Leaves* which abound in mucilage are useful in bowel affections such as dysentery, cholera infantum etc. An emollient *poultice* is also made from them *Decoction* made from the *leaves* and *root* is employed as a hair-wash and will blacken the hair and promote their growth Following *compound oil* is recommended for use in psoriasis, prurigo, leucoderma etc— Take of Gingelly oil 100, Aconite 8, Oil of Pongamia glabra, Curcuma longa, Berberis aristata, root of Calotropis gigentia, Nerium odorum, Valeriana hardwicki, Acorus calamus, Red sandalwood, Rubia cordifolia, Vitex negundi, and Alstonia scholaris, each four parts Mix all the ingredients except gingelly oil and make a powder To this add cow's urine and gingelly oil, and boil

P S — The seeds yield about 40 to 45 per cent of oil on the weight of seed in the country ghani"[2]

(1), (2) & (3)—Bombay Government Agricultural Department Bulletin.

2284 SESBANIA ACULEATA Pers

(N O —Papilionaceae)

is separated from the husk by pounding is usually prepared by boiling or parching, and may be eaten alone or mixed with milk and sugar. Used in rheumatism[1]

2292 SHOREA LARD

(*Eng*—Hog's lard tree) is a species found in Burma whose fruit produces an oil of the consistence of lard

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2291 SHOREA ROBUSTA, Gaertn

(N O—Dipterocarpaceae).

(*Sans*—Sal, Sala, Asvakarna *Eng*—Sal Tree *Hind*.—Sakhu; Sal *Ben*—Sal, Taloora, (resin), Ral, Dhuna *Bom* & *Mah*—Sal. *Tel*—Jalari-chettu *Tam*—Talooia, Kungiliyam *Mal*—Karimaruthu *Can*.—Bile-bovu, Bile-bhogimara) is common in the sub-Himalayan regions and the forests of Western Bengal. Bark contains tannic principles and yields on boiling with water, an extract similar to catechu, which is astringent Resin (gum) which exudes from incisions made in the bark is a mild astringent, aphrodisiac and stimulant, it unites with fixed oil to form plasters and ointments applied to chilblains, ulcers etc A paste of it mixed with brandy and white of an egg is a very useful and soothing application for the relief of lumbago and other rheumatic pains A paste of it put over the top of the head is a cure for elongated uvula

Following compound ointment is given in Chakradatta—Take of ral (resin), rocksalt, treacle, wax, honey, bdellium, red ochre and clarified butter in equal parts, boil them together and prepare an ointment *Murakibhat Ahsani* recommends the following ointment for eczema—Take of S robusta, gum-mastiche, each 1 tola, *Mom* (wax), zard 1½ tolas, and mustard oil 4 tolas Make an ointment With sugar it is administered in dysentery, bleeding piles etc; also used for weak digestion gonorrhoea and as an aphrodisiac Twenty grains of pulverised resin mixed with a pint of boiled milk taken every morning is a good aphrodisiac In the dysentery of children the resin is given in doses of about 20 grains with an equal quantity of

2295 SIDA ACUTA, Burm

S carpinifolia, S lanceolata

(N O —Malvaceae)

(*Sans*—Bala Pramjuvika *Mah*—Pata Bel—Kureta *Duk*—Isarbedi *Hind*—Barlaca kareta *Bom* & *Guj*—Jangli methi *Tel*—Visha boddi *Tam*—Vathathuruppi, Mallaidangi *Mal*—Cheruparuva *Can*—Visha khaddi) are found throughout the hotter parts of India, and Ceylon *Roots* of these plants are bitter tonic also stomachic, diaphoretic and antipyretic, useful in the form of decoction or infusion in febrile affections and some forms of dyspepsia and in mild cases of debility from previous illness *Infusion* with a little ginger added is given in intermittent fever and chronic bowel complaints, in doses of a small tea cupful twice a day *Expressed juice* of the root in the form of an electuary is employed for the removal of intestinal worms *Root* of S carpinifolia is made into a smooth paste with sparrow's dung and water and applied for the bursting of boils and abscesses *Leaves* warmed, moistened with a little gingelly oil and applied to abscesses hasten suppuration The drug is used as a diuretic in rheumatic affections and as a demulcent in gonorrhoea and chronic dysentery

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2296 SIDA CARPINIFOLIA Linn

See—S acuta & S lanceolata

See S acuta & S lanceolata

Sans—Bala Phanijuvika *Ben*—Pila or Peet berela *Bom* methi *Hind*—Barlara *Bom*—Jangli methi *Tam*—Vatha turippi

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2297 SIDA CORDIFOLIA Linn

or S herbacea and S rotundifolia S althaeifolia

(*Sans*—Bala Batyalika (seeds) Beejband Bijband *Eng*—Country mallow *Hind*—Barria, Kungai Khareti Gwalior—Khurenti *Punj*—Simak *Duk*—Kanghi *Ben*—Brela Bala *Bom* & *Mah*—Chikana Tupkari *Guj*—Jungli methi *Tel*—Chutimutti Tutturabendi Muttuvi Chiribenda

Tam.—Mayir-manikham, Paniyar-tutti *Mal.*—Velluram *Can.*—Kisangi, Hettuti-gida *Kon.*—Kobir-sir-bhaji).

Habitat—Along with other species are common throughout the tropical and sub-tropical plains all over India and Ceylon, growing wild along the roadside

Parts used—Roots, leaves, seeds and stems

Constitution—"A systematic examination of the drug by extraction with different solvents showed the presence of the following—Whole plant (including leaves, seeds stems and roots) contains alkaloids to the extent of 0 035 per cent Seeds contain much larger quantities, i e, 0.32 per cent of alkaloid, than either the stems, roots or leaves. Fatty oil, phytosterol, mucins, potassium nitrate, resins, resin acids, etc., but no tannin or glucoside The hydrochloride of the alkaloid occurs in colourless needles m p 215 5° and is freely soluble in water but sparingly soluble in absolute alcohol. The main portion of the alkaloid was identified to be *ephedrine*, an alkaloid so far observed in the different varieties of Ephedra only These two plants belong to entirely different divisions of the vegetable kingdom The ephedras belong to the groups of Gymnosperms while Sida cordifolia belongs to Angiosperms"[1]

Action—Roots of all these species are regarded as cooling, astringent, stomachic and tonic, aromatic, bitter, febrifuge, demulcent and diuretic—"Chopra & De (1930) have shown the presence of a sympathomimetic alkaloid whose pharmacological action closely resembled that of ephedrine and they thought that the alkaloid was undoubtedly ephedrine Later, Ghosh and Dutt (1930) have shown that the sympathomimetic alkaloid referred to above showed all the chemical and physical characteristics of ephedrine So its use as a cardiac stimulant in the old Hindu medicine has thus a natural basis" "The seeds are considered to be aphrodisiac" Pharmacological action causes marked and persistent rise of blood pressure in anaesthetised or decerebrated animals—(Ghosh & Dutt) 'Hakims used the drug for its aphrodisiac effects"[1]

rhoea, cystitis, leucorrhoea, chronic dysentery, nervous diseases as insanity facial paralysis, and in asthma as a cardiac tonic Dose is from ½ to 2 drachms *Root* is used as a substitute for a non procurable medicine — "Reddhi" in preparing *Vrihat Aswaganda Ghrita* for increasing sexual power—N N Sen Gupta) *Decoction of the root* and ginger is given in intermittent fever attended with cold shivering fits *Root-juice* is used to promote the healing of wounds Root pounded into a *paste* with juice of palmyrah tree is applied to elephantiasis *Powder* of the *root-bark* is given with milk and sugar for the relief of frequent micturition and leucorrhoea Chakradatta recommends the following *decoction* and oil for use in hemiplegia, stiff-neck, facial paralysis and noise in the ears with headache —(1) *Mashabaladi Kvatha* —Take of the root-bark of S cordifolia, pulse of Phaseolus roxburghii, root of castor oil plant and of Mucuna prurians Hygrophila polysperma, Vanda roxburghii and Withania somnifera, equal parts, in all two tolas and prepare a decoction in the usual way It is administered in 1 to 2 ounce doses, with the addition of asafoetida and rock salt 'The root by itself is also used in all the above described diseases"[5] (2) *Balataila* —Take of the root of S cordifolia 4 seers, water 32 seers, and boil down to 8 seers To this decoction add 8 seers of milk, 4 seers of prepared sesamum oil and 1 seer of the root of S cordifolia in the form of paste and prepare an oil in the usual way The oil is used for external application in nervous diseases "This oil mixed with '*mal a-adhwaja*' and musk is used as a cardiac tonic"[7] On the West Coast in Malabar this process of preparing the oil is repeated several times by adding fresh milk and a paste of the root bark, this is done 14 to 101 times or more and is sold in Malabar etc This specific oil has been used "in several cases of facial paralysis, sciatica, both internally and externally and found to be very efficacious in curing those diseases when they are due to inflammation of the nerves" —(Ind Drug Report, Madras) Another oil called (3) *Dhanwantri Tailam* (21 and 101 times boiled) containing S cordifolia and 47 other substances, and prepared in milk is recommended for all disorders produced by the derangement of the wind humour (vata), emaciation, weakness, diseases of generative organs,

paralysis and rheumatism This was tried by Dr Koman in cases of neuralgia and found useful—(Ind Drugs Report Madras) Dose of the oil is quarter tola taken in cumin seed decoction. (4) A compound liniment named *Prabhanjana Vimardhana*, and made up of S cordifolia and the five bigger roots of *dashamula* etc., is recommended for external application in sciatica and neuritis of legs attended with pain *Leaves* mixed with rice are given to alleviate the bloody flux —(Lind say) They are mucilaginous and used as a demulcent and with other cooling leaves are applied in ophthalmia In *infusion* they are prescribed in fevers as a cooling medicine and to check bloody fluxes When fresh they are bruised and applied to boils to promote suppuration Seeds are used in gonorrhoea cystitis piles colic and tenesmus Boiled milk whisked with fibrinous twigs coagulates The fluid on decantation is given internally in piles *Leaves* are cooked and eaten in cases of bleeding piles *Juice of the whole plant* pounded with a little water is given in doses of ¼ seer for spermatorrhoea rheumatism and gonorrhoea —(Dymock) and made into a *paste* with juice of palmyra tree it is applied locally in elephantiasis *Roots leaves* and *seeds* are all used in Ayurveda as a stomachic and as a cardiac tonic

(1) (2) (3) (4) (5) & (6)—Chopras I D of I pp 387/388 389

2298 SIDA HUMILIS Willd or S veronicifolia

(*Sans*—Bhumibala *Ben*—Junka *Tam*—Palam pasi)

Used in diarrhoea

2299 SIDA INDICA—See Abutilon indicum

See Abutilon indicum

2300 SIDA RHOMBIFOLIA Linn

Var—Rhomboidea or retusa or S orientalis S cordifolia

(N O—Malvaceae)

(*Sans*—Atibala Mahabala Bala Vadhya *Eng*—Country mallow Yellow barleria *Hind & Ben*—Lalberela Khereti Safed or Svetberela *Guj*—Kehetar ubal dora B methi *Mah*—Sadeva *Urai*—Sap devi Ir b—Mushta ghool

Kulbahebari *Pers*—Shamblidebari. *Duk*—Khangi *Tel.*—Mayir manikkam, Mutheera pulagam *Tam.*—Athiballached; Sa nutti, Kurunthotti *Mal*—Velluram *Can*—Kisangihettutti-gida *Kon*—Tupkadi *Sinh*—Kotikanbevila) are weeds very common in India and Ceylon in the dry country

Action & Uses in Ayruveda & Siddha—Mathura tikta rasam, seetha veeryam, mathura vipakam, snigdam, tridosha baram, nutritive, tonic, asthi jwaram, excess pittam, good for eyes, used for preparing tailams Seeds are used in gonorrhoea—(Therapeutic Notes)

Action & Uses in Unani—Hot 2°, Dry 2°, leaves and root used, piles, gonorrhoea, anti-soud, diuretic, aphrodisiac—(Therapeutic Notes)

Uses—Root of these weeds, especially of S retusa is held in great repute in treatment of rheumatism. *Stems* abound in mucilage and are employed as demulcents and emollients both for external and internal use, useful in calculous troubles and as a febrifuge with pepper Mucilage is used also by chemists in oxidizing mercury, and also in scorpion-sting

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2301 **SIDA SPINOSA, Linn., S. alba or S alnifolia**

(*Sans*—Nagabala, Khar-yashtika *Hind & Duk*—Gulsakari *Ben*—Gorakchaulia, Pilabarela, Bonmethi *Guj*—Kantalo-bal *Mah*—Tukati-khareti *Tam*—Mayir-mamkkam *Mal*—Kattu ventiyam *Can*—Kadumenthya *Pers*—Shamlethe-dashti) is another species found throughout the hotter parts of India and Ceylon *Leaves* are demulcent and refrigerant and are useful in gonorrhoea, gleet and scalding urine *Decoction of the root bark* and root is used in mild cases of debility and fever Leaves are bruised in water, strained through cloth and administered in the form of a draught Root is used in decoction prepared similarly to that of S acuta

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2302 **SIEGESBECKIA ORIENTALIS, Linn., S brachiata**

(N O—Compositae)

(*Tam & Tel*—Katampam *Chin*—He-ki-en Kau-kan) Plant common throughout India In China it is used as a

remedy for ague, rheumatism and renal colic It contains a bitter crystalline principle (substance) named *Daruturine* which is believed to be a derivative of salicylic acid Action —Sialogogue, tonic and aperient *Tincture* of the drug has been recommended in doses of 1 to 2 drachms as a remedy in scrofulous and syphilitic affections, externally a mixture of equal parts of the *tincture* and *glycerine* has been tried in Europe with good effect in ringworm and some other parasitic eruptions Antiseptic properties have been ascribed to the fresh plant when applied to unhealthy or gangrenous sores It is strongly recommended in diseases of urethra In the form of an aqueous extract in *syrup* and sometimes combined with iodide of potassium it is prescribed in cases where a powerful alterative, sudorific and anti-syphilitic is required It is believed to be much more powerful than sarsaparilla —(Christy's New Commercial Plants & Drugs)

2303 SILYBUM MARIANUM, Gaertn

(N O —Compositae)

Action —Cholagogue Constituents —Tyramin

SIMARUBA EXCELSA—See Quassia excelsa

2304 SIMARUBA QUASSIOIDES—See Picrasma Quassioides

2305 SINAPIS ALBA—See Brassica Alba

2306 SINAPIS DICHOTOMA or S GLAUCA

Hins —Rakta sarsapa *Ben* —Sarisa *Hind* —Sarsom) is a species extensively cultivated throughout tropical India for the rubefacient oil derived from the seeds. Oil is used in cooking and in skin diseases Tender *leaves* are eaten— (Chakravarthy)

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restlessness and anxiety, the mustard foot-bath should be used every night before bed-time In some cases cloths steeped in a mixture of mustard and hot water are applied as to envelop the whole of the legs and lower part of the abdomen, a cold wet towel being at the same time applied round the head Mustard *baths* are recommended in cases of acne They have an invigorating and cleansing effect on the skin leaving it soft and healthy and is practically useful for greasy skins and general pustular conditions'—(Dr V Hetherington—Practitioner)

In cholera, colic and spasms of the bowels unattended by inflammation a mustard poultice is placed over the abdomen In the vomiting of fevers and pregnancy, it is applied to the pit of the stomach In cholera when the patient is very low the poultice may be applied over the heart or the left side of the chest In coughs with much difficulty of breathing, mustard poultices to the chest and on the back between the shoulder blades afford relief In whooping cough mustard poultices are applied along the spine Tooth ache, face-ache and neuralgic pains of the head and face are frequently relieved by the application of a mustard poultice over the seat of pain In dropsy mustard is administered in the form of *whey* made by boiling half an ounce of the bruised seed in a pint of milk and straining This quantity is given daily in divided doses Mustard enters into the composition of several prescriptions for loss of appetite indigestion etc Thus—take of mustard seeds, cumin seeds, fried asafoetida ginger and rock salt equal parts Powder and mix Dose—grains 20 with butter-milk Mustard oil is largely used in India for culinary purposes Externally it is applied as stimulant in chest affections especially of the children undiluted oil is vesicant and blisters at once *Volatile oil* of mustard consists of 95 p c of Allyl Isothiocyanate, also allyl cyanide, carbon disulphide and traces of isomeric allyl thiocyanate *Internally* small doses are used as condiment, a teaspoonful to a tablespoonful in ten ounces of water is a useful emetic—(See also Brassica juncea)

2307A SISYMBRIUM IRIO ZINN, & SPHOPHIA

(No —Cruciferae)

are tall erect glabrous shrubs found in North-west India and North west temperate Himalayas

(*Hind* —Khubkalu *Punj* —Naktrasa *Sind* —Jangli sarson *Merwara* —Parjan *Bom* —Khakshi *Mah* —Rantikhi *Pers* —Khakshir *Arab* —Khubah) *Seed* is expectorant, stimulant and restorative also a febrifuge It is externally used as a stimulating *poultice* —(Dymock Stewart) The drug is used in asthma —(Chopra)

2308 SISYMBRIUM NASTURTIUM

(N O —Cruciferae)

(*Hind* —Lo tputiah *Ind Bac* —Seidz hurun) Leaves are stimulant diuretic and antiscorbutic

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2309 SISYMBRIUM SOPHIA Linn Substitute for Saris

2310 SIZYGIUM CARYOPHYLLUM—See Myrtus caryophyllus

2311 SIZYGIUM JAMBOLANUM—See Eugenia jambolana

2312 SKIMMIA LAUREOLA Hook or Limonia laureola

(N O —Rutaceae)

(*Punj* —Ner Barru Shalangh *Nepal* —Chumlani *Lepcha*—Limburnyok) is a common undershrub met with throughout the temperate Himalayas from Murree to Mishmi and Khasia Mountains Constituents —Essential oil It is an extremely aromatic, gregarious ever green shrub Its *wood* has an aromatic scent when fresh cut It is said that the odour of the musk deer is popularly supposed to be derived from it The *plant* is very similar to the Japanese Skimmia Japonica A poisonous crystalline alkaloid *Skimmianine* has

been found to be present in all parts of Skimmia Japonica, but most abundantly in the leaves. The alkaloid has been found by experiments to have a direct action on the muscles of the heart, decreasing the pulsations and causing disturbances of the diastole. The pulse is similarly affected even when atropine has been previously administered. Slight poisoning is accompanied by feeble spasms, Intravenous injection causes general symptoms of poisoning. Pressure of the blood falls even when chloral has been administered, but after a time it increases again. Skimmianine has no effect on the secretion of urine. It is probable that the same alkaloid is also present in the Indian species which deserves careful examination. "Leaves are used in small-pox".—(Chopra).

2313. SMILAX ASPERA. Linn.—See Hemidesmus indicus.

(N.O:—Liliaceae).

This is a substitute for Indian Sarsaparilla

2314. SMILAX CHINA, *Linn or CHINENSIS*:

S. Pseudo-China.

(N.O.—Liliaceae).

taken internally in rheumatism, gout, epilepsy, chronic nervous diseases, cachexia, seminal weakness and constitutional syphilis It is used along with *anantamul* and other drugs of reputed efficacy in syphilis and rheumatism.

Action & Uses in Ayurveda & Siddha.—Tikta rasam, slight ushna veeryam, vata haram, improves agni, clears urine and stools, in vibandam, flatulence, epilepsy, insanity, syphilis, colic, pains in the body, skin diseases.—(Therapeutic Notes).

Action & Uses in Unani.—Hot 1°, Dry 1°. Demulcent, expels vicious matters, in souda diseases as syphilis and leprosy Kidney and bladder diseases, paralysis headache, convulsions, etc.—(Therapeutic Notes).

2315 SMILAX GLABRA Roxb.

(*Hind.*—Bara-chobchini *Ben.*—Harinashuk-chini) is a species growing in Eastern India and Southern China, where its large tuberous root is used for sores and syphilis

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2316 SMILAX LANCEAEFOLIA, Roxb.

Is another species found in the same regions, its large tuberous rhizome is used in rheumatism and sores Juice of the fresh root is taken inwardly for the cure of rheumatism and the refuse after extracting the juice is applied to the affected parts

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2317 SMILAX MACROPHYLLA, Roxb

(*Hind.*—Jungli-aushbah *Ben.*—Kumarika *Bom.*—Guti *Tam.*—Malait-tamara) Used as a substitute for sarsaparilla.—(Chopra's "I D of I" p 528)

2318. SMILAX OFFICINALIS

Comes from Honduras

2319. SMILAX ORNATA

Is a species indigenous to Costa Rica, but also cultivated in Jamaica and known as "Jamaica Sarasaparilla" which supplies

Sarsaparilla of the British Pharmacopoea For particulars see B P

2320 SMILAX OVALIFOLIA Roxb

(*Eng*—Wild sarsaparilla *Hind & Guj*—Guti, Jangli-ushbah *Ben*—Kumarika *Bom & Mah*—Gutvel *Mal*—Kuri-vilandi *Tam*—Malaitamara *Tel*—Konda-tamara) is found in the Konkans It is the country sarsaparilla of the Portuguese and used as an alterative in syphilis, scrofula etc. In doses of 3 *mashes* (35 grains) it is given in Nepal for the treatment of gonorrhoea and other discharges from mucous membranes—(Watt) This drug is used as a substitute for sarsaparilla.

2321. SMILAX PSEUDO-CHINA, Willd—

Same as S China.

2322 SMILAX ZEYLANICA, Linn

(*Sans*—Vanamadhusnahi *Tam*—Periyakanni). Decoction of the root is given for swellings abscesses and boils.

N.B—Several species of Smilax, occur on the hills, at higher elevations, in South India

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2323 SMITHIA GEMINIFLORA, Roth

(N O—Papilionaceae)

(*Sans*—Lakshmana *Tam*—Elakanni) Action—Laxative Used in biliousness rheumatism, ulcers & sterility in women, removes effects of old age and wrinkles—(Chopra's "I D of I" p 528)

2324 SOJA HISPIDA, Moench or Glycine

(N O—Papilionaceae)

and fat, and its lack of starch, and small content of sugar. Being so highly nutritious, it is not adapted for use as a side-dish, like ordinary vegetables but, like meat, supplies a chief food Among the preparations mentioned as common in China and Japan are 'tofu' resembling cottage cheese, 'Shoyu' or 'Soya' which has been soaked to remove the skin and then boiled and seasoned, 'Miso' or soy-bean milk, prepared by soaking pulverised beans and straining, and 'Matto' obtained by fermenting the boiled beans The lack of starch gives the beans favour as a diabetic food, and soy-bean meal and soy-bean bread have been prepared The beans have been also tried as a coffee substitute —(Popular Science Siftings). For more particulars see "ABC of Soya-bean" printed below, also Dolichos Soja etc

Uses —ABC OF SOYA-BEAN —

As an economical source of valuable and wholesome dietary elements, the soya-been probably has no peer

Bread made from 20 per cent flour is non-fattening because of the peculiar quality of its lecithin and oil, which enables the organism to utilize them in the organs and tissues instead of storing them in fat deposits

Calcium—Soya-beans contain 10 times as much calcium as wheat flour, and 20 times as much as sirloin steak.

Digestibility—Soya products leave the stomach in two and a half hours, while meat requires from three to five hours

Economical—One pound of whole soya flour is equivalent in protein and fat to two pounds of beef

Flour of soya-beans is not very palatable but is easily digested by adults as well as children

Gluten is almost entirely absent in the Soya-bean.

Human organisms are able to store three times as much nitrogen from soya-bean food as from meat.

Investigation shows that the soya-bean is the only seed which contains both the water-soluble and the fat-soluble vitamins

Dr. John says —"Because of its low-starch content, the soya-bean has found a place as a diabetic food as well as in many proprietary foods"

Dr Kellogg says —"Another property of the soya-bean which gives it great value from dietetic standpoint is its basic-ash alkaline quality All meats, breads, and break-fast foods yield a highly acid ash and, when freely used, may cause acidosis This condition is associated with Bright's disease, arteriosclerosis, and many other grave disorders and is one of the causes of general physical deterioration and premature old age

Lecithin —The nerve and brain food Cow's milk is quite deficient in lecithin, whereas soya-bean milk is quite rich in this important element

Milk —In composition, this vegetable milk resembles cow's milk so closely that it may be used as a substitute for cow's milk even in the feeding of young infants, and is often preferable to cow's milk in the treatment of intestinal or stomach disorders

Nutritional anemia produced by an exclusive diet of cow's milk, can be cured by the addition of whole soya bean milk

Oil of the soya bean possesses a unique property among all the other known fats and oils in inducing continuous high muscular activity without any apparent fatigue—a fact recognized by people who keep it.

Phosphorus and potassium are present in the soya bean in three times the amount in wheat.

Quintuplets—Yes, they are protected against bowel trouble by the use of soya acidophilus milk.

Twenty four times as alkaline as eggs, 12 times as alkaline as wheat

Usually high mineral content of the soya bean makes it a perfect food for healthy bones and perfect teeth

Versatility—Almost any flavour of flesh, fish, or fowl may be produced in various soya-bean products

Water-soluble vitamin B is present in abundance in bread made with 20 per cent soya-bean flour

Excellent source of vitamin A, and a good source of vitamins B, C, D, and G

Yield of protein from the soya-bean is twice as much as from bread

Dr Ziegelmayer says — Soya flour contains as much lecithin and phosphorus as wheat germ and egg-yolk"

(Calcutta Municipal Gazette" 31st May 1941 (Vol XXXIV No 2) Page 49)

2325 SOLANUM DULCAMARA, Linn

(N O —Solanaceae)

(*Sans*—Kakmachi *Eng*—Bitter-sweet *Ind languages* nab-es salab (berries) *Punj*—Rubabarik (leaves) *Kash*—Bhalu mash) grows in Western Himalayas from Kashmir to Garhwal, but the red berries are imported from Persia into India This plant is nearly allied to the potato, which it very closely resembles in the odour of its root Its bright scarlet berries are poisonous to children like an overdose of the decoction of the fresh twigs The drug contains a peculiar glucosidal principle (hence the popular name) *Dulcamarin* or *Picroglycion*, a yellowish substance (not an alkaloid) which consists of a poisonous glucoside alkaloid 'solanine' resolvable into sugar and solanidine Dulcamara is cardiac tonic, alterative, disphoretic, diuretic, sudorific and mildly narcotic, usually in decoction of the berries (1 to 2 ounces in a pint of water) It

affections, also in scrofula, chronic rheumatism and syphilis, the dose is—of the *decoction*, 1 to 2 ounces, of the *powder* 20 to 60 grains, of the *extract* 5 to 10 grains, of the *syrup* ½ to 1 ounce For making the decoction the twigs gathered should be dried ones and as thick as a goose-quill one ounce of them chopped up should be boiled in 1½ pints of water until reduced to half the quantity

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2326 SOLANUM ESCULENTUM

Is a native of southern Asia, and its *fruits* are used as discutient and anodyne poultice especially for haemorrhoids *Leaves* are narcotic and are used internally in intoxication and externally as a soothing *poultice* —(Chakraverthy)

2327 SOLANUM FEROX Linn

(*Ben* —Ram begun *Tam* —Ana ehundai *Mal* —Vellothuvazhutina *Tel* —Molak kayi) is one of the ingredients of *Dasamula* and is generally prescribed for fevers in which *pitta* humour is at fault 'The berries of this plant are used medicinally —(Chopra)

2328 SOLANUM GRACILIPES, Dene

(*Ind & Baz* —Marghipal) Fruit is used in ostitis

2329 SOLANUM INDICUM Linn

(*Sans* —Brahati Vrihati, Bhantaki *Eng* —Indian Nightshade *Hind* —Barhanta, Birhatta *Ber* —Byakura *Bom. & Mah* —Dolimoola Moti ringani Ringani *Guj* —Ubhi ringani *Tel* —Tellamoolaka *Tam* —Kari mulli Pappara mulli *Mal*— Cheruchunda *Can* —Kiriguligida *Kon* —Kallanta) is a plant common all over India *Fruit* and root contain wax, fatty acids, and alkaloids *Solanine* and *Solanidine* *Plant* is a cordial, aphrodisiac, astringent carminative, cardiac tonic, and resolvent. It is useful in asthma, dry cough, difficult parturition, chronic febrile affections, colic with flatulence, wounds scorpion sting,

also dysuria *Root* forms one of the *Laghupancha mula* of *Dasamula Kvatha* of Hindu Medicine It is seldom used alone It is regarded as diuretic, useful in dropsy and expectorant, useful in cough and catarrhal affections, also diaphoretic and stimulant *Vapour of the burning seeds* is a remedy for odontalgia In the form of *decoction* (1 in 10) half a teacupful twice daily is given in dysuria *Root* of S jacquinii is similarly employed *Compound decoction* made up of S indicum, S jacquinii, Sida cordifolia Justicia adhatoda and raisins equal parts is given in bronchitis with fever —(Chakradatta)

2330 SOLANUM JACQUINII,

S xanthocarpum, S virginianum, S diffusum

(*Sans*—Nidigdhika Vrahali, Kantakari, Kshudravyagri *Eng*—Wild Eggs plant Bitter sweet, Woody Nightshade *Ben & Can*—Kantakari *Gwalior*—Katharı *Arab*—Hadaka *Pers*—Badinjan i barri *Hind*—Kateli *Guj*—Patharingani *Bom & Mah*—Bhuiringani *Tel*—Nela mulaka, Vakudu *Mal*—Velvottuvalutina *Kon*—Chinehartı *Tam*—Kandankattari, Siriya Kandangatari, Siru vazhunai—*remarks* This drug is commonly called in Tamil 'Paparamullu' and "mulli". The brinjals some say are the real "Kandanga kathri" that with thorns and without it Siruvazhu dunai" (brinjal with thorns)

Habitat.—This is common everywhere, especially on the East and West Coasts of India

Constituents —*Fruit* contains fatty acids, wax and an alkaloid *Dried leaves* contain an alkaloid and an organic acid

Action & Uses in Ayurveda & Siddha —Tikta katu rasam, ushna veeryam, vata kapha haram, lagu, ruksham, dipanam, pachanam, in swasam, kasam, jwaram, pinasam, parsva soolam, krimi, hridrogam etc, whooping cough —(Therapeutic Notes)

Action & Usese in Unani —Hot 2°, Dry 2°, allays cough, asthma, fevers, diuretic, laxative —(Therapeutic Notes)

Uses —Uses of the root are similar to those of the root of S indicum. It is used in humoral asthma, cough, catarrhal

fever and pain in the chest; also dysuria, stone in the bladder, costiveness, in dropsy, the sequels of the advanced stage of fever, leprosy, consumptive complaints, general anasarca, low vitality of the general system, enlargement of the liver and spleen. It is combined with *Kurchi* in anasarca and dysentery. *Stems, flowers* and *fruits* have bitter and carminative properties; fumigations with the *vapour of the burning seeds* are reputed to cure tooth-ache. *Decoction of the root* given *in combination with alcohol* and *mineral diuretics, during its* use, milk diet should be prescribed. Decoction of the root is given with the addition of long-pepper and honey in cough and catarrh and with rock-salt and asafoetida in spasmodic cough— (Chakradatta). *Compound decoction* is made up of this drug, root of *Justicia adhatoda, pulse of Dolichos uniflorus* and ginger equal parts, in all two tolas; and it is administered with the addition of *pachak* root in cough with difficult breathing— (Sharangadhara). *An electuary* made of the root together with several other substances and sugar, sesame oil, honey and clarified butter and named *Kantakaryava Leha* is recommended in Bhavaprakash for various sorts of cough.

2331. SOLANUM LYCOPERSICUM, Linn.

See Lycopersicum esculentum

There is an old blood in this drug.

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cough and loss of appetite Tender fruits are antiphlegmatic and alleviative of wind and ripe ones are carbonas and bilious Fruits grown in all seasons of the year are alleviative of the three faults Burnt fruits are light in digestion, purgative, slightly bilious and beneficial in phlegm, wind and obesity" —(N N Sen Gupta) *Leaves* are narcotic, *seeds* are stimulant

Constituents —Fresh vegetable contains 88 26 p c moisture, and the completely dried material contains Ether extract 4 20 p c, albuminoids 16 37 p c (cont'g Nitrogen 2 62 p c), soluble carbohydrates 55 23 p c, woody fibre 17 00 p c and ash 7 20 p c (cont'g 0 70 p c) respectively *Green leaves* are the main source of antiscorbutic Vitamin C —(Bom Govt Agri Dept Bulletin)

Uses —Fruit is generally used as a culinary vegetable, made into pickles sometimes fried and minced up with buttermilk Pierced all over with a needle and fried in gingelly oil, the fruit is employed as a cure for toothache It has also been recommended as an excellent remedy for those suffering from liver complaints Seeds are apt to lead to dyspepsia and constipation

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2333 **SOLANUM NIGRUM, Linn** S rubrum, S incertum

(*San & Ben* —Kakmachi *Hind.*—Makoi, Gurkamai *Ben* —Gurkamai, Tulidun *Gwalior* —Mako *Arab* —Anabusathaliba, Anb-us-salap *Bom.*—Kamuni Mako, Ghati *Guj* —Piludu *Tel* —Kamanchi-chettu, Kanchi pundu, Kachi *Tam* —Manattakkali, Munna-takali-pullum, Milagu-takkali *Mal* —Tudavalam *Can* —Kakmunchi *Punj* —Kambei, Kachmach) is a herb common throughout India

Constituents —*Black berries* contain "solanine" which is a compound of sugar, saponin and solanidine—an alkaloid having the property of dilating the pupils

Action —Herb is alterative, sedative, diaphoretic, diuretic hydragogue and expectorant, locally anodyne Solanine is a powerful protoplasmic poison acting upon amoeboid organisms and ciliated epithilial cells *Berries* (fruits) are tonic diuretic

and useful in anasarca and heart disease 'when attended with swelling of the legs and feet"—(Chopra) *Black berries, leaves* and *young stems* have all similar properties, viz alterative and diuretic

Uses—*Leaves* are employed as *poultice* over rheumatic and gouty joints, also as a remedy in skin diseases *Freshly prepared fluid extract* from all portions of the plant, *(berries leaves* and *stems)* has been recommended in dropsy, in doses of ½ to 2 drachms also in heart disease, skin diseases, piles, gonorrhoea, inflammatory swellings and chronic cirrhosis (enlargement) of the liver and spleen A *syrup* of it is useful as a cooling drink in fevers, and to promote perspiration *Leaves* made hot are applied to painful and swollen testicles *Decoction of the berries* and *flowers* is useful in cough and consumption in doses of 1 to 2 ounces *Cases of poisoning have occasionally occurred from eating the berries of S nigrum S dulcamara and S tuberosum* Dr Burton Brown has recorded the death of three children after eating the berries of S nigrum—(The Punjab Poisons) Following symptoms were observed—"A feeling of sickness followed by vomiting, pain in the belly and intense thirst, pupils dilated with impaired vision, headache giddiness delirium, purging and convulsions sleep ending in coma" The drug is also used in scorpion sting

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2334 SOLANUM SPIRALE, Roxb

(Hind—Mungas Kajur Bagua) Root is narcotic and diuretic

2335 SOLANUM TRILOBATUM, Linn

(*Sans*—Alarka *Uriya*—Nabhi-ankuri *Tam*—Tudavullay, Thuthulai. *Tel*—Uchchinta, Uste, Mullamusti) Action—Cardiac tonic and carminative Siddha physicians consider it slightly bitter and hot, ushna veeryam, stimulant, expectorant and tonic. Uses—All parts of this common shrub of Southern India are useful in asthma, chronic febrile affections and difficult parturition A decoction of the root

and *leaves* is given in consumption Siddha physicians consider this drug as a specific and prepare a ghee from this for use in tuberculosis, and use as food for all kinds of lung diseases (Chopra's 'I D. of I " p 595 and Therapeutic Notes)

2336 SOLANUM TUBEROSUM Linn.

(N O —Solanaceae)

Eng—Potato *Hind & Duk*—Alu *Ben*—Golalu· Belathi-aloo *Bom Mah. Can & Kon*—Batata *Guj*—Papeta *Tam*—Urla kalangu, Uru-laikhizhangu *Tel*—Urla-gadda *Fr*—Pomme de terre *Ger*—Kartappe

Habitat—Originally a native of Chili or Chile, it is now cultivated everywhere and found all over in India

Constituents—Fresh Deccan potatoes contain moisture 80 66 p c, and the completely dried material contains Ether extract 0 77 p c, albuminoids 16 75 p c, (cont'g Nitrogen 2 67 p c), soluole carbohydrates 73 58 p c, woody fibre 2 93 p c, and Ash 5 97 p c (cont'g sand nil) respectively. "The free soluble pectin, proto-pectin, middle lamella pectin and total pectins beg n to rise in potatoes as growth proceeds and the increases become smaller at maturity. The free soluble pectin increases and the other three pectic constituents decrease as the age advances, and as the rotting sets in'—(S D Agnihotri, Department of Botany, Royal Institute of Science, Bombay) Sprouting, growing tubers flowers, unripe seeds and leaves contain colanine, and therefore are poisonous But, full-grown potato-tuber does not contain solanine Potato contains nitrogenous substances, starch 15 to 25% contained in the cells of the tuber as oval grains fat, carbo-hydrates, ash and water The nitrogen of the potato is not all in the form of true albuminoids or proteins, but nearly half is in the form of true albuminoids and nearly half in the form of amido-compounds including principally asparagin The non-albuminous nitrogenous products like asparagin form an important constituent of the tuber The true albuminoids or proteins are called *tuberin*

great amount of commercial glucose is made from potatoes In many places potatoes form an important source of alcohol. *Potato Meal* as infant food —Mueller (L Klin Woch) recommends for feeding infants a potato meal prepared by washing selected, well cleand potatoes, slicing these and drying the slices at a low temperature, not exceeding 40°C The slices which contain the hulls are powdered and then are slightly roasted at 50 to 55° at which temperature a conversion of the starch into dextrin takes place Such a powder contains the natural constituents, not only the mineral substances and albuminoids but also the vitamins Baked potatoes with cream are good for baby as food

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2337 SOLANUM VERBASCIFOLIUM, Linn.

(*Nepal* —Dursul *Hind* —Asheta *Tel* —Rasagadi-manu)
Constituents —Alkaloid solanine, saponin

2338 SOLANUM XANTHOCARPUM —Schrad & Wendll.

See also L jacquinii and L trilobatum

(N O —Solanaceae)

Sans —Kantakari, Nidigdhika *Ben* —Kantikari, Kantakari *Guj* —Bhoringani *Hind* —Bhutkatya, Bhumiringani Kateli, Katai *Mah* —Kanteringani *Bom* —Bhuringni, Ringni *Tam* —Kandan-Kattiri, Cundung-Katric, Mullikkai, Kandan-Kaththiri *Punj* —Warumba, Mahori Mamoli *Tel* Pinna Mulaka, Vankuda

Habitat —Grows abundantly in India, particularly in Deccan, Malabar, and the Punjab

Action —Ayurveda describes the plant as aperient, pungent, bitter, digestive, alterative and astringent The stems, flowers and fruits, according to Dr Wilson, are bitter and carminative Root is an effective diuretic, expectorant and febrifuge

Constituents —'A gluco-alkaloid ($C_{44}H_{78}O_{19}N$ or $C_{44}H_{76}O_{19}N$) termed 'Solancarpine' is found in the fruits. On hydrolysis it gives a crystalline compound m p 174°-175°, and

a sugar The alkaloid ($C_{30}H_{41}O_3N$) is termed "Solacarpidin", gives an insoluble hydrochloride (A sterol ($C_{36}H_{54}O_4$) which is also found is termed 'Carpesterol'. Petroleum ether extract gives a crystalline substance m p 245°C

'In the whole plant the same gluco alkaloid is found here also Alcoholic extract gives a complex substance giving tests for a chloride, a nitrate, potassium, a trace of iron, and more than one organic substance From the aqueous extract potassium chloride (cubes), and potassium nitrate, (long flat needles) crystallize out" [D D Kanga, Ahmedabad]

"The fruits gave alkaloidal reactions corresponding to solanine The dried leaves gave 29 7% ash and contained a trace of an alkaloid and an astringent organic acid giving green precipitate with ferric chloride' (Dymock)

G Pendse & S Pendse describe that an alkaloid in the plant complete with berries, is present in very small quantities They attribute the physiological activity of the whole plant to potassium nitrate which is present in it to the extent of 1 6% 'The products of hydrolysis of the gluco-alkaloid have been found to be the alkaloid (shown above) and glucose, rhamnose and a hexose probably galactose" (Kanga)

Uses —*Uses same as S trilobatum.* Roots are one of the constituents of "Dashmul Asava" The plant is useful in fever, cough, asthma, costiveness The stems, flowers and fruits were prescribed by Dr Wilson, in those forms of igni petiditis which are attended with a vesicular and watery eruption Fumigation with the vapour of the burning seeds is in high repute in the cure of tooth ache In the Konkan, two tolas of the juice of the fresh plant with two tolas of Hemidesmus juice are given in whey as a diuretic, and the root with chiretta and ginger is given in decoction as a febrifuge The root beaten up and mixed with wine is given to check vomiting The juice of the berries is useful in sore-throat In the Punjab Hills the juice of the plant is administered with black pepper in rheumatism. A decoction of the plant is used in gonorrhoea It also promotes conception in the female Fine powder of the fruits of this plant with honey is used for chronic coughs in children A decoction of the root with that

2341 SONCHUS ARVENSIS, Linn., or S. nrixensis,

(N.O:—Compositae).

Is a small plant.

(*Hind.*—Sahadevi-bari. *Punj.*—Kalabhangra. *Ben.*—Bonpalang. *Tel.*—Nalla-tapata. *Tam.*—Bhangra. *Santal.*—Birbarang) is wild in cultivated places common in the Khassia and Himalayas. Cattle are fond of every part of the plant; on being wounded there is much *milky juice* discharged which thickens into a substance like fresh soft opium. Its medicinal properties are similar to Lactuca scariola. Among the Santals the root is given in jaundice.—(Rev. A. Campbell).

2342. SONCHUS OLERACEUS, Linn.

2343. SONNERATIA ACIDA, Linn.

(N.O:—Lythraceae).

(*Ben.*—Orcha, Archaka. *Uriya*—Sundariguna. *Bom.*—Tivar) is found in the forests of Sind, Bengal, Delta of the Indus, Sunderban, Chittagong to Tenassarim, Deccan and Konkan. *Fruit* is used as a poultice in sprains and swellings Fermented juice of the fruit is useful in arresting haemorrhage

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2344. SOPHORA TOMENTOSA, Linn.

(N O:—Papilionaceae)

Is a plant met with on the shores of the Eastern and Western Peninsula and Ceylon Constituents—An alkaloid. *Roots* and *seeds* have been considered as specifics in bilious sickness in New South Wales—(F. M. Bailey).

2345. SOPUBIA DELPHINIFOLIA, G. Don.

(N.O:—Scrophulariaceae).

(*Bom.*—Dodhali) is a root parasite, the action of which is astringent Applied to bruises and sores.

2346. SORGHUM HALPENSE.—Pers.

See—S Vulgare

(N.O:—Gramineae).

Hind.—Baru. *Ben.*—Kala-mucha.
Parts used:—Rhizome.
Constituents—Rhizome contains HCN.
Uses—Same as S. vulgare.

2347. SORGHUM SACCHARATUM, Pers.

(N.O:—Gramineae).

(*Hind. & Bom.*—Deo-dhan. *Tam.*—Tella-jonna). Constituents—HNC in sap.

2348 SORGHUM VULGARE—Pers

See —Andropogon Sorghum

Varieties —Jowars (shalu), Nialo (Broach), Kalbondi (Poona), Dagadi (Poona), Bedri (Satara), Dukri (Sholapur and Satara), Kavali or Kagi (Nasik and Karnatik)

2349 SOYMIDA FEBRIFUGA Adr Juss.

(N O —Meliaceae)

or Swietenia febrifuga s rubra

(*Sans*—Rohuna, Rohini, Patranga *Eng*—Indian Red-wood tree, Bastard Cedar *Hind Duk Bom. & Ben*—Rohan *Mah*—Rohuna *Guj*—Rohina *Tel*—Sumi Somidamanu *Tam*—Shemmaram *Can*—Swami mara) is a large tree common in the hilly districts of North-West, Central and Southern India Bark occurring usually in half quills of a rich red-brown colour is an astringent and antiperiodic, febrifuge, tonic and it contains resin, starch, tannic and gallic acids and a bitter principle It is employed in dysentery, diarrhoea, intermittent fevers and general debility, 4 to 5 drachms may be given in the 24 hours in divided doses i e, about a drachm each time In large doses it leads to vertigo and stupor It is also used as a febrifuge and antiperiodic *Decoction of the bark* (1 in 20) is a substitute for that of oak-bark and may be adopted for gargles, vaginal injections enemata and also as applications for rheumatic swellings The decoction was given in one ounce doses three times a day in cases of malarial fever and found to be beneficial—(Ind Drugs Report, Madras) *Powder* may be applied as *poultice*

2350 SPATHOLOBUS ROXBURGHII, Benth.

(N O —Papilionaceae)

(*Tam*—Plashi valli) Decoction of bark is used as a remedy in dropsy, worms, bowel complaints and in snake-poison.

2351 SPERMACOCE HISPIDA, Linn., S. scabra (N.O:—Rubiaceae).

(*Sans.*—Madan-ghanta. *Ben.*—Madana-banta-kadu. *Hind.*—Madanaghanti. *Eng.*—Shaggy Puttonweed. *Mah.*—Ghanti-chi-bhaji; Gondi. *Tam.*—Nutti-choorie; Nattai-churi. *Tel.*—Madana-ghettu. *Mal.*—Thartuvel) is found throughout India. It is alterative, stimulant and tonic. *Seeds* as *confection* are cooling, demulcent and given in diarrhoea and dysentery. *Root in decoction* (1 in 10) is alterative and used like sarsaparilla *Seeds* have been recommended as a substitute for coffee. The dose of the *confection* of seeds is ½ to 1 drachm and of the *decoction* of the root is 1 to 2 ounces.

2352. SPERMACOCE STRICTA—See Paederia foetida.

2353. SPHAERANTHUS AMARANTHOIDES, Burm. (N.O:—Compositae).

Is a weed of the paddy fields, found in South India.

2354. SPHAERANTHUS HIRTUS is a herb (N.O—Compositae).

(*Sans.*—Munditika; Bhikshugparivraji. *Eng.*—East Indian Globe-thistle. *Hind & Mah.*—Gorakmundi. *Pers.*—Zakhimi-i-hyat. *Arab.*—Kamazariyus. *Gwalior.*—Gulmundi. *Ben.*—Murmuria. *Tel.*—Boedatarapu-chettu. *Tam.*—Vishnu-karandai; Kott *Mal.*—Adakumaniyam. *Can.*—Karandagida. *Kon* Kalaneho) is a herb found mostly in Southern India grow ally in the fields. The *herb* yields a deep el ery-coloured essential oil. *Stems, leaves* and *flowers* contain a bitter alkaloid "Sphaeranthine". Herb is bitter, stomachic, stimulant, alterative, pectoral and demulcent, and externally emollient. *Distilled water* prepared like rose-water from the herb is recommended by Hakims for bilious affections and for the dispersion of various kinds of tumours. *Root* is used as a stomachic and anthelmintic in doses of about 40 grains daily in the form of powder; also the *seeds* have the

same properties They are useful in worms and indigestion, and given with honey, in cases of cough *Flowers* (flower-heads) are highly esteemed as alteratives depuratives, refrigerants and tonics, useful as blood purifiers in skin diseases *Root bark* ground small and mixed with whey is a valuable remedy in bleeding piles, also used as *paste* for local application *Oil* prepared from the *root* by steeping it in water and then boiling it in sesamum oil until all the water is expelled taken on empty stomach every morning for 41 days in doses of 2 *drhems* is a valuable aphrodisiac It is used in glandular swellings in the neck with benefit and also a good remedy in jaundice —(D Sanyal) *Leaves* dried in the shade and powdered are used in doses of 20 grains twice a day in chronic skin diseases as antisyphilitic and nervine tonic The drug is also useful in urethral discharges and jaundice

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2355. SPHAERANTHUS INDICUS Linn —See S hirtus

2356 SPHAERANTHUS MICROCEPHALUS C laevigatus

(*Sans*—Mundi *Hind*—Coti mur ! *Ben*—Sravani) is a species common in Bengal It is u t l s a ton c vermifuge and diuretic

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2357 SPHAERANTHUS MOLI—See S hirtus

2358 SPHAERANTHUS SUAVEOLENS

Is a species found in Bengal with a strong pleasantly aromatic odour *Flower* is used as a tonic and alterative

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2359 SPILANTHES ACMELLA Linn

(N O —Compositae)

(*Bom*—Pipulka *Tam*—Vana mugali) Constituents — Spilanthol. Used in toothache and periostites

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2360. SPILANTHES OLERACEA, C. B. Clarke & Jacq.

S. calva; S. paniculata

(*Sans.*—Akalkar. *Eng.*—Para Cress. *Hind.*—Ukra; Pokarmul; Pakarmul. *Ben.*—Roshunia. *Bom.*—Akra. *Tam.*—Ukra. *Kon.* & *Mah.*—Acharbondi; Pipulka. *Can.*—Vana Mugali. *Tel.*—Maratimogga; Maratitige) is found throughout India. Constituents:—Spilanthol. *Flower-heads* are used in medicine; they contain resin similar to pyrethrin, fixed oil, yellow colouring matter, astringent organic acid, glucose, extractive matter and mineral matter. In the form of *tincture* (1 in 10) and in doses of 10 to 30 minims it is used as a powerful stimulant and sialogogue. The whole plant is very acrid but the *flower-heads* are chewed to relieve toothache, also chewed in headache, paralysis of the tongue, affections of throat and gums, cough etc. It is a popular remedy for children who stammer. It is regarded as a local specific in inflammation of the periosteum of the jaw and the application has a speedy effect in relieving pain and swelling. *Tincture* of these flowerheads for toothache in place of tincture of pyrethrum is recommended by Dr. W. Farquhar. A bit of lint dipped in the tincture and laid on the gums repeated 3-4 times a day, reduced pain and swelling.

2361. SPINACIA GLABRA or S. inermis

(N.O:—Chenopodiaceae).

(*Fr.*—Epinard lisse. *Ger.*—Glattfruchtiger Spinat. *Ben.*—Palamsaka) found in Bengal, with smooth succulent seeds, and when boiled and seasoned forms a pleasant dish.

2362. SPINACIA OLERACEA, Linn, S. setrandra; S. spinosa

(*Eng.*—Spinach; *Fr.*—Epinard Cornu. *Ger.*—Gemusespinat. *Hind. Sind.* & *Guj.*—Palak. *Ben.*—Palang. *Pers.*—Burhan-palak. *Bom.* & *Mah.*—Sag; Chitar; Ispank. *Tel.*—Mattur Bachhale; Dumpa bachhale. *Tam.*—Vasole-keray; Vusayley-keeray. *Can.*—Basalay. *Kon.*—Vali) is a species cultivated as a garden vegetable throughout India. Consti-

tuents.—"The fresh vegetable contains 84 00 p c moisture, and the dried material contains Ether extract 6 25, Albuminoids 0 75 (cont'g Nitrogen 0.12), Soluble carbohydrates 63 88 woody fibre 9 12, Ash 20 00 (cont'g Sand 0 75) p c respectively Iodine, Lecithin Leaves contain As—0,009 mg in 100 g "—(Bombay Govt Agri Dept Bulletin) *Herb* contains a large quantity of mucilage, i e, nitrogenous matter and alkaline nitrates, fat, sugar, fibre and ash. Its succulent *leaves* and *tender stems* when boiled and seasoned form an excellent cooling, nutritious and demulcent dish Herbaceous parts are mildly laxative and used as an emollient, *poultice* In the form of *infusion* and *decoction* (1 in 10) in doses of 1 to 2 ounces it is used as demulcent, diuretic and astringent in fevers, inflammations of the lungs and bowels, (febrile affections), hurried breathing, biliary derangements and as a lithontriptic in urinary calculi *Juice of the leaves* is used as a gargle in sorethroat *Oleum Chenopodii* is derived from S oleracea It is a valuable drug in the treatment of affections due to ankylostoma The secret of its satisfactory use lies in preventing absorption W Straub thinks that the fatal results were probably due to the drug being given three times a day He states that it is important that the drug should be given in one sufficiently large dose, and then it should be expelled from the intestines by an aperient If a satisfactory result is not obtained by this dose, an interval should elapse before the treatment is repeated The method used in Central America (W W Deeks) is quoted —The evening before the treatment the intestines are cleared by magnesium sulphate next morning at 7 o'clock 24 drops of Oleum Chenopodii in a gelatine capsule are given on an empty stomach This is stated as the dose for an adult and the capsule should have been recently filled Two hours later a similar dose of the aperient is given and the treatment is then complete The second aperient is given in order that the Oleum Chenopodii may not remain longer in the intestine than is absolutely necessary Repetition of the treatment, if required should only be undertaken after two weeks In no case should a second treatment immediately follow the first, as otherwise toxic symptoms may be expected Straub con-

cludes that by taking these precautions Oleum Chenopodii may be used without risk.

2363. SPIRAEA ARUNCUS, Linn.

(N.O:—Rosaceae).

Contains HCN glucoside.

2364. SPIRAEA LINDLEYANA, Wall.

Leaves and roots contain HCN.

2365. SPONDIAS ACUMINATA, Roxb.

(*Mah*—Ambada, *Can*—Kodambada). Fruits are often eaten and are also preserved in pickle.

2366 SPONDIAS ELLIPTICA—See Buchanania latifolia.

2367 SPONDIAS MANGIFERA, Willd., S. ekminut

(N.O:—Anacardiaceae).

(*Sans*—Amrataka; Pittavraksha. *Eng*—Indian Hog-plum or Wild Mango *Hind*—Jangli am; Amra. *Ben.*—Amra *Mah.*—Ambada *Guj.*—Ameda; Ranamba *Tel.*—Adavi-mamidi, Ambalamu. *Tam*—Amputtai; Mari-manchedi. *Mal.*—Ambalam. *Can*—Ambate. *Kon.*—Ambado) is a tree met with throughout India *Fruit*, is generally eaten as a condiment, and made into chutney and pickles. The inner part near the rind is rather acid, but that being removed the part nearest the stone is sweet and eatable. *Pulp of the fruit* is acid and astringent useful in bilious dyspepsia; also a useful antiscorbutic. *Leaves* and *bark* are aromatic and astringent and administered in dysentery; *bark;* is used in bilious dyspepsia; it is sometimes used as refrigerant. *Gum* is demulcent *Juice of the leaves* is applied locally in earache. *Decoction of its wood* is used in gonorrhoea and leucorrhoea. By some the fruit is considered to be an antidote for wounds caused by poisoned arrows, and for this purpose it is eaten

either green or dry About a tola of the *tender fruit-juice* mixed with five tolas of sugar-candy and 8 to 10 grains of pepper-powder is a popular home-remedy for biliousness. *Gum* exuding from the bark is used in *fumigation.*

2368 STACHYS PARVIFLORA, Benth.

(N O —Labiatae).

(Punj.—Kirimar) Useful in guinea-worms

2369 STAPHYLEA INDICA

(N O —Vitaceae)

(Ben & Hind—Kurkur-jihwa *Burm.*—Ka-let *Goa*—Diono *Mah.*—Karkani *Port.*—Ratanhia *Tel*—Ankadoo) is found in the hotter parts of India and Burma *Roots* and *leaves* are used in the form of *decoction* (1 in 10) in doses of ½ to 1 ounce, as stomachic, tonic and astringent in diarrhoea, colic etc, also used to relieve thirst during fever *Externally* it is used for ring-worm *Roasted leaves* are applied to the head in vertigo *Juice of fresh leaves* is digestive and given in diarrhoea and chronic dysentery (See also Leea stypbylea or L Sambucina)

2370 STATICE AEGYPTICA, Delile.

(N O —Plumbaginaceae)

Action —Febrifuge and stomachic

2371 STEMODIA VISCOSA, Roxb

(N O —Scrophulariaceae).

(Ben—Nukachuni *Tam*—Bodasarum), abounds in paddy fields of Southern India Action —Demulcent

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2372. STEPHANIA HERNANDIFOLIA, Walp or Cissempelos hexandra.

(N. O. Menispermaceae)

(*Sans.*—Vanatikta *Ben.*—Aknad) Used in diarrhoea dyspepsia and urinary diseases Constituents —Saponin

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2373 STEPHANIA ROTUNDA, Lour.

Uses same as S hernandifolia

2374 STEPHEGYNE PARVIFOLIA, Korth

(N O —Rubiaceae).

(*Hind & Bom.*—Kaddam *Punj*—Kalam *Tam*—Buta Kudambe) Used in fever and colic

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2375 STEREOSPERMUM CHELONOIDES, DC.

(N O —Bignoniaceae)

(*Hind*—Pader *Ben.*—Dharmar *Bom*—Padal *Tam.*—Padri), contains a crystalline bitter substance . Action—Cooling, used in scorpion-sting

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2376 STEREOSPERMUM SUAVEOLENS DC

Heterophragma suaveolens; H chelonoides or Bignonia suaveolens or B. chelonoides

(N.O—Bignoniaceae)

(*Sans*—Patala, Kamaduti, Madhuduti *Hind.* & *Bom.*—Paral *Ben*—Parul *Mah* & *Tel*—Kalgoripadri *Guj*—Pandan *Tam.*—(flowers) Madan-kamapu, Padri *Can*—Hudai *Kon*—Kusgol) is found throughout the moist parts of India. *Flowers* contain albuminous saccharine and mucilaginous, matters and wax *Infusum of the bark* (1 in 10) is used as refrigerant and diuretic in doses of ½ to 1 oz in dyspepsia, fever, cough, dropsy etc.

Flowers with honey stop troublesome hiccough *Ashes* are used in the preparation of alkaline water and caustic pastes. Action —Cooling, diuretic, and tonic Uses generally resemble S chelonoides

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2377 STEREOSPERMUM XYLOCARPUM, Wight.,

or Bignonia xylocarpum

(*Bom*—Kharsing *Tam*—Vadencarni *Mah & Kon*—Kharsingi *Can*—*Ghansing*) is found in the Deccan Peninsula It is stimulant, expectorant and parasiticide *Tar* (oil from the wood) is useful in the treatment of scaly eruptions of skin Other properties are similar to those of pine tar or Stockholm tar for which it may be used as a fair substitute

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2378 STERCULIA ACUMINATA or Cola acuminata

(*Eng*—Kola nut Bissy or Gooroo Nuts) is a native of the West Africa but now cultivated in India especially in the Botanical gardens of Calcutta *Kola nut* is a valuable dietetic agent stimulating and sustaining the system against fatigue when chewed, they are deprived of their seed coats and masticated while fresh There are two varieties viz Kernels of Cola acuminata and C. vera They contain 2 5% or 3% of caffeine and 0 2% of theobromine and a glucoside *Kolanin* It is to these substances chiefly the former that the drug owes its stimulating properties which cause it to be used in medicine to prevent fatigue and as a nerve stimulant Fresh *juice of the leaf stalks* is a remarkable styptic useful for wounds etc. Various preparations of the nut are available viz Kola wine, Kola chocolate etc

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2379 STERCULIA ALATA, Roxb

(N O —Sterculiaceae)

(*Tam.*—Pothondi) Seeds are used in Sylhet as a substitute for opium

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2380. STERCULIA FOETIDA, Linn.

(N.O:—Sterculiaceae).

Eng.—Poon Tree; Wild Almond. *Hind. & Bom.*—Jangli-badam. *Goa*—Kuomad; Virohi. *Mah. & Guj.*—Narkya-uda. *Tam.*—Penari-marum; Peenathamaram. *Tel*—Gurapu-badam. *Mal.*—Pottakavalam *Can.*—Penarimara.

Habitat—Found mostly in the Western Ghats, Southern India and Ceylon.

Constituents—*Kernel* contains fixed oil 40 p.c., and starch *Oil* is thick, bland and non-drying, depositing crystalline solid fats and fatty acids consisting of oleic and a small quantity of laurie acids.

Action.—*Bark* and *leaves* are aperient, diaphoretic and diuretic. Seeds are oily and if swallowed bring on nausea and vertigo. Decoction of *capsules* is mucilaginous and astringent.

Uses.—Its chief use is as a *fumigatory*. In itch and other skin diseases it is given internally and its *paste* applied externally. *Flowers* have most offensive odour and hence the name. *Seeds* roasted are edible. *Oil* is extracted by boiling *seeds* in water.

2381 STERCULIA SCAPHIGERA, Wall.,

is used in dysentery.

2382. STERCULIA URENS, Roxb.

(*Sans.*—Balika. *Hind.*—Gulu; Katira. *Ben.*—Bulu. *Guj.*—Karai. *Mah.*—Pandruk. *Gwalior.*—Kathira. *Bom.*—Gulu. *Tam*—Velley-putali. *Tel.*—Kalvi) is found throughout India. *Gum* contains mucic acid and ash 4 p c, it is cooling and is used for making sweetmeats; mucilage has no adhesive power. As its uses are similar to those of tragacanth, it is a substitute for the latter.

2383 STIPA TORTILIS, Linn

(N O —Gramineae)

Contains HCN-glucoside

2384 STRANVALSIA GLAUCESCENS, Lindl

(N O —Rosaceae)

(*Kumaon*—Garmehal) Leaves contain HCN (Chopra's 'I.D of I" p 530)

2385 STREBLUS ASPER, Linn.

(N O —Urticaceae)

(*Sans*—Sakhotaka *Ben*—Shaorha, Sheora. *Bom.*—Kavati, Sahora *Mah*—Sahor *Hind*—Siora *Tam*—Prayam, Pirayan *Tel*—Baranki, Baranika *Can*—Akhor moranu. *Ger*—Schweilbeere) is a small tree indigenous to tropical India *Constituents*—Bitter substance *Seeds* are beneficial in epistaxis piles, diarrhoea etc *Externally* they are applied as paste in leucoderma Its root is used in epilepsy and inflammatory swellings and is applied to boils Juice is astringent and antiseptic The Siamese make an excellent preparation out of its *bark* The drug is used in fever, dysentery and diarrhoea, as antidote to snake-bite

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2386 STRIGA OROBANCHOIDES, Benth.

(N O —Scrophulariaceae)

Is a root parasite plant found in marshy places of South India, and used in diabetes (Chopra's 'I D of I p 530)

2387 STROBILANTHES AURICULATUS Nees

(N O —Acanthaceae)

(*Santhal*—Gada kalha) Leaves are used in intermittent fever (Chopra's 'I.D of I' p 530)

2388. STROBILANTHES CALLOSUS, Nees.

(N.O:—Acanthaceae).

(*Bom. & Mah.*—Karoi; Karvi) is met with in South Deccan, common in higher elevations on the ghats, and Central India. The plant has a strong aromatic odour. *Bark* with an equal proportion of that of Calophyllum inophyllum is applied as a fomentation in tenesmus. *Juice of the bark* with an equal quantity of that of Eclipta alba, boiled down to one-half and mixed with old sesamum oil, a few pepper corns and ginger is heated and used as an external application in parotitis; equal quantities of the *juice of the flowers* and those of Randia dumetorum are smeared over bruises—(Dymock). *Seeds contain no strychnine*, but brucine is present.

2389. STROBILANTHES CILIATUS, Nees.

(*Bom.*—Karvi). Uses of the bark are same as that of S. callosus.

2390. STROPHANTHUS DICHOTOMUS, DC

(N.O:—Apocynaceae).

Leaves, bark and *seeds* contain strophanthin like a toxic glucoside. (Chopra's "I.D. of I." p. 530).

2391. STRYCHNOS AXILLARIS, Coleb.

(N.O:—Loganiaceae).

There is an alkaloid.

2392. STRYCHNOS BLANDA

Is a species growing in Burma, but medicinally it is of no importance as it does not contain either strychnine or brucine.

2393. STRYCHNOS BOURDILLONI, Sp., Neva (Brandis).

(*Tam.*—Valli-kanjiram). Decoction of root is applied in rheumatism, ulcers, elephantiasis, fever and epilepsy.

2394 **STRYCHNOS CINNAMOMIFOLIA, Thw.**

(*Tam.*—Valli-kanjiram) Uses same as S bourdillonı

2395. **STRYCHNOS COLUBRINA, Linn, S Rheedı or Lignum colubrinum,**

(*Hind. & Ben*—Kuchilalata *Eng*—Snakewood *Port*—Pao de Cobra *Bom & Guj*—Goagarilakri *Mal*—Modira-kanni, Modira-caniram *Tel*—Nagamusti, nagamusadi, Tan-soopaum, Konsu-kandira *Bom*—Kanal, Taral *Mah*—Kajar-wel, Devakadu N B—These Indian language names are ap-plied to several species of Strychnos, e g S rheedi, S beddo-mei, S laurina, S cinnamamifolia etc All of these plants are put to the same uses as S colubrina)

Habitat—West Deccan Peninsula, from the Konkan to Cochin, frequent,

Parts Used—Root, wood, leaves and fruit

Constituents—Root or wood contains strychnine and brucine

Uses—In cutaneous diseases *root* or *wood* applied as *paste* alleviates pain and removes swellings *Infusion of the bark* in doses of 2 to 3 drachms or *tincture of the root* (1 in 10) in doses of 2 to 10 minims is used as febrifuge, in obsti-nate intermittent fevers, tertian and quartan, as tonic it is given in dyspepsia and malarial cachexia As it contains strychnine in considerable quantity great caution is necessary in its use *On the whole it is a dangerous drug* This remark applies with equal force to the seeds of Strychnos ignatii Wood of the root is estecmed by the Telinga physicians an infallible remedy for the bite of Naga, as well as for that of every other venomous snake It is applied externally, and at the same time given internally It is also given in sub-stance for the cure of intermittent fevers—(Roxb). In the Konkan, *fresh leaves* rubbed into a *paste* with the kernel of the cashewnut, are applied to suppurating tumors.—(Dymock) Bruised *fruit* is applied to the head in mania, the *root* rubbed down with pepper is given to check diarrhoea, and boiled with

oil it is used as a *liniment* for pains in the joints —(Rheede) Rumphius states that it is used in Java as a febrifuge and anthelmintic and also externally in certain skin diseases Horsfield notices its use in cutaneous affections, and to alleviate the pain and swelling from confluent small pox —(Dymock) Its claims as an antiperiodic have been examined by Dr Berdenis Van Berkelow —(Schmidt's Fahrubucher, May 24th 1866, and Brit & For Medical Chir Review, April 1867, p 527), and after a trial with it in 22 cases, quartan and tertian, he reports favourably of its action, and considers that from its cheapness it may advantageously be used as a febrifuge in pauper practice Whatever efficacy the root possesses in this character is doubtless due to this alkaloid, and as the proportion in which it exists in this wood is undetermined, and is likely to vary according to the season of collection, it is far safer to employ in its stead the alkaloid itself, a preparation of uniform strength and which can be regulated with comparative ease *In the present stage of our information, Lignum colubrium must be looked upon as a dangerous remedy* —(Pharmacographica Indica) It is largely used in bites of *Naga* snake both locally and internally Other uses are also same as S nux vomica

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2396 STRYCHNOS GAULTHERIANA, Pier.

Contains brucine and strychnine

2397 STRYCHNOS IGNATII, Berg

(N O —Loganiaceae)

(*Erg* —St Ignatius' Beans *Arab & Hind* —Papita *Hind Ben & Bom* —Pipita *Tam* —Kayappan kottai) indigenous to the Philippine Islands but its seeds are occasionally met with in the drug bazaars of the large cities of India. *Seed* (St Ignatius bean) contains strychnine 1 5 p c brucine 0 5 p c and proteids glucoside loganin is believed to be present. Seeds are utilised in Europe for preparing strychnine which they yield in larger quantity than nux vomica seeds *Seeds are therefore to be used with great caution* Seeds are said to be

colouring matter, a concrete oil or fat, gum, starch, sugar 6 p.c., wax, earthly phosphates and ash 2 p.c. Wood, bark and leaves contain brucine, but no strychnine. Young fresh bark contains the largest percentage of brucine, i e., 3.1 p.c. Leaves contain 1/3rd p e. "Though the alkaloids occur in numerous species of Strychnos, they are not present in sufficient amounts to serve as commercial sources. (Chopra). N.B:—Investigation shows that the alkaloidal content is not altered by long storage in a moist condition. Adulteration of the seeds with S. blanda, a non-strychnine bearing seed, appears to be the real cause of the reported variation.

Action.—Dried seeds, which are intensely bitter to taste and very hard, are nervine, stomachic, tonic and aphrodisiac, a spinal stimulant; also respiratory and cardiac stimulant. In excessive doses it is a virulent poison producing tetanic convulsions. "Dr. Tabernaemontanus described nux-vomica as an anodyne, an emetic, purgative and expellant of "phlegmatic and choleric moisture".—(Dr. Madaus). *Bark* is employed as tonic and febrifuge. Strychnine is stimulant to the respiratory and vasomotor centres. "It has a selective action on the central nervous system, more particularly the spinal marrow where it causes the possible maximum of excitability of the reflex apparatus by removing the inhibitory power of all its neurons.—(Dr. Meyer-Gottlieb). "Long-continued tetanus ensues (tetanus-tonic contractions of all skeletal muscles lasting from a second to a minute and consisting in single contractions of the muscles following each other with the utmost rapidity".—(Dr. Höffmann). The spasms are followed by a stage of paralysis.—(Dr. Marfori-Bachem). The vaso-motor centre is likewise excited with the result of vaso-constriction and a rise in the blood-pressure. Very small doses will also produce vasodilatation. Constriction of the renal vessels results in diuretic impairment. Through excitation of the vagus nuclei, the heart-beats become slower. The respiratory centre is stimulated by small doses; large doses paralyse it owing to tetanus of the respiratory muscles.—(Dr. Marfori-Bachem). A notable feature is the sharpening of the sensory functions, more particularly that of visual power.—(Dr. Lichtenfels). The toxic symptoms are vomiting (rare).

—(Dr Kobert), marked nervous excitation, restlessness, exaggerated reflex movements, sharpening of the senses, stiffness of the musculature of calves, jaws and throat, trembling and twitching of limbs, difficult breathing, sensation of fear, painful contractions of groups of muscles, tetanic convulsions, trismus, opisthotonus, rise in the temperature, protrusion of veins of the neck, cyanosis, mydriasis, exophthalmus.—(Dr. Marfori Bachem) The cerebral cortex, the brain, spinal marrow, and peripheral nerves exhibit marked hyperemia and blood exudation—(Dr Allard) Examination of the liver shows an almost complete disappearance of glycogen.—(Dr Henke-Lubarsch) The vomicine contained in Nux vomica causes clonic spasms via the brain—(Dr Ruickoldt)—Dr Madaus's Book In minute doses it has the same therapeutic action as the nux-vomica but in a more powerful degree "The poison nuts which have a bitter taste, were formerly used for poisoning crows, sparrows, mice, rats, etc Strychnine is considerably more poisonous than brucine—(Drs. Morrison & Bliss)—Dr Madaus's Book

Physiological action of Strychnos alkoloids.—Brucine closely resembles strychnine in physiological action, but is less poisonous It also differs from strychnine in its more marked Curare-like action on the nerve terminations in voluntary muscle Brucine is slower in action and more readily eliminated and not cumulative in its effects With nitric acid it gives a red colour thus differing from strychnine which remains uncoloured Strychnine is highly toxic, in poisonous doses it acts principally on the spinal cord, causing excessive reflex irritability, which results in convulsions (tetanus) in which all the muscles of the body are involved The respiratory muscles are affected in the paroxysyms and as a general rule, after two or three convulsions respiration fails to return With very large doses death may occur almost immediately from asphyxia resulting from the paralysis of the central nervous system The terminations of the motor nerves are paralysed by large doses of strychnine In small quantities strychnine slows the heart and raises the blood pressure and with poisonous doses the blood pressure is very high, due to the increased activity of the vaso-motor centre

Uses.—Nux vomica *seeds* produce a sort of intoxication for which they are habitually taken by some as an aphrodisiac. *No preparation of nux-vomica seed should be used except under careful medical supervision* It is employed in doses of ½ to 3 grains in powder, ¼ to 1 grain of the *extract*, and 5 to 10 *minims* of the *tincture* Nux vomica seeds in powdered form is preferred for administration, especially in the treatment of dyspepsia and diseases of the nervous system. "Dr Hufeland used nux-vomica for a variety of indications tremor, nervous debility, dysentery, constipation"—(Dr Madaus), for, in powdered form nux vomica, as Dr H. C Sen says "remains in the alimentary tract for a long time, and thereby exerts its influence on the digestive tract by allowing gradual absorption of its active principles and by its prolonged mild stimulating action on the secreting cells and nervous mechanism of the alimentary tract. In the form of decoction, a very soluble form, on the other hand, the local action does not last long and the active principles are absorbed and eliminated very soon One of the best Indian methods of preparing nux vomica in powdered form for medicinal purposes is to boil it in milk or a mixture of equal parts of milk and water When the seeds become soft from prolonged heating, the cotyledons are scraped apart and the embryo is removed. These scraped cotyledons are then converted into a fine paste As soon as the cotyledons show a tendency to become hard, they are boiled again to render them soft for easy manipulation. The process of boiling in milk has a mitigating effect on the nux vomica. It is a very important point to remember that the efficacy of nux vomica like that of arsenic, is enhanced if the patient takes sufficient quantity of milk, ghee or butter This preparation of nux-vomica can be used with safety for a long time I beg to introduce this preparation of nux vomica to medical men, so that they may utilise it for relieving the hydraheaded troubles of dyspepsia' "The drug is extensively used in small doses as a valuable tonic and in the treatment of certain forms of paralysis and other nervous diseases' It is used as a remedy in intermittents, dyspepsia, chronic dysentery, atonic diarrhoea paralytic and neuralgic affections worms hysteria mental emotion, epi-

lepsy, chronic constipation from atony of the bowels, prolapsus of the rectum, gout, chronic rheumatism, insomnia from overfatigue, and hydrophobia In neuralgia of the face and gastralgia, in sexual impotence, spasmodic diseases as vomiting of pregnancy, chorea and epilepsy, its effects are well marked. *It cures diabetes if given for a long time* In functional paralysis due to anaemia of the cord, general exhaustion, spermatorrhoea, excessive venery, alcoholism opium or lead poisoning, diphtheritic paralysis, retention or nocturnal incontinence of urine in children it acts like a charm A pill known as *Samiragaja Kesari* is generally recommended in diseases of the nervous system It is made up of nux-vomica, opium and black pepper, equal parts and made into two-grain pills These are given, one twice a day, with the juice of betel leaves. Rasendrasarasangraha gives the composition of a pill called *Shulaharanayoga* prescribed in diarrhoea It is composed of Chebulic myrobalan, long pepper, ginger, nux-vomica, asafoetida, sulphur and rock salt, equal parts and made into four-grain pills These are given with warm water in dyspepsia with pain after meals and in diarrhoea. In tympanites nux vomica is given with antiferments as salicylic acid As a bitter tonic it is given with antacids and carminatives, in dyspepsia with eructations, vomiting of food and habitual constipation In cases of hydrophobia, Pandit J L. Duveji recommends "purified nux vomica" to be given to the person bitten by a mad dog and the same drug mixed with water or the excretion of a cock to be applied over the bitten part Vomiting and purging benefits the patient. *Wood* is a popular remedy in the dyspepsia of vegetarians as paste it is applied to the head in headaches, a paste made of nux-vomica seeds 2 parts, black pepper 4, dry ginger 5 and stag's horn 3 parts is useful application to swollen glands, in oedema of the hands, feet and abdomen *Juice of the fresh bark* is given in doses of a few drops in cholera and acute dysentery *Root bark* ground into a paste with lime juice and made into pills are also effectual in cholera. *Bark* is sometimes employed in *infusion* or *weak decoction* and the root, which is very bitter is used to cure interruttent fevers and the bites of venomous reptiles. A paste of nux-vomica seeds is used in rat bites Paste mix-

ed with dry ginger and the horn of the antelope rubbed on a stone is used with benefit in muscular and chronic rheumatism. *Haj-ul-Gurba* prescribes a paste made of the equal parts of nux-vomica seed, seed of Momordica charantia, red ochre, *siah jeera* and root of *Bismari ki-Jhad*, for application in tympanitis. Oil obtained by heating fresh seeds is also a useful external application in chronic rheumatism, also in palsy and relaxation of the muscles and tendons Nux-vomica is useful in the treatment of tobacco-amaurosis and paralysis following on exhausting diseases such as diphtheria, gastric catarrh etc; and in debilitated conditions of the alimentary canal. As a respiratory stimulant it is used in bronchitis, emphysema and phthisis *Leaves* of nux-vomica are applied as *poultice* to sloughing wounds or ulcers when maggots have formed

Strychnine is obtained from the dried ripe seeds of nux-vomica 'In the form of galenicals like extracts and tinctures and purified alkaloids like strychnine and brucine are manufactured in the western countries for use in Western medicine and sent out to India for use here"—(Chopra). It is chiefly used as a tonic for the sake of its local action on the digestive system, also employed in various forms of paralysis owing to its stimulant action on the central nervous system It is generally used as a poison for dogs, cats, and as a vermin killer "Although animals, in general, succumb to strychnine, the cat tolerates a good deal of it. Snails are not affected at all and the rhinoceros-bird even uses the strychnos seeds for food The demand for strychnine is increasing steadily, as it is being employed largely as an insecticide and as an animal poison In modern times strychnine has been recommended as a test of the gastric secretion because it stimulates that secretion where it is impaired—(Dr Korbsch)—Dr. Madaus" It is prescribed in doses of 1/32 to 1/8 gram in solution or in pill It is also used in almost all the cases in which nuxvomica is used. Various spasmodic diseases as chorea, asthma and epilepsy are cured by strychnine It is also employed hypodermically as a remedy in narcotic poisoning and against the effects of chronic alcoholism, also as an antidote to snake-bite administered hypodermically (1/16 to 1/10th grain) close

to the bitten part Brucine has been used in epilepsy in doses of 1/8th to ½ grain in solution.

Contra-indications against the use of strychnine are — recent cases of paralysis, acute paralysis of the lower extremities with structural alterations of the cord and that form of paralysis due to softening of tumours

Incompatibles are —alkalies and alkaline carbonates, iodides, bromides, mercuric chloride, and tannic acid, chloral and calabar bean

Antidotes for poisoning are —Stomach tube, emetics; tanic acid in solution, large doses of charcoal in water, a draught containing potassium bromide (1 drachm) and chloral (half drachm) if not by mouth, give per rectum Chloroform inhalation between spasms or Amyl nitrate inhalation between spasms or even subcutaneously

Several of the strychnos varieties furnish hunters with "curare", an extremely dangerous arrow-poison —Dr. Madaus

of the urinary organs and in gonorrhœa It is also used as a remedy in diabetes. Seeds rubbed up with honey and a little camphor into a paste is a favourite remedy with Vaidyas and Hakims, applied to the eyes in chemosis of the conjunctiva and lachrymation or copious watery discharge from them Rubbed with water and rock salt they are applied to chemosis in the conjunctiva *Powdered seed* mixed with honey is applied to boils to hasten suppuration *Fruit* is regarded as an emetic and antidysenteric, it is given as a powder in doses of half a teaspoonful Pulp is a good substitute for ipecacuanha in the treatment of dysentery and bronchitis It is also regarded as a remedy for diabetes.

2402 STRYCHNOS RHEEDEI, Clarke.

(*Hind & Ben.*—Kuchilalata *Tam.*—Naga-musadi) Contains brucine and strychnine

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2403 STRYCHNOS WALLICHIANA, Benth

Contains traces of alkaloid

2404 STYRAX BENZION, Dryand

(N O —Styraceæ).

(*Eng.*—Benzoin tree, (resin) Gum Benzoin. *Hind Ben & Bom.*—Luban (resin) *Mah.*—Oodh *Tam.*—Shambirani) is a native of the Malay Peninsula (Lower Siam) and Sumatra. Gum Benzoin flowing from the incised stem bark of the tree and which is largely imported into India from Penang contains three resins, benzoic acid cinnamic acid, vanillin and volatile oil *Benzoin* is antiseptic, disinfectant, stimulant and expectorant It is used throughout India as an incense It is the source of benzoic acid which is largely used in medicine as aromatic, stimulant, expectorant, antiseptic and styptic When burnt its *vapour* is used as *deodorant and antiseptic*, in sick rooms and hospitals As diuretic it is useful in calculous disorders from phosphatic deposits in the urine Its combinations with alkalies *viz*, Ammonia, Potash and Soda, called

benzoates, are more decidedly diuretic and useful in dropsy and gouty concretions It is useful in jaundice and in incontinence of urine in children Mixed with ointments it prevents rancidity, its vapour as inhalation is useful in cough and boarseness and in whooping cough, in laryngitis, tracheitis, bronchitis, asthma and phthisis. Its compound tincture, popularly known as *Friar's Balsam* or traumatic balsam has been employed as a styptic and healing application, a piece of lint or soft rag dipped into it and wrapped over cut surfaces will usually stay the haemorrhage and effect a cure It is also a useful application to foul and indolent ulcers. A teaspoonful of the *tincture* added to a quart of water forms a mild—Lait Virginal—largely employed in the toilet and for bathing irritable skin eruptions Internally it is employed in cases of alkaline urine and in distressing coughs, the dose being 30 drops to a drachm on lump sugar or in mucilage, dose of benzoin is from 3 to 10 grains In the form of *suppository* it is used in uterine discharges.

2405 **STYRAX HOOKERI, Clarke**

(*Lepcha*—Chamokung)

2406 **STYRAX OFFICINALE, Linn.**

(*Ben*—Silajit *Bom.*—Usturak) Action Stimulant

2407 **STYRAX SERRULATUM, Roxb**

(*Ben*—Kam jameva) Resin is similar to gum benzoin.

2408 **SUAEDA FRUTICOSA, Forsk.**

(N O—Chenopodiaceae)

(*Punj*—Leonuk Chotee Lanu Lunak *Mah.*—Morasa. *Sind*—Ushaklan *Pushtu*—Zimeh) is found in the Northwest India and throughout the Punjab, Westward to the Indus and common in the plains. This is one of the plants from which *Sajjukhar* is prepared. *The woolly excrescences on the tips*

of its branches, mixed with an empyreumatic oil, are used as an application to sores on the backs of camels Leaves are applied as a poultice to ophthalmia and used in infusion as an emetic

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2409 SWERTIA AFFINIS, Clarke.

(N O —Gentianaceae)

Is a substitute for chiretta

2410 SWERTIA ALATA, Royle.

(*Punj* —Hatmul) Tonic and febrifuge

2411 SWERTIA ANGUSTIFOLIA, Ham.

(*Hind* —Pahari kiretta) Substitute for chiretta

2412 SWERTIA CHIRATA, Ham.

Is a species (*Sans* —Kirata tikta Bhunimba, Jwaranthakah *Eng* —Chiretta *Hind* —Kirayat-charayatah *Arab* —Qasabuz Zarirah *Ben* —Mahatita, Chireta *Guj Mah* & *Duk* —Charayatah *Bom* —Chirata Kiraita *Tam* —Nila-vembu *Tel* —Nila vemu *Mal* —Kiriyattu) Indigenous to temperate Himalayas at altitudes above 4000 feet from Kashmir, Simla to Nepal and Bhutan, Khasia Range, and sometimes found in various other parts of India, obtainable in Indian bazars in large quantities which usually come from Nepal and are quite cheap in price Tinnevelly 'nilavembu' is best. Constituents —Ophelic acid, an amorphous bitter principle, chiratin a yellow bitter glucoside, resins gum, carbonates and phosphates of potash, lime and magnesia, ash 4 to 6 p c., no tannin Action —Bitter tonic, stomachic, febrifuge and anthelmintic according to Ayurveda —(Chopra)

Action & Uses in Ayurveda and Siddha —Tikta-rasam, seetha veeryam, lagu, ruksham In sannipatham, swasam, kasam, raktadosham, trishna sodham, kushtam, jwaram, krimi. —(Therapeutic Notes)

Action & Uses in Unani —Hot 2 , Dry 2 , tonic to heart, liver and eyes, resolvent, drying astringent, liquifying balgham, cough, scanty urine, melancholia, dropsy, sciatica skin diseases —(Therapeutic Notes)

Uses —"An infusion of the drug is generally employed, but it forms part of many compound preparations Hakims also use this drug extensively According to Fleming chiretta possesses 'all the stomachic, tonic, febrifuge and anti-diarrhoetic virtues which are ascribed to gentian and in a greater degree than they are generally found in it in the state in which it comes to us from Europe' "Experiments carried out in the School of Tropical Medicine, Calcutta re chemical composition of S chirata also show that it can effectively replace the gentian of the B P The percentage of bitter principle was found to vary from 1 42 to 1 52 This compares favourably with the bitter principle existing in Gentiana kurroo There are several spurious kinds of chiretta in the market as well S angustifolia, S decussata, S corymbosa and S pulchella are used in the indigenous medicine in South India Some of these are not bitter at all and are, therefore, devoid of therapeutic activity. True chiretta, viz Swertia chirata, has now been recognised in the British and the United States Pharmacopoeias —(Chopra) Chiretta is used in scorpion sting also In short in modern materia medica chiretta is used like gentian, calumba and other bitters Chiretta having no tannin can be given with iron

For further action and uses see Gentiana kurroo See also Ophelia angustifolia chirata, O densifolia O elegans O multiflora and Andrographis paniculata

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2413 SWERTIA CORYMBOSA, Wight

Is a substitute for chiretta

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and antiperiodic. It is used as antiperiodic with neem-bark and black-pepper and given in fevers in the form of *infusion*; dose is ½ to 2 ounces This drug is also a substitute for true chiretta

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2415. SWERTIA PANICULATA, Wall.

(*Bo n*—Kadavi) is also a substitute for chiretta.

2416 SWERTIA PERENNIS. Linn.

Contains gentiopicrin.

2417. SWERTIA PURPURASCENS, Wall.

(*Hind.*—Cheretta) is used like chiretta

2418 SYMPLOCOS BEDDOMEI or Hopea racemosa

See—Styrax benzoin.

2419 SYMPLOCOS CRATAEGOIDES, Ham.

(N.O:—Styraceae).

(*Punj.*—Lodar *Bom.*—Lodh) Bark is used in ophthalmia (Chopra's 'I D of I" p 531).

2420. SYMPLOCOS RACEMOSA, Roxb., S. theofolia.

(N.O:—Styraceae).

Sans.—Lodhra, Tillaka; Srinata; Savura. *Eng.*—Lodh Tree; (bark) Lotur-bark; Small-bark tree. *Hind.*—Lodh. *Ben. & Mah.*—Lodhra *Guj.*—Lodhar. *Tel.*—Lodhuga-chettu. *Tam.*—Velli-lothi. *Mal*—Pachotti. *Can*—Balaloddugina-mara; Pachettu. *Arab.*—Moogama.

Habitat.—This is a small tree found very commonly in the plains and lower hills of Bengal, Assam and Burma, and dry forests of Chota-Nagpur plateau.[1]

chyluria (filarial) and elephantiasis by Lieut Col Russel and Dr K L Dey A decoction of the *bark* or *wood* is used as a gargle for giving firmness to spongy and bleeding gums and in relaxed uvula In bleeding from the gums a *paste* composed of Lodhra bark, *rasot*, tubers of Cyperus rotundus, and honey is applied to the gums —(Chakradatta) It is one of the constituents of a *plaster* or *lep* used to promote maturation of boils and other malignant growths *Amritasagara* recommends the following application for ophthalmia —Take of Lodhra bark liquorice root, burnt alum and *rasot* equal parts and rub into a paste with water This is applied round the eyes

(1) (2) 3) & (4) —Chopra's "I D of I" pp 390

2121 SYNANTHERIAS SYLVATICA, Schott

(N O —Araceae)

(*Sans* —Vajrakanda *Eng* —Wild Suran *Mah* —Vajra mula *Goa* —Uzomut *Tel* —Adavi kanda *Tam* —Kattukkaranai) found in several parts of India Its *crushed seeds* are used to cure toothache a small quantity is placed in the hollow tooth covered with cotton It acts rapidly benumbing the nerves It is also applied externally to bruises on account of its benumbing effects *Paste* of seeds is locally applied to reduce glandular swellings The taste of the *fruit* is intensely acrid In a few seconds it causes burning of the tongue and lips which lasts long causing salivation and numbness

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2122 SYRINGA EMODI Wall

(N O —Oleaceae)

(*Punj* —Shafri) contains astringent and bitter principle

2123 SYRINGA PERSICA, Linn

Contains glucoside Syringin SYZIGIUM CARYOPHYLLATA—See Myrtus caryophyllata

purgative *Leaves* and *bark* are cathartic *Root* and *bark* are used in scorpion sting

2428 TABERNAEMONTANA HEYNEANA, Wall

(*Bom* —Naglkud) Uses similar to T Coronaria

2429 TABERNAEMONTANA SPHAEROCARPA Blume

Bark and seeds contain an alkaloid

2430 TABERNAEMONTANA WALLICHIANA Steud

Contains an alkaloid

2431 TACCA ASPERA Roxb T laevis

(N O —Taccaceae)

(*Sans* —Suran *Ben* & *Hind* —Varahikand *Mah* —Dukar kand Sakar kand *Duk* —Bar kanda *Tam* —Kara *Tel* —Kunda gadda *Can* —Handi gedde *Kon* —Devra kando) is of tropical India the Konkan and Central India *Tubers* are alterative nutrient and tonic given as confection in doses of 1 to 2 drachms in cachexia leprosy scrofula etc Root *stalk* is intensely bitter when raw It is full of starch which when prepared is of excellent culinary properties and is far preferable to that of any other root for dysentery

2434 TAMARINDUS INDICA Linn

(N O —Caesalpiniaceae)

(*Bom* —Diva *Tam* —Karachunna) Root is bitter and is used in dysentery

2433 TAGETES ERECTA Linn

(N O —Compositae)

(*Eng* —French Marigold *Hind* & *Ben* —Genda *Bom*.—Makhmal Gul jafari *Mah* —Rojracha phul *Tam* —Banti) commonly cultivated in Indian gardens for their bright

Uses—Pulp of the fruit is used as an adjunct to other laxatives as in the confection of senna or to increase the action of sweet purgatives such as Cassia and Manna Tamarind, ripe fruit of a year or two old, is good in atony of liver, stomach and intestines Old tamarind is easily discernible by its black appearance First ripe fruit is useful in constipation It is also useful in intoxication from Datura and from spirituous liquors, for which Chakradatta recommends the following —Take of tamarind pulp, dates, raisins, pomegranate seeds, fruits of Grewia asiatica and ripe emblic myrobalans, each one tola, pound them together and make an emulsion with 32 tolas of water Dose —2 ounces Tamarinds are used largely in Indian dietary, in curries and chutnies and boiled in water and sweetened with sugar or as a cooling sherbet with milk (1 in 20) is a refrigerant and carminative and is useful as a laxative for children suffering from fevers, or a syrup of tamarinds, figs and prunes is similarly useful in 1 to 2 drachm doses One ounce of tamarind fruit with one ounce of dates boiled in a quart of milk and strained and a little of cloves and cardamoms and a few grains of camphor added forms an excellent laxative drink useful in fevers, sun-stroke, and in inflammatory affections In loss of appetite and disinclination for food an agreeable cooling drink known as *Amlica pana* is prescribed —Macerate some tamarind pulp in water, strain and add black-pepper, sugar, cloves, camphor and cardamoms to taste Tamarind is useful in preventing or curing scurvy *Pulp of the ripe fruit* as well as a *poultice of leaves* are recommended as applications to inflammatory swellings to relieve pain Hakims consider the pulp useful for checking bilious vomiting and for purging the system of bile and to adjust humours "Pulp of the fruit, when preserved in sugar, makes a cooling drink In the absence of lemon, tamarind can be used for its antiscorbutic properties Vaidyas also consider the ripe pulp of the fruit to be a very effective laxative in habitual constipation and enters into many of their medicines"[1] A *gargle* of tamarind water is useful in healing aphthous sores and sorethroats *Ashes of the burnt shells* of ripe fruit are used as an alkaline substance along with other

Buthur Bom —Bathur Kon —Undrachekan) found on the temperate Himalayas, common in Tibet and on the Nilgiris "Most of the taraxacum that is used in the preparation of the pharmacopoeial drugs is imported The indigenous root is somewhat smaller than the imported variety but is effective' —(Chopra) The milky juice contains a bitter amorphous principle—taraxacin, a crystalline principle—taraxacerin also potassium and calcium salts, resinoid and glutinous bodies Root contains inulin 25 p c, pectin sugar, levulin ash 5 to 7 p c Root is a valuable hepatic stimulant and very beneficial in obstructions of the liver, chronic disorder of liver and visceral diseases It is also a mild tonic, diaphoretic, cholagogue and diuretic 'Powdered root in doses of 10 to 15 grains is used as a hepatic stimulant"—(Chopra) *Dried root powder* is frequently used mixed with coffee A popular combination is that of the *fluid extract or decoction of the root* with podophyllum 'useful in jaundice hepatitis (chronic liver congestion and torpor), and in indigestion Dose 1 to 2 ounces"—(Chopra) Root is also given in dyspepsia, jaundice dropsy, chronic skin diseases and cachectic disorders generally Decoction of the sliced fresh root (1 in 20 reduced to 10) with the addition of cream of tartar (4 drachms to the pint) is taken in 2-ounce doses twice or thrice a day

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2440 TAVERNIERA NUMMULARIA, DC

(N O —Papilionaceae)

(*Bom & Sind* —Jeti-mad) met with in Sind, Punjab and *Deccan Leaves* ground into paste are applied as poultice to sloughing ulcers to keep them clean

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2441 TAXUS BACCATA, Linn.

(N O —Coniferae).

(*Sans* —Manduparni, Talispatra, Barahmi *Eng* —Himalayan Yew *Hind* —Thuneer, Birmi, Zirnubbirmi, Thuno *Ben* —Sugandh, Burmie, Bhrmie, Birmi *Bom* —Birmu, (leaves) Talispatr *Punj* —Birmi, Tung, Barma, Rikhai Thona (leaves—birmi) *Kumaon* —Thaner, Thuner, Gallu

Kash —Tung Sungal Postil Chatung) is a native of temperate Himalayas, Afghanistan to Bhutan and Kassia Hills, Upper Burma Constituents —There is an alkaloid called taxine —(Chopra) Action —Carminative, expectorant, stomachic and tonic —(Chopra) Leaves are somewhat similar in property to Digitalis In the form of *tincture* (1 in 8) dose ½ to 1 drachm, or *infusion* (1 in 20) dose ½ to 1 ounce, it is used as antispasmodic and given in asthma, haemoptysis, epilepsy and other spasmodic affections *Leaves* contain a volatile oil, tannic and gallic acids and resinous substance called toxin Yew *leaves* (found in most of the towns of Northern India) and *fruits* are given for their emmenagogue, sedative and antispasmodic effects They act as antilithic in calculus complaints *Leaves* are prescribed in hysteria, epilepsy and nervousness"—(Chopra) *Dried leaves* and *twigs* constitute *talispatra* of Indian bazaars It is remarkable that in Bengal bazaars the *talispatra* should be an Abies—See Abis webbiana Used in scorpion sting also

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2142 TECOMA UNDULATA G Don

(N O —Bignoniaceae)

Hind & Beng—Rugtorra *Punj* Rohira) Bark is a remedy for syphilis

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2143 TECTONA GRANDIS Linn

(N O —Verbenaceae)

ns a local application for the relief of headache, toothache, and to subdue the inflammation and irritation of the skin set up by the use of marking nuts and cashewnuts It is also used dispersing inflammatory swellings Oil of the nuts is used to promote the growth of hair and also to cure itchiness of the skin Bruised seeds with *palasa papada* are used as varalians over the pubes in partial suppression or retention of urine

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2444 TEPHROSIA HIRTA Ham

(N O —Papilionaceae)

Is growing wild in Southern India

2445 TEPHROSIA PURPUREA Pers

See Galega purpurea

2446 TEPHROSIA VILLOSA Pers

(*Tam* —Vayakkavalai) Leaves are used in dropsy

2447 TERAMNUS LABIALIS Spreng

(N O —Papilionaceae)

(*Sans* —Masha parni *Hind* —Mashparni *Ben* —Mashani *Tam* —Kattualandu) grows wild in Southern India Action —Stomachic and febrifuge Used in nerve diseases paralysis and rheumatism Also see Glycine labialis

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2448 TERMINALIA ARJUNA W & A Pentaptera glabra P angustifolia

(N O —Combretaceae)

(Sans —*Arjuna* Kukubha (red) Raktarjuna *Eng* —Arjuna Myrobalan *Hind* —Arjun Kahu *Ben* —Arjun *Bom* —Arjuna sadra *Mah* —Shardul Sanmadat *Guj* —Sajadan Sadado, *Tel* —Yermaddi Maochettu Tella madoi *Tam* —Vella marda Vellai maruda maram Maruthu *Can* —Billimatti

Tormatti, Holematti) is found in Lower Himalayas, Bihar, Bengal Chota Nagpur, C.P, Burma, Central and Southern India and Ceylon Bark contains tannin including gluco-tannic acid 15 p c, a colouring matter, a glucosidal body and ash 34 p c containing sodium, pure calcium carbonates and traces of alkaline chlorides, ('the watery extract contains as much as 23 p c of calcium salts and 16 p c of tannins")—(Chopra). and traces of alkaline chlorides 'Very little colouring matter besides the tannin is extracted by alcohol According to Ghoshal the root contains —(1) sugar (2) tannin, (3) colouring matter (4) a body of the nature of a glucoside and (5) carbonates of calcium and sodium and traces of chlorides of alkali metals He also found that the total tannin content amounted to 12 p c and the content of ash to 30 p c ' Chopra and his co-workers after careful analysis of good specimens of the bark say that the following are their results —Neither alkaloid nor glucoside could be found, and there was no substance of the nature of an essential oil It contains unusually large quantities of calcium salts with small amounts of aluminium and magnesium salts about 12 p c of tannins consisting of mainly pyrocatechol tannins an organic acid with a high melting point and a phytosterol an organic ester easily hydrolysed by mineral acids some colouring matters sugars etc

The different fractions obtained from petroleum ether, alcoholic and aqueous extracts during analysis were carefully tested but with the exception of calcium compounds no other constituent producing any effect on the heart or on any of the other tissues were detected The colouring matter was separated and tested with the same result.

TABLE

Showing Mineral Constituents per cent of Bark of the Terminaliae

	CaO	CO_2	MgO	P_2O_5	SO_3	Cl	K_2O	Na_2O	Fe_2O_3	SiO_2
1. T arjuna	14 995	10 602	0 280	1 065	0 119	0 220	1 017	—	—	0 051
2 T bialata	14 861	10.256	0 273	1 093	0 102	0 043	0 346	—	—	0 080
3 T *belerica*	14 046	10.242	0 782	1 218	0 124	0 835	0 789	0 485	—	0 158
4 T tomontosa	12 012	9 253	0 484	0 953	0 081	0 286	0 256	—	—	0 089
5 T Manii	11 823	7 927	0 494	0 923	0 112	0 091	0.256	—	—	0 076
6. T myriocarpa	10.363	8 671	0.226	0 702	0 081	0 036	0.354	0.218	—	0 058
7 T Chebula	10 244	8 302	0 557	0 870	0 058	0 188	0 425	—	—	0 366
8 T catappa	7 511	5 579	0.501	0 854	0.340	0 492	0 587	0 364	—	0 031
9 T travancorensis	7 062	4 930	0 332	0 627	0 068	0 043	0 194	—	0 003	0 107
10 T. pyrifolia	6 741	4 843	0 313	0 632	0 069	0 029	0 .11	—	0 042	0 132
11 T oliviri	6 663	4.389	0 265	0.519	0 048	0 008	0 022	—	—	0 011
12 T pallida	5 589	3 636	0 434	0.391	0 139	0 017	0.282	—	—	0 080
13 T citrina	5 147	3 635	0 089	0 023	0 069	0 016	0 127	—	—	0 047
14 T coriacea	4 666	2.933	0 190	0 447	0 171	0 040	0 066	—	—	0 021
15 T paniculata	4 427	2 806	0.213	0 459	0 146	0 019	0 073	—	—	0 078

sively in the leaf-juice of Adhatoda vasika is administered as a linctus well mixed with honey, sugar-candy and cow's ghee in cases of phthisis. It stops the blood in the sputum and clears up the sores and cures them.—(Bhavaprakasha): this mixture is now used by Kavirajas as an *Anupana* in the treatment of consumption along with reduced minerals, such as pearl coral, gold, lead and mica In many cases the effect is very encouraging

Remarks.—"Caius, Mhaskar & Isaac (1930) reported that the dried barks of the Indian species of genus Terminalia exhibit a very great variability of forms. There are as many as 15 varieties (see Table herewith). The barks of these varieties of Terminalia are so very similar in appearance that there is very great likelihood of their being mistaken for one another In India, practically no distinction is made by the drug-sellers between these varieties and all of them are being constantly exhibited and sold indiscriminately as 'arjuna'. These workers have studied the pharmacological actions of all the barks separately using hot infusion, decoction and alcoholic extracts of the dried and cleaned bark. The conclusions are given below —"The pharmacodynamically-active barks of the commoner Indian species of Terminalia are either (1) mild diuretics. T arjuna, T. belerica, T. pallida, or (2) fairly potent cardiac stimulants, T. bialata, T. coriacea, T. pyrifolia, or (3) both diuretic and cardiotonic. T. catappa, T. chebula, T citrina, T. myriocarpa, T oliveri, T. paniculata, T. tomentosa These conclusions are different from those reported from the Calcutta School of Tropical Medicine. Therefore, Chopra says that further study is necessary to confirm the findings already recorded"

(1) (2) (3) (4) (5) & (6)—Chopra's "I D of I " pp. 401/404

2419. TERMINALIA BELERICA. Roxb.

(N.O:—Combretaceae).

Sans.—Vibhitaka; Vibhitaki; Vipitakaha; Anilaghnaka; Aksha; Bahira; Karshapalah; Kaligrvamah; Bhuta-vasah. *Eng*.—Beleric myrobalans. *Hind*—Bhaira; Bahera; Bhera;

slightly roasted on fire, and the corneal portion of the fruits thus prepared is to be kept in the mouth for the relief of sore-throat, cough and catarrh. It is a constituent of *triphala*, is prescribed in diseases of the liver and gastro intestinal tract and in a large variety of diseases. Dr. A. Lakshmipathi, B.A., M.B.C.M., Bhishagratna had cleaned and dusted a sharp cut made on him by a dirty razor with fine *triphala churnam* near at hand, soon after removing the firm bandage which he had applied to check the free flow of blood and had found no pain at the spot and a thick cap formed which came away after two and a half days leaving a clean and healthy line marking the site of the cut. The regeneration and the healing of the tissues was perfectly alright and in fact better than what he expected with any other treatment. He also tried *Triphala Churnam* in a case operated for phimosis, where there was much bleeding. Though the dusting of fine *triphala* appeared to be crude yet the effects were very good. The bleeding stopped in about 10 minutes. A thick paste formed by that time and effectively capped the whole area. The case was closely watched. There was no subsequent rise of temperature or any other ill effect followed. In about 6 days after the operation the cut margins healed well. In all fresh wounds immediate dusting of *triphala* without washing, is of great utility in making the wound heal by the first intention. For wounds suspected of syphilitic character one part of *Rasa karpooram* mixed in 8 parts of *Triphala Churnam* is generally used. *Kernel* is narcotic and astringent and is used as an application to inflamed parts. In the Konkan the kernel with that of the marking nut is sometimes eaten with betel nut and leaf in dyspepsia. Jogis consider that one *kernel* eaten daily increases the appetite for sexual indulgence. Oil expressed from *kernel* is used as a dressing for the hair; also as a substitute for ghee, externally it is applied in rheumatism. *Unripe fruit* is purgative. *Dried ripe fruit* is astringent and employed in dropsy, piles and diarrhoea also occasionally in fever. Fully ripe or dried fruit, mixed with honey, is used as an application in ophthalmia. For dry and rough cough a linctus made of equal parts of the dried *beheda* pulp, *sain-dhava* pith, black pepper and sufficient quantity of honey

Kurka (tree), Pinda karakkay (fruit) Tam —Kadookai, Kaduk-kai (mature) Pinchu kadukkai (immature), Kada kai, Kaduk kay (tree), Kaduk-kay-pinji (fruit), Kadukkai-poo (these are gall like excrescenses on the leaves and young branches of T chebula) *Mal*—Kadukkai *Can*—Amlaykayi, Alate-huvvu (Poo-flowers) Alale or Hirade (dye) (fruit), *Sinh*—Aralu *Malay*—Buah Kaduka

Habitat—This tree is wild in the forests of Northern India, Central Provinces and Bengal common in Madras Mysore and in the southern parts of the Bombay Presidency

In general myrobalans are oval in shape and about two inches long and are of a dull yellow colour There are 4 varieties (1) *Survari harade*, which are large dense and heavy about 2 inches long yellowish brown, when cut it contains yellowish or darkish brown, pulp and stone (2) *Rangari harade* these are smaller less wrinkled and less furrowed than the above variety, in length about an inch the epidermis is yellow when cut it presents a yellow dried pulp and a stone The pulp is less astringent than that of *Survari* hirade (3) *Bala harade* are smaller than the above two varieties Their colour is deep brown or black highly wrinkled dark or brown epidermis Their pulp is dark and homogeneous there is no stone (4) *Jara harade* these are the smallest of all Other characters are similar to those of *Bala harade*

Parts Used—Dried fruits immature fruits mature fruits myrobalans and galls mostly the outer skin of the fruits 'Two varieties are used in Unani viz—(1) Halila Zard (Manju) (2) Halila Kabli (Surat) besides Halila Siah (pinju) —(Therapeutic Notes)

Constituents—Myrobalans contain astringent principles Tannin (tannic acid) 45 p c, and a large amount of gallic acid Mucilage a brownish yellow colouring matter chebulinic acid which when heated in water splits up into tannic and gallic acids

Action—Myrobalans are a safe and effective purgative (gentle laxative) astringent and alterative Unripe fruits are

used in loss of memory, giddiness, faintness, etc (3) A compound decoction named *Pathyadi Kvatha* is recommended by ancient writers and it consists of chebulic myrobalans, pulp of Cassia fistula, root of Picrorrhiza kurroa, root of Ipomoea turpethum and emblic myrobalans equal parts, in all two tolas Dose is 2 to 4 ounces as a purgative Nowadays senna and rhubarb are added to the above preparation (4) Another decoction called by the same name and containing the three myrobalans, chiretta and *gulaucha* is used in doses of 1 to 2 ounces as alterative, bitter-tonic and antiperiodic, useful in dyspepsia feverishness and hemicrania Or (5) a decoction made of 5 drachms of powdered *harade*, 1 drachm of powdered rhubarb root and 4 ounces of water, boiled for 10 minutes, is also a nice purgative A decoction of bruised myrobalans 6 in number cloves 1 dr water 10 ounces, boiled for 10 minutes and strained, is a household laxative Dose to be administered early in the morning (Chopra's IDof 1 p 599) (6) As a laxative powder 1 drachm each of *harade* fennel and sugar taken once or twice daily acts well (7) Take of Chebulic myrobalans 5, Belleric myrobalans 1, Glycerrhiza 1 bra 5 Coriander seeds 6, Foeniculum vulgare 6, Anise seeds 4 Rose buds 5 ond sugar 10 parts Mix and make a powder Dose is 10 to 20 grs Used in rheumatism (8) Take of Chebulic myrobalans 3 drs, *Bala harade* 4 drs, Raisins 5 drs Belleric myrobalans 3 drs., almond oil 3 drs and honey 2 drachms Mix and prepare a decoction in the usual way Dose is 3 to 6 ounces Used as an aperient in head affections hepatic congestion dyspepsia abdominal complaints and biliousness (9) Take of *Post halila Kabli Post halila Zard* (Chebulic myrobalans), Emblic myrobalans Belleric myrobalans, and small black chebulic myrobalans, of each 3 parts, Rose buds, *Sanat* (Senna) and water melon each 1 part, and dried ginger 2 parts Mix with oil of almonds and sugar candy and make into the consistency of *syrup* Dose is 1 to 2 t ls used in headache As alterative tonic for promoting strength and preventing the effects of age, chebulic myrobalan is taken every morning with salt in the rainy season, with sugar in autumn with ginger in the first half of winter with long pepper in the second half, with honey in spring and with

constipation —(Ind Drugs Report, Madras) It is made up of Chebulic myrobalans, Emblic myrobalans, Chebulic myrobalans (unripe and small variety), 1 palam each, powder, grease it with almond oil, add honey and turn into confection. Dose is one tola at bed time, 2 hours after meals—(I D R , Madras) As laxative and alterative useful in dyspepsia and constipation, a pill known as *Pranadi Gutika* is recommended of which the chief ingredients are —chebulic myrobalans, dry ginger, piper nigrum, piper longum, root of piper longum and sugar Dose is 1 to 4 tablets to be taken twice a day with water A compound powder called *Narsimha Churna* possesses stimulant, tonic and alterative properties and is useful in sexual debility, neuralgia, dyspepsia and syphilis it was tried in cases of myalgia and atonic dyspepsia and found to give relief—(Ind Drugs Report, Madras) Its chief ingredients are three myrobalans (Chebulic, beleric, and emblic), *Trikatu* (the three acrids) Sesamum indicum and Semecarpus anacardium Dose is 10 to 40 grains, to be taken twice a day with ghee or sugar—(I D R , Madras) Equal parts of dried myrobalans in combination with emblic and beleric myrobalans and catechu, both finely powdered and rubbed into a thick paste with sufficient ghee or some bland oil, make an excellent ointment as an application to aphthae for chronic ulcerations, ulcerated wounds and many skin diseases attended with profuse discharge Such and other ointments of Chebulic myrobalans are substitutes for the B P gall ointments, and used externally as an astringent in piles For blepharitis an ointment made of equal parts of Chebulic myrobalan (when as big as a raisin) and Quercus infectoria, and sufficient quantity of pure water is recommended in Unani Works A decoction of chebulic myrobalan is a good astringent wash useful in bleeding piles and some vaginal discharges A fine paste made by rubbing the fruit with a little water mixed with carron oil and applied to burns and scalds effects more rapid cure than with carron oil alone. Finely powdered it is used as a dentifrice useful in carious teeth bleeding and ulcerations of gums Coarsely powdered and smoked in a pipe it affords relief in a fit of asthma

2452 TERMINALIA CITRINA, Roxb,

Belonging to the same Family and met with in Assam, East Bengal and Burma, (*Hind*—Harira, *Ben*—Haritaki Kavya) is similar in medicinal properties to those of the chebulic myrobalans

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2453 TERMINALIA PANICULATA, Roth

(*Bom*—Kenjal Kindal *Tam*—Pekarakai *Tel*—Neemeeri *Can*—Honal, Huluva, Hunab) is found in Malabar, Lower hills from Bombay to Cochin Nilgiris and Coorg mountains *Juice* (4 tolas) of the fresh *flowers* rubbed with root of Cocculus villosus given every hour, is used as a remedy in cholera and in poisoning with opium 4 tolas of the juice with an equal quantity of *quaia* bark juice is given frequently In paralytis juice with ghee and *saindhava* is applied locally

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2454 TERMINALIA TOMENTOSA Bedd

this tree, is used by chewers of betelnut Gum from the trunk is used as a cosmetic and incense

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2455 TETRANTHERA APELATA;

T roxburghii, T. lavrifolia

See Litsea sebifera

2456 TEUCRIUM CHAMAEDRYS. Linn

(N O —Labiatae)

(*Arab*—Kamazaryns) Action —Tonic, diuretic and sudorific Constituents —Essential oil and bitter substance

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2457 TEUCRIUM POLIUM, Linn

(Arab—Buliun), contains essential oil

2458 TEUCRIUM SCORDIUM Linn

(N O —Labiatae)

Eng —Water Germander Fr —Germandree aquatique, Germandree d'eau, Ger —Batengel, Knoblanch gamander

Habitat —W Himalayas Afghanistan N & W Asia Europe and N Africa

Parts used —Fresh herb

Constituents —An amorphous bitter substance

Action —Antiputrefactive (It was observed after a battle that the corpses lying on scordium did not decompose as soon as the others) The herb protects the lungs from putrefaction The herb is considered in Europe antiseptic, diaphoretic, and stimulant In Spain, the flower-tops and leaves are considered aromatic bitter, astringent, and are mostly used as diaphoretics and vermifuges

Uses —According to old European herb books the herb is valuable in phthisis against cough and phlegm Dr Matthiolu describes it as one of the outstanding remedies given in pestilence and pestilential fevers An infusion gives excellent results in all inflammatory diseases

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2459. THALICTRUM DALZELLI, Hook

(N.O:—Ranunculaceae)

Occurs on the Bababudan Hills of Mysore.

2460. THALICTRUM FOLIOLOSUM, DC.,

(N.O:—Ranunculaceae).

Is a tall perennial rigid herb.

(*Sans. Ben. & Mah.*—Trayamana. *Hind.*—Pilijari; Pinjari. *Bom.*—Manurana; Mamiran. *Eng.*—Gold Thread. *Pers.*—Asprak. *Punj.*—Gurbiani) found on the temperate Himalayas, Khassia Hills, and higher elevations of the Nilgiris and the Pulneys. Action:—Tonic, aperient and febrifuge. Root is like gentian very bitter and tonic and contains a compound of the alkaloid Berberine. It is useful in jaundice, flatulence and visceral obstructions. As a *collyrium* it clears the sight. *Cold infusion* of the root is used as a lotion for ophthalmia. It is also a valuable tonic and antiperiodic useful in fevers and atonic dyspepsia. Root also possesses aperient and diuretic properties; a good substitute for rhubarb; dose is 5 to 10 grains; of the *tincture* (1 in 8) the dose is 20 to 30 minims, and of the *liquid extract* 5 to 20 minims. A *snuff* prepared from it clears the brain; used in coryza; and relieves toothache. Five grains of powder or two grains of the *watery extract* given thrice daily acts on the bowels and is given with benefit in intermittent fevers and in convalescence from acute diseases. Dose of the infusion (1 in 40) is ½ to 1 ounce.

2461. THALICTRUM JAVANICUM

Is a species which occurs on the Nilgiris, Pulneys and Anamalais above 6000 feet.

2462. THEA ASSAMICA

See Thea sinensis and other varieties of Thea and also Camellia theifera.

(*Eng.*—Tea Plant. *Ben.*—Cha-gaca. *Fr.*—The. *Ger.*—Thee) is a shrub found wild in Upper Assam and is considered the parent species of all cultivated varieties of the tea plant.

Dried leaves of the tea plants contain in addition to what is mentioned under "Camellia theifera", insoluble inorganic matter 50 p c., and ash (containing iron, potash, silica alumina and magnesia) 4 p.c. Leaves of this species are astringent, especially if long infused and gently exhilarating. Its excessive use is easily apt to produce dyspepsia and nervousness. Tea of these leaves is often aromatized with sweet-scented flowers or leaves of rose, jasmine etc., and in moderate doses. is used as a nervine stimulant and restorative like coffee in ordinary fatigue. In over-doses it has a degenerative effect on the nervous system analogous to what follows even the moderate dose of alcohol—See also Camellia theifera

2463. THEOBROMA CACAO OR COCO—Linn.

(NoO:—Sterculiaceae)

Eng.—Cacao; Cocoa; Chocolate tree; *Fr.*—Cabasse; Cabosse; Cacao. *Ger.*—Kakaobaum. *Sinh.*—Chocolathgas; Cocomaram.

Habitat:—The plant is a native of tropical America; Central and S. Africa, cultivated on the Nilgiris and in Ceylon. One species of Theobroma is also sometimes grown in the Bombay Presidency.

Constituents:—Seeds contain albuminoids or nitrogenous substances starch water, fat, sugar, celiulose and mineral matter; also the alkaloid 1.5 to 2.4% theobromine, and a colouring matter called cacao-red.

The average composition of good West Indian beans is:—

Fat (Cacao-butter) 50.0%; Starch 10%; Albuminoids 20%; Water 12%; Cellulose 2%; Mineral matter 4%; Theobromine 2%.

It is to the cacao-red and the volatile oils that the beans owe their colour, peculiar aroma, and to a great degree their characteristic taste. By treating the shells of cocoa-beans with benzine it is possible to extract the fat they contain, which is sold under the name of second Dutch cacao-butter; however the value is but small. Leaves contain an alkaloid called caffeine in a very small amount.

Action —On account of the high percentage of nitrogenous materials, fat and starch which it contains the nutritive value of cacao is great, and the alkaloid theobromine gives it stimulating properties also *This stimulating effect of cacao* is increased by the volatile oil developed during the process of roasting and to which cacao owes its characteristic aroma. The bean contains approximately half its weight of fat (known when extracted as "oil of theobroma or cacao-butter) This with the other constituents, renders the beans very nutritious, but too fatty to suit many people's taste One of the first operations in the preparation of cacao is to get rid of the greater portion of this fat It is not that the fat is harmful or indigestible, but simply that there is too much of it for ordinary purposes The amount of theobromine contained is comparatively small, and yet to it cacao owes its stimulating action In 1840 Wosscressenzky succeeded in separating the alkaloid theobromine from the beans, he found that chemically it differed little from caffeine and theine, the active principles of coffe and tea, whence it is that the physiologically stimulating effect of cacao, coffee, and tea is very similar Theine, caffeine, and theobromine act as poisons when they are consumed in large quantities Seeds are analeptic

Remarks —Officinal in Pharmacopoeias of India and U K

Uses (contmued) —Infusions of the shells cacao-beans are sometimes employed to improve the taste of coffee-beans during roasting, and also to enhance the flavour of coffee-substitutes made out of corn or malt Cacao-extracts are also made out of the shells, by boiling them with water, the extract thus obtained is reduced by evaporation until it acquires a certain strength This extract is not only used as a substitute for coffee and tea, but is also sometimes mixed with cacao and chocolate

Cacao-shells are fed to cattle to increase the quantity milk, and the analysis of this milk showed an increase of butter and milk-sugar

In comparing the three staple beverages, cocoa, tea and coffee, only cocoa can be regarded as a food, because, the whole cocoa bean is roasted and ground into such a fine

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(NoO:—Sterculiaceae)

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flowering tops is deodorant and antiseptic and is a remedy for toothache, and decoction of *leaves* cures itch and skin diseases For further particulars see B.P.

2468. THYMUS VULGARIS, Linn.

(T. zygis, variety—gracilis).

2469. THYSANOLAENA ACARIFERA, Nees.

(N.O:—Gramineae)

(*Santhal.*—Karsar) Root is used for mouth-wash in fever.

2470. TIAGIDIUM INDICUM

See Heliotropium indicum.

2471. TILIACORA RACEMOSA, Coleb.

(N.O:—Menispermaceae).

(*Hind.*—Baga-mushada *Ben.*—Tiliakora. *Tam.*—Tiga-mushadi). Constituents—Alkaloid tiliacorine Used as antidote to snake-bite.

2472 TINOSPORA CORDIFOLIA, Miers. or Menispermum cordifolium or Cocculus cordifolia.

(N.O:—Menispermaceae).

(*Sans.*—Guduchi, Amrita, Soma-valli. *Hind.*—Gurach; Gulancha, Giloe. *Ben.*—Gulancha; Gurach, Gadancha; Palo (extract) *Punj.*—Gilo-gularich, Gilo; Garham; Palo; Sat-gilo (extract). *Bom.*—Gulwail; Gharol; Gado; Galo. *Mah.*—Gula-veli, Guloe *Tam.*—Shindil-kodi; Shindil-Shak-karai (extract). *Tel.*—Tippatige; Guluchi; Guricha; Mana-pala; Tippa-tige-sattu (extract); Tippatege-veru (root)

Habitat.—Occurs in almost all districts of Madras Presidency.

Parts Used.—Stem and root.

Habitat—Found in the lower sub-tropical Himalayas Kumaon, Bhutan, Khasia Mountains, Western Nilgiris, Southern India and Ceylon, and in bushy places, from sea-level upto 6,000 ft. very common

Parts Used—Root, bark leaves and fruit

Constituents—Root bark contains a resin, essential oil and "a bitter substance, citric acid, pectin, starch etc., but the chief constituent is *berberine*' which, however, is present only in small quantities Root bark as well as the fresh plant has an aromatic odour"[1] Leaves distilled yield a yellowish green essential oil of sharp aromatic odour like that of citron, containing citronella-aldehyde "The chief constituent is a camphor like body with a melting point of 96·5-97 Citronellal and linaool are also present'[2] 'Root contains a bitter principle large quantities of yellow-resin which the vascular and cortical system contain Inner bark also contains a trace of berberine, some quantity of a sticky resinous product, which is insoluble in water or dilute acids but readily soluble in ether, and appeared to be identical with the similar substance present in the yellow powder The central woody portion of the root yielded no berberine—J Ch S 1895, T 413)[3]

Action—Fresh *root bark* and the *whole plant* are pungent and aromatic, *root bark* is an aromatic tonic, stimulant and antiperiodic Vyas & Bhatia's (1932) attempts show that a freshly-prepared infusion of the drug is only very feebly toxic, the toxicity being about one-fifth of that of cinchona Bitter, stomachic, tonic and antiperiodic *Whole plant* is hot and pungent. *Root* is pungent and sub-aromatic, and is considered as stomachic and tonic It is given in a weak infusion to the quantity of half a teacupful in the course of the day Leaves are also sometimes used for the same purpose—(Anslie) Fresh root bark is administered by Telinga physicians for cure of remittent fever.—"I conceive every part of this plant to be possessed of strong, stimulating powers, and have no doubt but under proper management it might prove a valuable medicine where stimulants are required."—(Roxb)

three days, it prevents the return of paroxysm as successfully as very large doses of quinine. To render the cure more perfect & complete, the tincture or decoction should be continued in smaller doses for 4 or 5 days more. The beneficial influence of the tincture or decoction of T. aculeata in remittent fever is precisely the same, and the only difference is that it sometimes relieves the exacerbation and checks its return at once; and with others, it first converts the remittent into intermittent fever and then cures the latter in the same way as explained above Out of the many severe and very obstinate cases of malarious, jungle and other fevers, which yielded to this drug, there were several in which quinine with arsenic was first tried and failed As the dose of the tincture of T. aculeata is much smaller than that of its decoction, and as it can also be prepared and kept always ready for use, it is preferable to the latter, but there is no difference whatever between the medicinal properties of preparations

The root-bark of T aculeata is not only much cheaper than quinine and Warburgh's tincture, but is also one of the cheapest drugs in Southern India, its price being only about 2 to 3 annas per lb In addition to this, its advantages over quinine are that it, unlike the latter, can be freely and successfully administered *in the absence as well as in the presence of fever* and that, however long and frequently it may be employed, it never produces ringing in the ears, deafness and some other disagreeable symptoms which are so commonly observed in the use of quinine."—(Dr. Rheede)

"The infusion of the root-powder, in the proportion of an ounce of the powder to ten fluid ounces of boiling water, makes a capital preparation. Dose one to two ounces twice or thrice daily"—(Late Lt. Col Kirtikar).

(1), (2), (4) & (5)—Chopra's "I D of I" p 407.
(3)—Journal of Chem Society, 1895 Part I, p 413

2477. TODDALIA BILOCULARIS, W. & A.,

(N.O:—Rutaceae).

(*Sans*—Krishna-aguru *Tam*—Devadarom Wood boiled in oil is used in eye and ear diseases, rheumatism and asthma. Decoction of root is *used in biliousness.*

2478. TORENIA ASIATICA, Linn

(N.O:—Scrophulariaceae).

(*Tam*—Kakapu) Leaves are used as a cure for gonorrhoea

2479 TORULA SACCHAROMYCES; T. cerevisae,

(N.O:—Fungi).

Is a plant with the aid of which yeast is produced. It is used in diabetes, diarrhoea, scurvy, typhoid fever, and also as anti-septic poultice It is a peculiar product of the fermentation of malt liquors produced by aid of alcoholic fermentation of saccharine fluid by this fungus It occurs in two forms, the top of surface yeast, a semi-fluid frothy mass cellular of a peculiar odour The bottom or sediment is yeast. Dose is ½ to 1 oz Is it tonic, stimulant and laxative

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2480 TRACHELOSPERMUM FRAGRANS, Hook.

(N.O.—Apocynaceae).

(*Kumaon*—Dudhi) Used as a substitute for Alstonia scholaris

2481. TRACHYDIUM LEHMANNI, Benth.

(N O—Umbelliferae).

(Ind. Baz—Shekakul)

2482. TRACHYLOBIUM HORNEMANNIANUM, Heyne.

(N.O—Papilionaceae).

(*Eng*—Gum cobal *Ind. Baz*—Sandarus). **Action:—**Astringent, anthelmintic, diuretic and emmenagogue. Used in scorpion-sting

2483 TRADESCANTIA AXILLARIS, Linn, or Cyanotis Axillaris, (N O —Commelinaceae)

Is an annual shrub (*Hind*—Baganella Soltraj *Bom*—Itsaka. *Tel*—Golagandi *Tam*—Nirpulli) found throughout India in the plains *Seeds* contain a little fat, albuminoids, 16 p c., carbohydrates 24 p c cellulose 9 p e, and ash nearly 9 p.c *Seeds* have proved to be a valuable resource in times of famine The drug is used in tympanitis *Juice* of the plant is externally applied in cases of ascites especially when combined with a little oil

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2484 TRAGIA INVOLUCRATA, Linn, T cannabina (N O —Euphorbiaceae)

(*Sans*—Vrishi kali Kasaginnie *Hind*—Barhanta *Ben*—Bichuti, Jal bichuti *Bom & Duk*—Kanchkuri *Mah & Kon*—Khajkotli *Can*—Haligilu *Tam*—Kanchuri vayr, Kanjuri, Sirukanchni *Tel*—China dulogondi, Telladurada gondi *Mal*—Sheriganam) a stinging nettle found everywhere in India *Root* is valued in febricula and in itching of the skin It is used in the form of paste to aid the extraction of guinea worm A paste with *tulsi* juice is also employed as a cure for itchy skin eruptions—(Dymock) Action—Diaphoretic, alterative and diuretic *Root* is diaphoretic and given in decoction in doses of 2-4 ounces in fevers when the extremities are cold and also for pains in the legs and arms. *Decoction of the root* (1 in 10) was tried and found useful in relieving bronchitis and the attendant fever—Ind Drug Report, Madras) The drug is also used in scorpion sting

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2485 TRAGOPOGON PORRIFOLIUS (N O —Compositae)

(*Eng*—Salsify) found in Bombay Presidency

2486 TRAGOPOGON PRATENSE, Linn.

Constituents —As—0 007 mg in 100g plant

2487 TRAPA BISPINOSA, Roxb., T. natans or T. bicornis,

(N O —Onagraceae).

Is an aquatic plant (*Sans*—Sringataka *Eng*—Indian Water Chestnut, Indian Caltrop *Fr.*—Noix aquatique Cornicle *Ger*—Gemeine Wassernuss *Hind*—Singhara *Ben.*—Paniphal, Singara *Bom. & Mah*—Singada. *Guj*—Singari. *Sind.*—Shringata *Punj*—Gaunri *Tom.*—Pauri mattaisal, Singarakottai *Mal*—Karimpolam) found commonly floating on the surface of lakes, tanks and pools in Kashmir and also other parts of India In Kashmir the water-nuts form a staple farinaceous food Fruit or nut or seed contains manganese and starch It is nutritive, sweet tonic and cooling *Fresh fruits* are edible, both raw and cooked, dried ones are baked and eaten They are also grated into flour and made into cakes The nutritive value of the kernels is shown by analysis to be equal to that of rice *Fruits* are refrigerant and useful in diarrhoea and bilious affections with diarrhoea, with milk *fruits* are used in nervous and general debility, seminal weakness and leucorrhoea. As *confection* made of it is given in 2 to 4 dr doses In menorrhagia Hakims prescribe it as a *compound powder* thus —Take of Trapa bispinosa 2 tolas, Kamarkus (kino) 1 tola and white sugar 3 tolas. Divide into 7 parts and give 1 part every day. The *upper portion* of the *stem* was used in *poultices* as a discutient and the expressed *juice* in eye-diseases The drug is also used in scor-

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2488 TREMA ORIENTALIS, Blume

(N O—Urticaceae)

Sans.—Jivanti *Tam.*—Chenkolam, used in epilepsy

2489. TREWIA NUDIFLORA, Linn., T. macrophylla,

(N.O:—Euphorbiaceae).

(*Sans.* & *Hind.*—Pindara. *Ben.*—Pitali; Pittori. *Bom.*—Petari. *Mal.*—Sivani. *Can.*—Katkamba) is found in various parts of India. *Root* contains resinous matter and fat. Constituents:—An alkaloid. *Decoction of root* (1 in 10) is used as stomachic and alterative in flatulence, gout, rheumatism etc.

2490. TRIANTHEMA DECANDRA, Linn.

(N.O:—Ficoidaceae).

(*Sans.*—Punarnavi. *Hind.* & *Ben.*—Gadabani; *Ben.*—Gada-Cani. *Gwalior.* & *Duk.*—Bhees-khupra. *Tel.*—Tella ghalijeroo; Galijeru. *Tam.*—Saranai; Sarvalai; Vallai-Sharunnai. *Can.*—Jaija-soppu) found in the Deccan Peninsula. *Root* and *root-bark* are aperient; its decoction is given in asthma, hepatitis and suppression of the menses *Root* ground up with milk and given internally is a specific in orchitis. *Juice of the leaves* dropped into the nostrils relieves one-sided headache.—(Watt).

2491. TRIANTHEMA MONOGYNA, Linn.,

T. obcordata; T. pentandra.

(N.O:—Umbelliferae).

(*Sans.*—Punarnava. *Hind.*—Lal-sabuni. *Hind.* & *Duk.*—Nasur Janghi. *Ben.*—Sabuni Lal and Lovet Sabuni; Gado-Cunya. *Punj.*—Bishkapra. *Guj.*—Satudo. *Mah.*—Vish khapra. *Tam.*—Sharvalaykiray; Sharunnay. *Tel.*—Ambati-maddu; Ghalijeroo. *Can.*—Muehugoni) is found throughout tropical India, low country and Ceylon. *Root* contains a glucoside similar in properties to Saponin. It is cathartic, abortifacient and irritant. Root when fresh is sweet. *Dried root* is given in *powder* with ginger as cathartic. As *infusion* (1 in 20) it is given in doses of 1 to 2 ounces in constipation, jaundice, strangury and dropsy. It is also used in torpid liver,

asthma and amenorrhoea *Plant* is boiled and eaten as a vegetable

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2492. TRIANTHEMA PENTANDRA, Linn.

(*Punj & Bom*—Bishkapra) Action—Astringent and abortifacient Used in scorpion-sting

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2493 TRIANTHEMA PORTULACASTRUM, Linn.,

(N.O—Ficoidaceae).

(*Tam.*—Sharunnai, Vellai-saranai; Shavalai, Sarvalai Tel.—Ambatimadu, Tella-galijeru); powdered bitter and nauseous root is given in combination with ginger as a cathartic; the root applied to the eye cures corneal ulcers, itching, dimness of sight, night blindness (Indian Medicinal Plants)

2494 TRIBULUS ALATUS, Delile

(N.O—Zygophyllaceae).

(*Hind.*—Gokhuri-kalan *Bom*—Trikundri) Uses same as T. terrestris

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2495. TRIBULUS AQUATICUS

See Trapa bispinosa

2496. TRIBULUS TERRESTRIS, Linn.

T. lenuginosus; T zeylanicus

(N.O—Zygophyllaceae).

Sans—Ikshugandhi, Gokshura; Trikantah *Eng*—Small Caltrops *Gwalior & Hind*—Chota-gokhru *Ben.*—Gokhuri *Arab*—Khara-khusk *Punj*—Kurkundal *Tel*—Palleru-mullu; Nirunji *Tam.*—Cherunerunche; Nerinji, Nerinjal

Mal—Nerungil, Nerinnil *Can & Kon*—Negil-mullu *Sinh* Trimen, Sambunerinchi.

Habitat—This trailing plant is common in sandy soil throughout India and Ceylon, plentiful in the United Provinces and in Madras The carpels or cocci of the fruit resemble a cloven hoof of the cow This variety is known as *mitha* (sweet) gokhru as distinguished from *kudva* or *moto gokhru* (Pedalium murex).

Parts Used—Fruit and root, especially, the entire plant is also used

Constituents—Extract of the powdered fruit was found to contain an alkaloid, a resin, fat and mineral matter 14 p.c 'The fruit is said to contain a substance having an aromatic smell and it gives off a fragrant odour when it is burnt "[1] "The fruit contains (1) an alkaloid in traces (0 001 per cent). (2) a fixed oil 3 5 per cent, consisting mainly of unsaturated acids, (3) an essential oil in very small quantities, (4) resins, and (5) fair amounts of nitrates An aqueous solution of the tartrate of the alkaloid, after removal of the alkaloid was found to contain sugars, etc , but no physiologically-active substance—(Chopra)"[2]

Action—Plant and dried spiny fruit are esteemed as cooling, demulcent, diuretic, tonic and aphrodisiac "The diuretic properties of the plant, no doubt, are due to the large quantities of the nitrates present as well as as the essential oil which occurs in the seeds "[3] Stems are considered astringent "Its action on the mucous membrane of the urinary tract closely resembles that of *Buchu* and *Uvaursi* flowers "[4] 'The plant which was also known to the old Greek physicians, is used in South Europe as an aperient and diuretic "[5]

Action & Uses in Ayurveda and Siddha.—Mathura rasam, seetha veeryam, mootralam, vrishyam, dipanam, balakaram, pushtikaram, in asmari, prameham, arsas, krichram, swasakasam, hridrogam—(Therapeutic Notes)

Action & Uses in Unani—Murakabul khuva, diuretic, aphrodisiac, increases semen, removes stones, causes nuzj in madda, in colic due to heat—(Therapeutic Notes)

Uses —*Plant* and *dried spiny fruits* are used in *decoction* or *infusion* in cases of spermatorrhoea, phosphaturia, diseases of the genito-urinary system such as dysuria, gonorrhoea, gleet, chronic cystitis, calculous affections, urinary disorders, incontinence of urine, gout, and impotence, also in uterine disorders after parturition and to ensure fecundity, and used in Northern India in cough, diseases of the heart and suppression of urine Water rendered mucilaginous by the plant is drunk as a remedy for impotence and an *infusion* of the *stem* is administered in gonorrhoea It is generally given with hyoscyamus and opium, "in inflammatory conditions of the urinary passages'[6] Chakradatta recommends a *decoction* of the *fruits* with the addition of impure carbonate of potash to be given in painful micturition "The fruits also form an ingredient in medicines for urinary disorders and impotence, and is one of the ten ingredients of the *'Dasamula Kvatha'* a compound decoction often mentioned in Sanskrit works."[7] A *compound powder* called *Gokshuradi Churnam* is popular in all urinary diseases it is made up of Tribulus terrestris 9 tolas, Cubebs, Mesua ferrea, Rhei radix and Potassium nitrate, each 3 tolas Powder and mix Dose is 10 to 20 grains. This drug "was given a good trial in cases of Bright's disease with dropsy, all the patients derived much benefit by its use It was also combined with bdellium in a patient suffering from gonorrhoeal rheumatism with cystitis. The patient recovered without interruption'—(Ind Drugs Report, Madras) A *decoction* of the entire plant is given with *Silajatu* and honey in the same affection Equal parts of *Gokhru* and sesamum seeds taken with goat's milk and honey cures Impotence arising from vicious practices. Bhavaprakasha gives the composition of an *electuary* known as *Gokshuradi ava leha* recommended in painful micturition, suppression of urine, bloody urine, calculous affections etc It is prepared as follows —Take of the entire plant of Tribulus terrestris 12½ seers water 64 seers and boiled till reduced to one-fourth. To the strained decoction add 6½ seers of sugar and again boil till reduced to the proper consistence for an electuary; then add the following substances in fine powder —ginger, long pepper, black pepper, cinnamon cardamoms, flowers of *Mesua ferrea*,

tejpatra leaves, nut meg, bark of Terminalia arjuna and cucumber seeds each 16 tolas, bamboo manna ½ seer, and prepare an electuary It is given in do e, of 2 tolas A compound pill known as *Gokshuradi Guggula* is prescribed for albuminuria, dysuria, calculi, gonorrhoea and rheumatism Chief ingredients in it are *gokshura*, *guggula*, *trikatu* and *triphala*, dose is 1 to 4 pills of 6 grains each three times a day These were tried in cases of gonorrhoeal rheumatism and gleet and found beneficial—(Ind Drugs Report, Madras). Following *compound decoction* is used as a cooling, soothing, aphrodisiac in cases of impotence resulting from gonorrhoea with painful micturition Take of *Gokhru* 10 parts, *Trikatu* (long pepper, black pepper and ginger) 5, Cinnamon 4, Cardamons 4, Saffron 1 *Tejapatra* 2, Nutmeg 3, Lettuce 3, Bonduc nut 4, and Bamboo manna 5 parts Mix and make a decoction. Dose is 2 to 6 drachms Following are a few simple Home Remedies —(1) Take of *Gokhru* 10, Hygrophila spinosa 5, Glycyrrhiza glabra 6 Withania somnifera 6, Hyoscyamus albus 5, Curculigo orchioides 6, Mace 4, Eulophia campestris 6 parts Mix and make a powder Dose is 10 to 15 grains, used in seminal debility (2) Take of *Gokhru* and Impure carbonate of potash 5 parts, each Make a decoction in the usual way Dose is 1 drachm, used in painful micturition (3) Take of *Gokhru* 10 Carbonate of iron and lime 6, Cinnamomum cassia 5, Cardamoms 6 and sugar 10 parts Mix and make a powder Dose is 10 to 15 grains, used in jaundice (4) Take of *Gokhru* 4 drs, Terminalia chebula 3 drs, Oxalis corniculata 3 drs. Mix and reduce the whole to a fine powder Dose is ½ to 1 drachm three times a day, used in gonorrhoea, gleet, and genito-urinary diseases (5) Take of Gokhru 12, Splianthes olracea 9, Camphor 9, Balsamodendron mukul 9, Opium 1, and honey sufficient quantity Mix and make a pill mass Dose is 5 grains, used in gleet and painful diseases of the bladder and urethra. "An alcoholic extract of the drug was prepared and tried in a series of cases, by Chopra, and found to have undoubted diuretic properties" The drug is also used in scorpion-sting

2497 TRICHILLIA EMETICA or T trifoliata, Roxb

(N O —Meliaceae)

(*Eng* —Emetic Nut *Arab* —Jauzel kai *Tam & Tel* —Walurrsi Walsura) is met with in Malabar, Travancore, Madras Presidency and Ceylon *Bark* contains resin, saponin and tannin Action —Emmenagogue and emetic It is stimulant and expectorant in *decoction* (1 in 10) in doses of 2 to 4 drachms It acts as a fish poison, but fish so caught is said to be not unwholesome to eat *Fruit* is used in hair washes to kill lice, to remove freckles and to cure itch

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2498 TRICHODESMA AFRICANUM Br

(N O —Boraginaceae)

(*Bom* —Paburpani) Action —Emollient, alterative and diuretic

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2499 TRICHODESMA INDICUM Br,

(N O —Boraginaceae) or Borago indicum

(*Hind* —Chhota kulpha *Ben* —Chotokulpa *Punj* —Kat mandoo *Sind* —Gaozaban *Santal* —Hatmudia *Kash* —Ratisurkh *Mah* —Laharzungi or kalpa Lahana kalpa *Tam*—Kazuthai tumbai *Tel* —Gusva gutti) is common throughout India except Bengal plains *Leaves* and root are used as cures in snake-bites also considered diuretic *Cold infusion* of leaves is considered depurative *plant* is used as emollient poultice

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2500 TRICHODESMA ZEYLANICUM Br

(*Sans & Hind* —Jhinpi *Bom* —Gaozaban) Leaves are used to make an emollient poultice

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2501. TRICHOLEPSIS GLABERRIMA, DC.

(N O —Compositae).

(*Bom* —Bramhadandi Action —Nerve tonic and aphrodisiac See also Echinopus echinatus

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2502 TRICHOLEPSIS MONTANA, Dalz

(*Tam* —Utakatara) Action —Bitter, tonic and diuretic. Used in cough

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2503 TRICHOLEPSIS PROCUMBENS, Wight.

(N O —Compositae)

(*Pers* —Kangari supheda Asphari-i bari *Arab* —Shankat-ul-beda *Hind & Bom* —Badavarda *Mah* —Sakayi is a herb Its constituents are a green volatile oil, an acid resin, fat, an alkaloid and gum *Decoction* of the *flower-heads* (1 in 20) is given in doses of 1 to 2 ounces as stomachic, aperient, febrifuge and tonic, in fevers, general debility, dyspepsia, flatulence, nervous depression, etc As a mucilage it is used in coughs

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2504 TRICHOSANTHES ANGUINA, Linn

(N O —Cucurbitaceae)

(*Sans* —Chichinda *Hind* —Chichonda. Chachinda, Chachinga *Eng* —Snake gourd *Ben* —Chichinga, Hopa *Mah* —& *Kon* —Padaval *Guj* —Pandola *Sind* —Kadotri *Tel* —Potlakaya *Tam* —Puttla, Lingapotla, Pudal *Can* —Padavalkayi *Punj* —Galartori, Pandol) cultivated throughout India *Constituents* —The fresh vegetable contains 95 00 p c moisture, and the completely dried material contains Ether extract 2.20 p c, albuminoids (cont'g Nitrogen 2 20 p c); soluble carbohydrates 67 85 p c, woody fibre 10 60 p c, and Ash 5 60 p c (cont'g no sand) respectively (Bombay Govt

Agri Dept Bulletin) *Seeds* are cooling *Fruits* are cooked and eaten when green and when ripe they are purgative Except in the fruit this drug agrees altogether with T cucumerina of which it is probably a cultivated form *Young fruit* is used as a substitute for French beans *Leaves stalks* and *roots* of the creeper are also used medicinally

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2505 TRICHOSANTHES CORDATA Roxb

(*Ben*—Bhui kumari Bhui khumba Patol) is found from the base of the Eastern Himalayas in Sikkim and Assam to Pegu Large tuberous *roots* are used as a valuable tonic and in enlargement of spleen and liver, and as a substitute for Calumba In Patna the *dried flowers* are believed to be stimulant in doses of 2 to 5 grains—(Irvine) In Deccan *root* dried and reduced to *powder* is given in doses of 10 grains

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tive *Decoction* of *patol leaves* and coriander is given as febrifuge and laxative in bilious fevers In the Konkan, *leaf-juice* is rubbed over the liver in liver congestion or over the whole body in remittent fevers—(Dymock) Expressed *juice* of *root* is drunk in doses of 2 ounces as purgative, but it is a strong gastro-intestinal irritant *Seeds* are given in disorder of the stomach *Unripe fruit* is very bitter and dried capsules are given in infusion or in decoction with sugar to assist digestion

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2507 TRICHOSANTHES CUSPIDA

Is a species found in Bengal and the East Indies, the *root* of which is a drastic purgative and the expressed *juice* is emetic

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2508 TRICHOSANTHES DIOICA, Roxb

Is another climbing plant of this species (*Sans*—Patola *Eng*—Wild snakegourd *Fr*—Trichosanthes contourne *Ger*—Schlangenfruchtiga Haarblume *Hind*—Palwal, Parvar *Ben*—Patol, Potal, Potol *Bom*—Potala *Mah*—Kadu-padvala, Parwar Palwal *Tel*—Adavi-patola, Kommu-potla *Tam*—Peyu-padal, Kombu pudalai *Mal*—Kattu-potolam *Can*—Kahi-padavala *Kon*—Kadupaddoola) common in Bengal and cultivated in Northern India, the Punjab and Baroda There are two varieties of the plant, one with oblong fruits like the 'tondli' (Coccinia indica) and the other with globular fruits Action—"Fruit is febrifuge, laxative and antibilious Juice of leaves and the fruit is a cholagogue and aperient Root is a drastic purgative"—(Chopra's 'I D of I" pp 534 and 600, and Bombay Govt. Agri Dept Bulletin) *Unripe fruit* is eaten and generally used as a culinary vegetable, it is with medicinal properties and is very wholesome, specially suited for convalescents and its *leaves* are tonic and febrifuge, are used as diet in sub-acute cases of enlarged liver and spleen 'pitta' variety of "Arsa" (piles), and in fistula in ano, when there is no fever as it checks 'pitta' *Young* and *unripe fruit* is valued by Europeans next to potatoes and brinjals In Bengal, *fruit*

of this tree is considered to be the *'patola'* of Ayurveda *Fresh juice* and *root* are also used medicinally *Tender tops* are also used as a pot-herb and are regarded as tonic and vermifuge *Stalk in decoction* is a reputed expectorant Chakradatta recommends a decoction *Patoladi Kvatha* in fevers, it is prepared thus —Take of Patola leaves, Pierorhiza-Kurrooa, red sandalwood, root of Sanseviera zeylanica, Picrorhiza kurrooa, Stephania hernandifolia and *Gulancha* each one drachm, water half a seer, boil together till reduced to one-fourth The same recommends another compound decoction useful as a valuable alterative, tonic and febrifuge given in boils and other skin diseases It is made as follows —Take of patola leaves, *gulancha*, mustaka, chiretta, nim bark, catechu, root-bark of Justicia adhatoda and Oldenlandia herbaceæ equal parts, in all 2 tolas and prepare a decoction in the usual way The old Ayurvedic physicians placed much confidence in it in the treatment of leprosy A popular compound powder known as *Patoladya Churnam* is prepared thus —Take of the root of Patola, turmeric, baberang seeds, Kamala powder and the three myrobalans, two tolas each, cinnamon and the root of the indigo plant three tolas each, Ipomœa turpethum four tolas; powder the ingredients finely and mix This is used as a drastic purgative in jaundice, anasarca and the ascites, Dose—about 1 drachm with cow's urine After the use of this medicine, light food only such as gruel should be taken Fruit of the bitter variety is used in scorpion sting

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2509 TRICHOSANTHES INCISA

Is a species found in Bengal whose *root powdered* and mixed with oil of Azadirachta indica is used in ulcers—(Chakravarthy)

2510 TRICHOSANTHES LACINIOSA

(*Sans*—Dindisa *Ben*—Dherasa *Fr*—Trichosanthes laciniæ *Ger*—Handtheilige haarblume) is a species found in

Bengal and the East Indies, and whose *fruits* and *tender shoots* are used as stomachic and laxative —(Chakravarthy).

2511. TRICHOSANTHES NERVIFOLIA, Linn

(N O —Cucurbitaceae)

Is yet another species (*Hind* —Palval Parvar *Ben* —Patol *Tam* —Kombupudalai) found in Bengal, Deccan, West India, Coorg and other tropical regions *Fruits* are used externally in epilepsy and mental troubles The medicinal properties, uses, etc are similar to those of T dioica

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2512 TRICHOSANTHES PALMATA, Roxb

Is a species (*Sans* —Mahakal *Hind* —Lal—Indrayan *Ben* —Makal *Arab* —Amhsghola Hanzal-e-nhimara *Pers* —Hanzal-surkha *Bom Mah & Kon* —Kaundala *Duk* —Gudapandu *Tel* —Avvaguda Kakidonda *Tam* —Shavarnipazlam, Korattai *Mal* —Kakatonti *Can* —Kakemandli, Avagude-hannu) found in Bengal and Southern India *Rind* and *pulp* contain an amorphous bitter principle "Tricho-santhin" resembling Colocynthin It is soluble in water and alcohol Green pulp in the interior of the fruit contains a colouring matter *Fruit* is a violent hydragogue cathartic It is considered poisonous mixed with rice it is employed to destroy crows *Fruit* is smoked in asthma and lung diseases It is used as a fumigatory in ozena and other discharges from the nose *Infusion of root* and of the three myrobalans and turmeric, all equal parts, flavoured with honey is given in gonorrhœa —(Dymock) Cocoanut oil in which the *fruit* is well ground and boiled is a remedy for ear-ache, sores in the ears and nostrils, and ozena in which it is instilled in drops *Juice of fruit* or the root bark boiled with gingelly oil is a good bath oil applied to the scalp before bathing for the relief of chronic or recurrent attacks of headache and hemicrania, etc *Oil* is dropped into the ear in cases of otorrhœa This has been tried and found useful in curing hemicrania —(Ind Drugs

isotrifolin As—0 012 mg in 100 g fresh plant and 0 037 mg. in dry

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2517. TRIFOLIUM REPENS, Linn.

Contains a glucoside

2518 TRIFOLIUM UNIFLORUM

See Psoralea corylifolia

2519 TRIGLOCHIN MARITIMA, Linn.

(N O —Naiadaceae).

Contains HCN-glucoside

2520 TRIGLOCHIN PALUSTRIS, Linn.

Contains HCN

2521 TRIGONELLA FOENUM GRAECEUM, Linn.

(N O —Papilionaceae).

Sans—Medhika *Hind. Ben Sind Guj. & Mah*—Methi *Eng*—Fenugreek. *Arab*—Hulabaha *Pers*—Sbamlita. *Tel*—Mentulu *Tam*—Vendayam *Mal*—Uluva, Ventayam *Can*—Menthe *Kon*—Metthu

Habitat.—This annual herb is found wild and extensively cultivated in Kashmir, the Punjab, Bombay and Madras Presidencies.

Parts Used —Seeds, pods and leaves

Constituents —'Fresh vegetable contains 77 00 moisture, and the dried material contains Ether Extract 4 80, albuminoids 16 21 (cont'g Nitrogen 2 61), soluble carbohydrates 56 11, woody fibre 11 51, and Ash 11 37 (cont'g sand 0 93) per cent respectively "The globulin and albumin in fenugreek have been isolated and analysed The globulin (fraction A) is characterised by a surprisingly high content of histidine which is about 4½ times the average amount contained in other related globulins obtained from leguminous seeds In this respect the protein has a close relationship with the protamines and histamines which are characterised by a high content of the hexone bases The albumin (fractionB) appears to contain phosphorus and sulphur in the molecule In this respect the composition of this fraction approaches the casein of milk"— (Y V Sreenivasa Rao, Dept of Biochemistry, Indian Institute of Science, Bangalore) Cells of the testa contain tannin Cotyledons contain a yellow colouring matter, but no sugar Seeds contain a foetid, bitter essential fatty oil 6 p c, also resin and mucilage 28 p c., albumin 22 p c, two alkaloids—chaline and trigonelline Seeds on incineration leave ash 7 p c, containing phosphoric acid 25 p c. Reutter has noted the presence of several alkaloids in fenugreek, such as methylamine, dimethylamine and trimethylamine as well as cholin neurin and betain, which are derived from the splitting up of lecithins Its chemical composition resembles that of cod liver oil, owing to its containing substances rich in phosphates, lecithin and neucleo-albumin It also contains considerable quantities of iron in an organic form which enables it to be readily absorbed —(Bull Soc de Thir, April 9th 1924) Fenugreek contains saponin also

ushna veeryam, vata-kapha-haram, in fevers, dysentery — (Therapeutic Notes)

Action and Uses in Unani—Hot 2°, Dry 2°, resolvent, aphrodisiac, diuretic, emmenagogue, expectorant in bronchitis, piles, externally in inflammatory conditions — (Therapeutic Notes)

Uses—*Young plants* (tender shoots) and aromatic *leaves* as a green culinary vegetable form a much appreciated *sag* if pulled up after the two seed leaves are formed *Seeds* as a condiment or pulse form an ingredient of curry powders, but are sparingly used as an article of food *Seeds* are much used in colic, flatulence, dysentery, diarrhœa, dyspepsia with loss of appetite, diarrhœa in puerperal women, chronic cough, dropsy, and enlargement of the liver and spleen *Seeds* fried in ghee and mixed with anisi seeds and salt and made into a *paste* are useful to check diarrhœa The seeds are generally roasted, powdered and given in *infusion* or weak decoction which is a healthy drink useful in dysentery With an equal quantity of powder of fried wheat added to the infusion it becomes a good substitute for coffee and a cooling drink Made into a gruel, fenugreek seeds are given as a diet to nurses to increase the flow of milk Several confections under the names of *Methi modaka Svalpa Methi modaka* etc are recommended for use in dyspepsia, in the diarrhœa of puerperal women and in rheumatism Bhaishajya-ratnavali gives the preparation of *Methi Modaka* thus—Take of three myrobalans ginger, long pepper and black pepper, tubers of Cyperus rotundus, nigella and cummin seeds, coriander, bark of Myrica sapida, pachak, root, Rhus succedanea, ajowan, rock salt, black salt, leaves of Pinus webbiana, flowers of Mesua ferrea, *tejapatra*, cinnamon, cardamom, nutmegs, mace, cloves, sandalwood and camphor, one part each, fenugreek seeds, in quantity equal to all the above ingredients, powder them all and prepare a confection with old treacle Dose, one to two drachms to be taken in the morning with clarified butter and honey Dr P, Blum states that fenugreek can be employed as a substitute for cod-liver oil in every case in which the latter is indicated, such as lymphatism,

scrofula, rickets, anaemia, and debility following infectious diseases or neurasthenia, as well as in gout and diabetes in which it may be combined with insulin The drug is given in the form of powder in doses of two tea-spoonfuls daily in broth, milk, or jam. As an application to the head they promote the growth of hair which they also prevent from falling off *Flour of the seeds* is used as a *poultice* to inflamed parts and is applied to the skin as a cosmetic In cases of leucorrhoea, *pessaries* made of *Methi* are used for the uterus and vagina *Poultice of leaves* is useful in external and internal swellings and burns on account of their cooling properties *Leaves* boiled and fried in butter are given internally in biliousness "*Leaves* and *tender shoots* are used as a vegetable *Methi* plants fed green and mature stalks are a good succulent fodder to farm animals The *seed* is also given to cattle as a strengthener" —(Bom Govt Agri Dept. Bulletin)

2322 TRIGONELLA OCCULTA, Delile

Seeds are used in dysentery

2323 TRIGONELLA UNCATA, Boiss.

(Ind Baz —Iktil-el malik) This is narcotic and paralyses heart.

2324 TRITICUM AESTIVUM or T hybernum

(Eng —Beardless Wheat, *Mah* —Pivla Potia, Pivlalotaka)

2525. TRITICUM HYBERNUM

Found in Bombay Presidency and Punjab. Varieties:—Australian, Pivla Pote (Malegaon); Safet (Hoshiarpur); Jonoria (Damoh), Dundan (Multan)

2526. TRITICUM PILOSUM (Dalz. & Gibs.)

(*Mah.*—Bakshi, Kala-Kushal; Kate; Pivla-Gahu; Parner). Varieties:—Black-awned class; Bakshi (Kopergaon); black-awned (Athani), Lal of Batala, Bansi (Baleghat); Parner.

2527 TRITICUM SATIVUM, Lam.

(N O:—Gramineae).

Sans.—Yava, Godhuma *Eng.*—Wheat *Arab.*—Hintah. *Hind.*—Gehun *Ben.*—Gam. *Bom. & Mah.*—Gahu. *Guj.*—Gehu *Sind.*—Kanik. *Tel.*—Godumulu. *Tam.*—Godumay. *Mal.*—Kotampum. *Can.*—Godi. *Kon.*—Gahu; Govu.

Habitat.—Wheat is extensively cultivated in various forms or varieties, in the Punjab, in the United and the Central Provinces, Sind, Central India, Rajputana and the Bombay Presidency

Varieties.—Kata or Shetgahu, Wagia, Daudkhani, Bakshi (kala kusal); Khapli; Mundi of Ludhiana; Potya of Nadiad; Junaria; Popatia; Hansia (Broach); Wheat Deshi Athani of Belgaum; Field Wheat from Parmer, Paman of Sirsa. The two most important classes of wheat are (1) soft (or starchy) wheat and (2) hard (or glutinous) wheat, the former containing a larger proportion than the average of starch, and being thus specially fit for the production of fine flour (*maida*) or *pithi*, while, in the wheats of the latter class, gluten predominates, rendering the grain especially productive of semolina (*suji* or *rava*). Grains of the first class break easily, with an opaque, pure, white fracture, while those of the second class are difficult to break or bite and appear more or less translucent. Each of these two classes are sub-divided into

two sub-classes distinguished by the grain being white or red There are thus four principal divisions, (1) hard white (2) hard red, (3) soft white and (4) soft red —(Bom Govt Agri Dept. Bulletin)

Constituents —Proteids 12 4, starch 67.9, fat 1 4 fibre 2 5 and ash 1 8 p c. Wheat contains all the elements necessary for the support of human frame, hence it is that bread is often and very properly called the 'Staff of Life" A grain of wheat can be divided into six parts, viz (1) outer skin, (2) middle skin, (3) inner skin or cerealin cells containing cerealin, (4) germ, (5) gluten cells, (6) starch granule First three parts and the germ go to make bran middlings and pollard, and the last two or endosperm are all that white flour contains. The first or outer skin is composed chiefly of fibre Its main use consists in its exciting mechanical action in the stomach, and if that organ is healthy, this results in digestion The second and the third skin contains a quantity of salts and acids These are most essential as food, being bone, hair and teeth producers. When the flour meal is being made into bread the ferment cerealin of the inner skin of the grain acts upon the starch granules and converts them into chemical sugar (dextrin) and so renders the bread more digestible "In wheat nitrogenous substances are in large proportion and the starchy substances, with the sugars, are also in large proportions—60 to 70 per cent —and are easily digested. Wheat, however, is deficient in nutritive fat and salts"[1] The germ is particularly rich in oil, nitrogenous matter, phosphoric acid and a considerable quantity of diastatic ferment This nitrogenous matter contains little or no tenacious gluten As already remarked, we have in a grain of wheat, materials for bone hair and teeth forming flesh forming and heat producing Very fine white flour although producing a larger number of loaves of bread, is not nearly so nutritious as the darker flour from the old stone mills, owing to the nitrogenous matter, the acids and salts having in the process of dressing been very largely extracted

Analysis of some of the varieties of wheat that are commonly grown in the Deccan[2] —

Components	Shet Parner Bukshi (1)	Shet Parner Bukshi (2)	Shet Parner glabrous	Local W Khandesh	Banshi	Khapli	Mundiai	Australian Hybrid	Banshi
	p c	p c	p c	p c	p c	p c	p c	p c	p c
Moisture	12 50	11 90	11 35	11 70	11 05	12 40	11 45	12 10	12 20
Ether Extract	1 80	1 80	2 10	2 00	2 30	2 70	2 50	1 80	2 00
Soluble carbo-hydrates	65 13	67 48	67 70	66 47	66 45	63 03	65 88	67 35	66 57
*Albuminoids	17 62	16 12	15 00	16 68	16 50	18 87	15 62	15 25	16 18
Woody Fibre	1 30	1 20	2 00	1 40	2 00	1 10	2 40	1 80	1 30
Ash**	1 65	1 50	1 85	1 75	1 70	1 90	2 15	1 70	1 75
Total	100 00	100 00	100 00	100 00	100 00	100 00	100 00	100 00	100 00
Containing —									
* Nitrogen	2 82	2 58	2 40	2 67	2 64	3 02	2 50	2 44	2 59
**Sand	nil	0 15	0 05	0 05	nil	0 10	nil	0 10	0 05

The following is the variation in the results obtained in wheat from the Bombay Presidency —[3]

Moisture	8 85	to	12 50	p c
Ether Extract	1 40	to	2 70	„
* Albuminoids	14 00	to	18 87	„
Soluble carbohydrates	63 03	to	72 10	„
Woody fibre	1 10	to	2 40	„
** Ash	1.30	to	2 15	„
Containing —				
* Nitrogen	2 00	to	3 04	„
** Sand	nil	to	0 1	„

Analysis of some of the important wheats grown in other parts of India —[4]

	Cawnpore Bearded	Cawnpore Beardless	Kathya, Cawnpore white, soft.	Rust-proo Cawnpore white, hard.	
Moisture	13 35	13 19	11 00	9 94	p c
Ether Extract	1 73	1 60	1 53	1 50	„
Albuminoids*	8 47	9 75	9.25	9.25	„
Soluble carbo-hydrates	73 08	72 03	73 65	75 96	„
Woody Fibre	1 57	1 93	1.33	1 50	„
Ash**	1 80	1 50	3.24	1 85	„
Total	100 00	100 00	100 00	100 00	„
Containing —					
*Nitrogen	1 36	1 56	1 48	1 48	p.c.
**Sand	0 05	0 10	0 25	0 05	„

It is interesting for the sake of comparison, to have the analyses of various samples of wheats and their averages grown in various parts of the World[5] —

Countries	Water	Proteids	Soluble carbo-hydrates	Fat	Cellu-lose	Salts
	p c	p c	p c	p c	p c	p c
England		10 99	69 21	1 86	2 90	1 67
India		10 99	70 90	2 08	1 92	1 45
All Europe except Russia (208 samples)	13 7	12 30	67 90	1 80	2 50	1 80
All Countries (948 samples average)	13 ,	12 03	68 57	1 85	2 31	1 77
American Wheat (average of 407 samples)	10 2	12 20	71 70	2 20	1 80	1 90

When some 46 samples of wheat from the Bombay Presidency were analysed for the nitrogen contents only, they showed the following variations[6] —

Nitrogen 2 00 to 2 71 per cent

Uses.—Wheat is the most nutritive of the food-grains, and is easily digestible It forms the staple food of the majority of the better classes of the people in Northern and Western India, "and is seldom eaten by the poor except on feast days as it is never eaten without the addition of clarified butter or ghee,"[7] and of nearly two-thirds of the human race The ripe grain of "Sind wheats are generally pronounced superior to those of Bombay and possess a larger proportion of soft, white forms The Sind Delta wheats however, are specially liable to rust'[8] Wheat is mostly used for breads and cakes Wheaten bread is the 'Staff of Life" Fermented bread is the best of these, aerated bread is better than baker's bread, white bread better than brown, stale bread 4 or 5 days old, better than new bread, and toasted bread better than untoasted—for the subject of chronic dyspepsia The toast must be crisp, eaten when yet slightly warm without butter, but with jam or vegetables, so that it may be throughly chewed

"Wheat flour is used for different kinds of leavened and unleavened bread Several sorts of baby-food are also prepared out of flour and pastry and fancy cakes, different kinds of rusks and dry biscuits, and pastes like macaroni and vermicelli, used in puddings soups and rag-outs'[9] *Whole meal bread* is good for those who have costiveness but no dyspepsia, bread made of flour containing some bran is good, as the coarse particles cause an irritation of the bowels and drive down the foecal matter more easily than bread made of fine flour Soojee, the coarser particles of flour are good for making porridge with, for those suffering from costiveness' Wheat bread is a good diet in *'Vayu* variety and *'Kapha'* variety of *'Arsa'* (piles) *Wheat coffee* is a good substitute for coffee It is an ideal nourishing drink and food for all including children It is prepared thus —Take a handful of wheat of long variety, fry it in an earthern pot and powder it in a grinding stone Put one tablespoon of the powder for two cups of water, boil it for a few minutes stirring all the while and add sufficient quantity of milk and sugar This may be taken along with any solid food or independently ac cording to the digestive power of the individual "The custom of feeding infants (especially in South India and Kanara) on wheat and *"ragi"* flour made into balls and preserved for months should be discarded and freshly ground wheat and ragi flour should be substituted in their place The former custom leads to fermentation and loss of vitamin and has been known to produce diarrhoea"—(Dr M Keshava Pai's remarks in one of his lectures) *Medicinally* wheat 1/8th seer kept in water overnight, beaten into a paste next morning strained and mixed with 5 tolas of sugar is given in *Prameha* (extreme heat of body) Also fried wheat is given mixed with honey for lumbago or pain in joints Wheat flour mixed with sugar and milk is given in epistaxis Flour of wheat made into *conjee* is taken to check profuse menstruation bread is used for making bread poultice, crumb of bread is employed for the preparation of charcoal poultice, it is also used as a basis for pills containing creosote and similar medicaments *Externally* wheaten flour is useful as a *dusting powder* over inflamed surfaces as in erysipelas burns scalds and

various itching and burning eruptions. It is employed for making *yeast poultice*. A mixture of flour and water is an antidote in cases of poisoning by salts of mercury, copper, zinc, silver and tin and by iodine. Whole wheat flour mixed with vinegar, boiled and applied outwardly removes freckles. "Wheat flour is used largely in pastry and sweetmeats. Green wheat ears called *Ombya* (Marathi) are parched and eaten."[10] The "bran" is used in *decoction* or *infusion* as an emollient bath in skin diseases such as psoriasis; and internally as demulcent. *Bran bread* is slightly laxative and may be used with advantage in certain dyspeptic conditions and owing to its freedom from starch, in diabetes. *Bran cakes* and *bran biscuits* are far preferable to pastries forbidden. As it retains heat for a very long time, *bran poultice* and dry applications are frequently made use of in the treatment of severe local pains whether spasmodic or inflammatory, in acute inflammation of the chest or abdomen and in the premonitory symptoms of croup in children. *Oil* pressed from the germ of wheat is said to heal tetter and ringworm and also hollow ulcers. "The *chaff (bhusa)* or *wheat straw*, usually mixed with other food or with the wheat grain or grain chaff, is used for doffer. Wheat straw by itself is a poor fodder and the straw of spelt-wheat is almost inedible. Wheat plays an important part in the manufacture of spirits and of beer. Starch is also prepared from wheat. To be of value for human food, the grains of wheat must be ground to flour".[11]

2528. TRITICUM SPELTA, Bailey.

(*Eng.*—Spelta Wheat; *Mah.*—Khapli. *Sind.*—Jod).

2529. TRITICUM VULGARE

(*Sans.*—Mahgodhuma (large grained); Madhuli (small grained); Niksuki (beardless) are three varieties of wheat mentioned in the Bhavaprakasa. The first variety is said to come from the West and the second, indigenous to the middle region comprising the old north-west provinces and Delhi.

2530. TRIUMFETTA RHOMBOIDEA, Jacq

(N.O —Tiliaceae)

(*Sans*—Jhinjharita *Hind*—Chitke, Chiriyari, Chikti *Ben*—Ben-Okra; Bun-okra *Tam*—Ottuppullu, Puramutti, Aadaiotti *Bom. & Mah*—Nichardi; Jhinjudi. *Kon*—Tupkadi) is found throughout tropical and sub-tropical and South India and Ceylon. It is a very common weed growing wild and freely on Matheran Hills Fruit, flowers and leaves are used in medicine. Mucilaginous, demulcent, astringent properties of the *leaves* and *fruits* of certain Triumfettas render them useful for injections for inveterate cases of gonorrhoea.—(Murray). *Bark* and *fresh leaves* are used for diarrhoea, also *flowers* rubbed with sugar and water are given in gonorrhoea to stop the burning caused by urine. The burr-like fruit is believed to promote parturition—(Dymock).

2531. TROPIDIS ASPERA

See Streblus asper.

2532. TURRAEA VILLOSA, Benn

(N.O.—Meliaceae)

(*Bom*—Kapur Bhendi) found in the Western Himalayas, Anamalais and Mahableshwar hills and in Gujarat at Dolka. Its *root* is used as an application to fistulas and is administered internally in black leprosy—(Dymock).

2533 TUSSILAGO FARFARA, Linn.

(N O—Compositae).

(*Ind. Baz*—Fanjulm. *Punj*—Watpan) is found on the Western Himalayas from Kashmir to Kumaon Constituents —Bitter glucoside Its *roots* and *leaves* are smoked like tobacco as a remedy for asthma, obstinate colds, coughs, and

other chest complaints Expressed juice of the *fresh leaves* taken in some ounce-doses every day heals scrofulous ulcers

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2534 TYLOPHORA ASTHMATICA, W. & A.

(N O —Asclepiadaceae)

(*Sans*—Anthrapachaka. *Hind*—Jangli-pikvan. *Hind & Ben*—Antamul. *Bom & Mah*—Kharaki-Rasana, Anthamul, Pitakari, Pitmari *Duk*—Pitakari *Tam*—Peyppalai, Nachchuruppan, Nanjamurich-chan, Nay-palai *Tel*—Verripala, Kukka pala *Sinh*—Binnuga) is a plant common in forests and in sandy localities in Bengal, Eastern India, Assam, Kachar, Chittagong, Deccan and Burma. Parts Used—Root and leaves. The properties of the plant so convinced the early workers that it was admitted as official in the Bengal Pharmacopoeia of 1844, and on the compilation of Pharmacopoeia of India in 1868, the leaves were made official in preference to the root as they produced more uniform and certain results Constituents—Tylophorine *Powder* of dried *leaves* is, one of the best indigenous substitutes for Ipecac (Ipecacuanha) In dysentery and diarrhoea even in the earliest stages and whilst fever is present, it or *powder of roots* may be given in doses of 10 to 15 grains in an ounce of water, two or three times daily conjoined with a drachm of mucilage and a ¼ grain of opium to the dose if required If the fever be of intermittent type or malarious origin it should be combined with quinine As an expectorant in respiratory affections, chronic bronchitis and the early stages of whooping cough it is administered in doses of 5 grains thrice daily or oftener either alone or combined with ½ drachm of syrup of country liquorice in ½ ounce of water thrice daily It is highly reputed as an alterative and as a purifier of blood, and is given in rheumatism It is bitter, aromatic and stimulant It is given to increase lochia in parturient women It is also used in syphilitic rheumatism Locally it is soothing and applied to relieve gouty pains This drug has been tried in the form of *decoc-*

tion of leaves (1 in 10) and *infusion of root bark*, in cases of dysentery, asthma and bronchitis and found beneficial in those diseases—(*Ind Drugs Report, Madras*) See also *Asclepias asthmatica*

2535 TYLOPHORA FASCICULATA, Ham

(*Bom*—Bhui dari) There is an alkaloid This is a poison for rats

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2536 TYLOPHORA TENUIS, Blume

(*Tam*—Nanjaruppan) Decoction is an antidote to arsenic poison and snake-poison, cures perspiration, urticaria and small pox

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2537 TYPHA ANGUSTIFOLIA, Linn.

(N O—Typhaceae)

(*Sans*—Eraka *Hind*—Pater *Mah*—Motitrina, Rambana *Eng*—Elephant Grass *Ben*—Hogla *Tel*—Jammu gaddi) is a grassy plant growing in marshy land in Bengal and Assam It is said to be "refrigerant, aphrodisiac and wind exciting, beneficial in strangury, calculus, dysuria, burning of the skin and diseases of bile"—(*N N* Sen Gupta) Wooly soft inflorescence is used like cotton wool as a local dressing to wounds and ulcers It acts in the same way as medicated cotton wool

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2538 TYPHONIUM TRILOBATUM, Linn., & Schott.

(N O—Araceae)

(*Ben*—Ghit kochu, Ghet-kachu, Ghekul *Tam*—Karunaikkuzhangu, Karungkaranai *Tel*—Kanda gadda *Mal*—China) is indigenous to Lower Bengal, Burma, Eastern and Western Peninsula and Ceylon it is common in damp places

in moist low country Its roots are exceedingly acrid and used in poultices and also applied externally to the bites of venomous snakes, at the same time it is internally given about the size of a field bean It is a most powerful stimulant Acrid principle is very volatile and by the application of heat or by simple drying the root becomes innocuous or even wholesome as articles of diet —(Ph Ind) As an article of food it relaxes the bowels and thereby relieves haemorrhoids. Wild plant is used as a medicine for piles

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2539 ULMUS CAMPESTRIS, Linn

(N O —Urticaceae)

Leaves are used in medicine

2540 UNCARIA GAMBIER, Roxb, or Nauclea gambier

(N O —Rubiaceae)

(*Eng* —Gambier, Pale Catechu—'this is called Pale Catechu' to distinguish it from Acacia catechu which is indigenous to India" —(Chopra) *San* —Khadir *Hind* —Kath, Kutha *Ben* —Papri, Khayer *Bom* —Chinai-katha *Mah* —Kath. *Tel & Tam* —Ankudu kurra *Mal* —Gambier, Gambir) cultivated in Sumatra Java, Malacca, Penang and Singapore

Properties & Action —"It has a bitter astringent taste and is a well-known local astringent"—(Chopra) Gambier is extracted from the leaves and young shoots by boiling and subsequent evaporation, and imported in irregular, sometimes partly agglutinated cubes It is closely allied to catechu of the B P It contains the active principle-Catechu tannic acid 22 to 50 p c, catechin 7 to 33 p c, quercetin, a yellow-colouring principle, catechu-red, gambier-fluorescein, wax, oil etc. It is largely used as an ingredient in *pan-supari* (betel-leaf) Externally it is an *application to* syphilitic sores and aphthous ulcers in the mouth "The officinal tincture diluted with water can be used as a gargle in sore-throat, stomatitis, etc

2543 URARIA PICTA, Desv

(*Hind* —Dabra *Ben* —Sankarjata. *Bom* —Krishniparni) Antidote to snake-bite

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2544 URENA LOBATA, Linn, & U sinuata, Linn., (N O —Ben Malvaceae)

(*Hind* —Lotloti Kunjia *Ben* —Ben ochra *Santal* —Bhidi-Janelet Mota behedi-Janelet *Bom & Kon* —Tapkote *Mah* —Vana bhenda Rantupkada Wagdau Bhendi *Sinh* —Valta Epala) met with over the hotter parts of India—waste open ground and Ceylon

Constituents —Urease *Root* is used as an *external* application for lumbago and rheumatism —See also Hibiscus tiliaceus

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2545 URENA REPANDA, Roxb, or U speciosa

(*Santal* —Sikuar *Uriya* —Jotojotua) is found in North-west India Upper Gangetic plain and the Western Peninsula. Root and bark are used by the Santals for hydrophobia —(Campbell)

2546 URENA SINUATA, Linn.

(*Hind* —Lotloti *Ben* —Kunjia *Bom* —Tapkote *Tam* —Ottatti Ottuttutti Piliya mankena)

Root is applied for lumbago

2547 URGINEA INDICA Kunth., U scilla, U maritima (N O —Liliaceae)

(refer Scilla indica also)

Is a bulbous plant

(*Sans* —Vana-palandam *Eng* —Indian Squill. *Arab* —Basalula phare-hindi *Pers* —Piyaz i-dasht i hindi, *Hind &*

containing crystals of calcium oxalate and citrate A *syrup* was prepared from the expressed juice of the bulbs the strength being 1 in 2, and administered in cases of bronchial catarrh and chronic bronchitis in the out-patient Department of General Hospital, Madras, and was found efficacious in those affections"—(Ind Drugs Report, Madras)

2548 UROSTIGMA BENGALENSIS

See Ficus bengalensis

2549 URTICA DIOICA Linn

(N O —Urticaceae)

(*Eng*—Common stinging nettle *Hind & Punj.*—Bichu) Though it is a native of Europe, a large number of its species are found in India Though regarded as a troublesome weed it is medicinally useful It contains formic acid, lecithin, mucilage, salts, ammonia, carbonic acid and water A *tincture* and *syrup* are made from nettles and recommended for nettle rash and other eruptive conditions It is a domestic remedy for renal complaints and haemorrhages It is astringent, diuretic and antiscorbutic, also powerful haemostatic It is laregly used for catarrh and leucorrhoea, bronchial haemorrhage, blood-splitting and uterine haemorrhage, where ergotine, tannic acid and the like are unsuccessful Dose of the syrup is from 2 to 4 drachms, of the tincture (1 in 8) and of the *fluid extract*, the dose is from ½ to 2 drachms Tincture diluted with an equal quantity of water and put on a cloth is useful for burns "Nettles are used also in nephritis, haematuria and menorrhagea"—(Chopra) *Young leaves* when steamed make a laxative vegetable *Dried leaves* powdered and inhaled relieve asthma and bronchial troubles, eight grains should be burnt and inhaled at bed-time

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2550. URTICA PARVIFLORA, Roxb.

(N.O:—Urticaceae).

Decoction is given in fevers

2551 URTICULARIA BIFIDA, Linn.

(N.O.—Lentibulariaceae).

(*Santhal.*—Arak-Jhawar). Used in urinary diseases

2552. UVARIA NARUM Wall. & U LUVIDO.

(N.O:—Anonaceae).

(*Kon.*—Kalo-Apkaro)—See Unona narum

2553. UVARIA ODORATISSIMA or Artabolrys odoratissima

(*Kon.*—Kalo-champu)—See Unona narum

2554 VALERIANA BRUNONIANA, W. & A.

(N.O.—Valerianaceae).

This drug is a substitute for valerian Contains an essential oil

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2555. VALERIANA CELTICA & V. JATAMANSHI DC.

See Nardostachys jatamanshi

2556. VALERIANA OFFICINALIS (B.P.), Linn.

var:—mikanii, Syme. and var: sambucifolia, Mik.

(N. O.—Valerianaceae).

(*Sans.*—Bala Hrivera *Eng.*—True valerian *Hind.*—Tagar Mushkwalee, Sugandhwala, Sugandha bala-chhara

Arab.—Sumbul-ut-teeb; Sumbul-i-asfar. *Pers.*—Resha-i-wala. *Duk.*—Vilayeti-jhatamanshi. *Bom.*—Kalavala) is a species found in North Kashmir at Sonamurg at a height of 8000 to 9000 ft., North Asia, Sind, Burma and Ceylon. Constituents:—"The root used in the B.P. yields 8 to 10 per cent ash rich in manganese. Dried rhizomes and roots contain a valuable essential volatile oil 0.5 to 0.9 p.c. (the yield varies with the locality and the season of collection; the fresh roots collected in the spring gave as much as 2.12 p.c. volatile oil, but a lower yield was obtained from the autumn-gathered rhizome), valerianic acid, formic, acetic and malic acids, chatinine, tannin, starch, sugar, resin, gum and extractive (Chopra). Contains also a glucoside and an alkatorit

Action:—"Antispasmodic and stimulant properties of this plant are well-known in the indigenous medicine."—(Chopra). "Useful in hysteria, shell-shock and neurosis."—(Chopra). For more particulars see B.P.

2557 VALERIANA HARDWICKII, Wall.

(Hind. & Ben.—Taggar *Bom.*—Taggar-ganthoda) Substitute for valerian. Contains an essential oil.

2558. VALERIANA WALLICHII, DC., V. leschenaultii; V. brunoniana.

(N. O.:—Valerianaceae).

(Sans.—Tagara; Nandyavartha. *Eng.*—Indian Valerian. *Hind.*—Tagar; Bala-tagra. *Punj.*—Mushkh-i-wala. *Ben.*—Tagar; Nahani; Shumeo; Asarun. *Bom. & Mah.*—Tagar-ganthoda. *Arab.*—Asarum. *Kash.*—Chhalgudi. *Can.*—Mandibattal) are plants indigenous to the temperate Himalayas and found in Kashmir and Bhutan. Rhizomes or root stalks are collected in Afghanistan and exported to India. Rhizomes and rootlets contain a large proportion of volatile oil (ethereal valerianic oil) 1 p.c. containing esters of valerianic acid (iso-

valerianic acid) Volatile oil contains bornyl isovalerianate, formate, butyrate, and acetate, mixed with l pinene, l-camphene, and terpineol By ferment decomposition isovalerianic acid, an oily liquid with a powerful valerianic odour and acrid burning taste, is formed, two alkaloids, chatinine and valerianine, a glucoside and a resin have been recorded. The action and uses of Indian valerian are the same as those of Officinal valerian

Action —Stimulant and antispasmodic Valerian is not only a nervine in the sedative and hypnotic sense, but that it is a useful analeptic, stomachic and calmytive The ethereal valerianic oil diminishes the irritability of the brain and spinal marrow, the isovalerianic acid is faintly narcotic Dr. Nolle was able to prove by his experiments that the centrally sedative effect of valerian is not due merely to *these two substances* (valerianic oil and isovalerianic acid) but depends also on the activity of other constituents of the root (It follows that the entire drug should be prescribed, not its separate constituents) Large doses of valerian produce central paralysis (Dr Poulsson), inhibition of the cardiac function, of the intestinal movements and of the intestinal tonus (in frogs and rabbits) —(Dr Petlach) Dr Ordinski experimenting with 1 20% valerian tincture, found that 8 c c per gm frog sufficed to abolish the croak-reflex for one hour, produces central paralysis lasting one hour —(Dr Madaus's Book)

Uses —"Dr Bohn gives valerian in disorders of the spinal marrow and the nerves nervous debility and failing reflexes, also as a hypnotic, and in spastic disorders like chorea, gastrospasms etc. Dr Fuchs has successfully treated nervous symptoms during the menopause Valerian belongs to the principal remedies of insomnia, especially where due to nervous exhaustion and mental overwork. It is also the most efficacious remedial agent in states of general and vascular excitation and in spasmophile diathesis. It has an extensive use in the treatment of women"—(Dr Madaus's Book) "Valerian is a very old remedy In the middle ages it was used in Europe as a perfume and as a spice and its medicinal name 'Poor man's treacle" implied something very precious"—(Dr

Chopra) "Dr Cullen praises especially the valerian root grown in dry, chalky soil, as a remedy against hysteria Dr Withering prescribes it in habitual constipation"—(Dr Madaus's Book) The drug is indicated in nervous and hysterical symptoms of women for ages (Dr Bohn) and recent researches have found it useful in neurosis and epilepsy Used also in scorpion-sting

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2559 VALKEMERIA INERME

See Clerodendron inerme

2560 VALKEMERIA MULTIFLORA

See Clerodendron phlomoides

2561 VALLARIS HEYNEI, Spreng

See Echites dichotoma

(N O —Apocynaceae)

(*Sans* —Bhadra valli *Hind & Ben* —Ramsar *Tam* —Puttapodara-ejarala) Used in wounds and sores

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2562. VALLARIS PERGULANA, Burm Toxic, heart poison

Contains a glucoside

2563 VALLISNERIA SPIRALIS, Linn

(N O —Hydrocharitaceae)

(*Hind* —Sawala *Tel* —Punatsu *Tam* —Velam-pasi Action —Stomachic Used in leucorrhoea.

2569 VANGUERIA SPINOSA Roxb

(N O —Rubiaceae)

(*Sans* —Pinda, Pindituka *Bom* —Alu *Ben* —Moyna *Hind* —Pundrika, Bangariki-lakri *Mah* —Chircholi, Madandriksh. *Tam* —Manakkarai, Peddamaoga *Tel* —Veliki, Visikilamu, Vedankike, Segagadda) found throughout India. Fruit contains sugar, gum and a small quantity of tannic acid but no cyanogenetic glucoside or alkaloid. *Fruit* is refrigerant and cholagogue and *decoction* of fruit (1 in 10) is used in biliary complaints with hepatic congestion, dose is 2 to 6 drachms Fruit is eaten when ripe, cooked or uncooked or roasted The drug is used in scorpion-sting

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2570 VANILLA PLANIFOLIA

(N O —Orchidaceae)

Eng —Vanillapods

Habitat —Native to South Africa and Mexico but cultivated in Ceylon, and imported into India

Constituents —The aroma and flavour are chiefly due to the presence of a substance known as '*vanillin*' contained in a fluid which gradually permeates the whole fruit, it further slowly accumulates as crystals on the outside of the cured pods In 1858 'Vanillin' was obtained from 'engenol' the substance to which "oil of cloves" owes its characteristic odour More recently vanillin has been prepared from sugar by an electrolypic process.

Uses —Within recent years considerable quantities of '*vanillin*', or artificial vanilla, have been manufactured on the Continent, chiefly in Germany and France, and is used as a spice for flavouring confectionary and food Dried seed pods of V planifolia constitute the 'vanilla' of commerce

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2572 VEBERATETRANDRA

Tam —Karai

Parts used —Pulp of the fruit

Action —(Siddha) —Thuvaruppu, Inipu, Seethaveeryam

Uses —Siddha physicians use the decoction of the pulp of fruit in dysenteries

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2573 VENTILAGO MADRASPATANA, Gaertn

(N O —Rhamnaceae)

(*Sans* —Raktavalli *Eng* —Red Creeper *Hind* —Pitti *Ben.*—Raktapita *Bom* —Lokandi *Guj* —Ragatorohado *Duk* Luri-chakka *Tam* —Surate-cheka, Vempadon *Tel* —Pethtige, Lurala tige Yerra chairatali *Can* —Papplichakkay *Kon* —Khandvel *Smh* —Yaccaduvel) is met with in Western Peninsula throughout the plains of India and forests of Burma and Ceylon Constituents —Trihydroxymethyl-anthranolmonomethylether, emodin, monomethyl ether —(Chopra) Powdered root bark is carminative, stomachic, tonic and stimulant, useful in atomic dyspepsia, debility and fevers. Oil is used locally for itch and skin eruptions

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2574 VERBASCUM THAPSUS, Linn

(N O —Scrophulariaceae)

(*Eng* —"Great Mullein" *Punj* —Valrphul, Bontamaku; Bhumkedhum *Hind* —Gidar tamaku)

Habitat —Indigenous to temperate Himalayas from Kashmir to Bhutan

Constituents —*Flowers* are found to contain a yellow, volatile oil, a fatty acid, free malic and phospboric acids, malate and phosphate of lime, acetate of potash, uncrystallizable sugar, gum, chlorophyl and a yellow resinous matter. Leaves chemically analysed are found to contain 8 p c of crystalline wax, a trace of volatile oil, 78 p c of resin soluble

in ether, small quantity of tannin, a bitter principle, sugar, mucilages etc, 5 9 p c of moisture and 12 6 p c of ash The drug was also found to contain mucilage, saponin, carbohydrate corresponding to dextrin, glucose, saccharose, moisture, ash and 32 7 p c of cellulose and lignin

Action —Demulcent, diuretic, anodyne, antiseptic and alterative —(Chopra)

Uses —Root is given as a febrifuge *Seeds* are narcotic and used to poison fish *Herb* is employed for the treatment of asthma and other pulmonary complaints Seeds are also aphrodisiac *Leaves* warmed and rubbed with oil are applied to inflamed parts A pint of cow's milk with a handful of the leaves and boiled down to half a pint, sweetened, strained and taken at bed time, allays cough and removes pain and irritability

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2575 VERBENA OFFICINALIS, Linn

(N O —Verbenaceae)

(*Punj* —Pamukh) Constituents —Glucoside and verbenalin Action —Febrifuge and tonic. Uses —Useful in nerve complaints and amenorrhoea

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2576 VERBESINA CALENDULACEA

See Eclipta alba and Wedelia calendulacea

2577 VERNONIA ANTHELMINTICA, Willd

or Ascaradia indica or Conyza ascaradia
or Serratula anthelmintica

(N O —Compositae)

Sans —Somaraja Atavi jeeraka Avalguja Vakuchi. *Eng* —Purple Fleabane *Hind* —Bakchi, Somraj *Bom* —Kalouji Somraj *Guj* —Kadvo-jiri *Bom & Mah* —Kali-jiri.

Tel—Adavi-jilkara, Vishakantakalu *Tam*—Kattu-shuragam *Mal*—Kattukjuragam *Can*—Kadu-jirigay *Kon*—Kale-juray *Sinh*—Sanni-naegam. *Malay*—Justan-hutan

Habitat—This plant is common in waste places near villages throughout India

Parts Used—Dried seeds, leaves and root

Constituents—Seed contains resins, an alkaloid known as vernonine, an oil and ash amounting to about 7 p c of tho dry material, free from manganese "The powdered dry seeds, when extracted successively with different solvents, gave the following extracts—petroleum ether 18 4 per cent, chloroform 1 2 per cent, and absolute alcohol 13 8 per cent The petroleum ether extract consisted mainly of a fixed oil (about 18 per cent of the seeds) and a very small amount of an essential oil (about ♦ 02 per cent) The chloroform extract contained a bitter substance The alcoholic extract consisted mainly of resins There was no alkaloid present The bitter principle, which was presumably the active principle of the drug, amounted to over 1 per cent of the weight of the seeds It was isolated on a larger scale by extracting the powdered seeds with rectified spirit until all the bitter substance was removed The alcohol was recovered and the residue repeatedly extracted with chloroform and filtered The chloroform extract was concentrated and the bitter substance precipitated with petroleum ether This process was repeated several times until the bitter substance was obtained as a yellow, amorphous powder It contained no nitrogen or sulphur and behaved as a resin acid"—(Chopra)[1]

Action—Seeds are anthelmintic, stomachic, tonic, diuretic, antiperiodic and alterative Viscid green oil obtained from seeds is diuretic and powerfully anthelmintic

Uses—*Seeds* are generally used in cases of round worms, which are expelled lifeless Dose is about 2 to 3 drachms of the bruised seeds administered in *electuary* with 4 to 6 drachms of honey in two equal doses and followed by an aperient. *Infusion* of the powdered seeds (10 to 30 grains) is also a good and certain anthelmintic—(Dr F Ross) This drug

Tel—Adavi-jilkara, Vishakantakalu *Tam*—Kattu-shiragam. *Mal*—Kattukjiragam *Can*—Kadu-jirigay *Kon*—Kale-jiray *Sinh*—Sanni-naegam. *Malay*—Justan-hutan

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2580. VERONICA BECCABUNGA, Linn.

Contains a glucoside, aucubin. Action:—Diuretic and antiscorbutic.

2581. VERONICA HEDERAEFOLIA, Linn.

Contains a glucoside, rhinanthin (aucubin).

2582. VETIVERIA ODORATA

See Andropogon muricatus.

2583. VETIVERIA ZIZANIOIDES, Nash.

See Andropogon muricatus. *(Eng.*—'Khus-khus' grass).

2584. VIBURNUM FOETIDUM, Wall.

(N.O:—Caprifoliaceae).

(Sans.—Shirporna-Jaya. *Bom. Mah. & Kon.*—Narvela) is a plant met with in Western India, Khasia Mountains, Assam and N. Burma.

Constituents·—A foetid volatile essential oil and a whitish crystalline alkaloid of a peculiar sharp taste, gum resin, and ash 12 p.c. Oil is the odorous principle in white greasy flakes The foetor (fetidness or stench) can be removed by distillation.

Action·—Acrid, bitter, uterine, astringent, sedative and emmenagogue. *Juice of leaves* in doses of ½ to 1 ounce; of *fluid extract*, in doses of ½ to 1 drachm, of *decoction of leaves*, (1 in 10), dose 1/3rd to 1 ounce, is given in many uterine diseases·—menorrhagia, post-partum haemorrhage and in threatened abortion; also in dysmenorrhoea and after-pains. A wine-glassful of the juice of the leaves is ad-

employed as *external application* in rheumatism The drug is also used in scorpion-sting

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(1), (2) & (3) — Chopra's "I D of I" pp 410

2578 VERNONIA CINEREA, Less, or Conyza cinerea or C. purpurea

(N O —Compositae)

(*Sans* —Sahadevi, Ardhaprasadana *Eng* —Ash-coloured Fleabane *Ben* —Kukseem, Kukur-songa *Bom.*—Motisodori *Guj* —Sadori *Mah & Kon* —Sayadevi *Tam* —Naichette, Mukuthipundu *Tel.*—Gherittekarmina *Mal* —Pirina, Puvankurutala *Can* —Sahadevi) is a species indigenous to Bengal, East and West Coasts of India, and South India

Action —Febrifuge, diaphoretic and alterative *Seeds* are alterative, *leaves and plant* are diaphoretic "*Whole plant* with its small flowers is used medicinally in *decoction or infusion* (1 in 10) to promote perspiration in febrile affections, dose is ½ to 1 ounce Combined with quinine it is beneficial in malarial fevers This is tried and found to be a useful combination"—(Ind Drugs Report, Madras) *Seeds* are employed as an alexipharmic and anthelmintic; also as alterative in leprosy and chronic skin diseases Seeds are used as a constituent of *masalas* for horses. Whole plant is a remedy for spasm of the bladder and strangury *Poultice* of the *leaves* is a useful application in guinea-worms *Flowers* are administered for bloodshot eyes (conjunctivitis) *Root* is given for dropsy The drug is also used in scorpion sting

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2579 VERONICA ARVENSIS, Linn

(N. O —Scrophulariaceae)

Contains glucoside, rhinanthin (aucubin).

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considered a good food and to destroy worms in the stomach (Hughes-Butler) In Cambodia pulse is prescribed in liver complaints with jaundice (Indian Medicinal Plants")

Chavli as a Fodder—*Chavli* is one of the most valuable leguminous fodder crops we have for all kinds of stock., It is rich in proteids in particular, and analyses of the very similar cowpea hay (when completely dried) grown in America are as follows —*

	Cut in full bloom Per cent	Cut when pods forming Per cent.	Cut when pods formed Per cent
Ether extract (fat, &c)	4 04	3.06	5 01
Proteids	17 86	19.93	21.38
Digestible Carbohydrates, &c	52.23	50.58	32.59
Fibre	18.29	18.52	29 05
Ash	7 43	7.91	11.07

This shows that the proteids increase in this case after the pods are formed, as the seeds are very rich in this constituent When ready for feeding off the following co-efficients of digestibility of the various constituents of the fodder have been given by American authorities with cattle —

Dry matter	68	per	cent	digestible.
Fat	59	,,	,,	,,
Proteids	76	,,	,,	,,
Digestive carbohydrates	81	,,	,,	,,
Fibre	60	,,	,,	,,

There is practically no waste in feeding chavli fodder. Even when it is a little mouldy it is eaten freely by stock of every kind, and this is of course a great advantage Altogether it would seem that chavli is likely to fill a large place in the fodder supply of Western India as a crop of exceeding high feeding value, easy to grow, and which stands ahead of all other known annual leguminous fodders for growing in the hot weather under irrigation or in the rainy season In addition to these advantages the long tap root of the plant

ministered internally in menorrhagia daily, also in post-partum haemorrhage." ("Indian Medicinal Plants").

2585. VICIA FABA, Linn.

(N. O:—Papilionaceae).

(*Hind.*—Bakla). Contains As—0,02 mg. in 100 g. in seeds. Shoots are efficacious in rousing a drunkard from stupor.

2586. VICIA HIRSUTA, Koch.

Seeds contain HCN.

2587. VICIA SATIVA, Linn. var:—V. augustifolia.

(*Hind*—Ankra. *Ben.*—Ankari). Contains glucoside & vicin. Seeds contain HCN. Fresh plant contains As—20 mg. in 100 g. and dry plant contains 54 mg. in 100 g.—(Chopra).

2588. VIGNA CATIANG Endl. or Dolichos Cationg.

(N.O:—Papilionaceae).

(*Sans:*—Chavala; Mahamasha; Rajamasho. *Mah.*—Chavli. *Can.*—Alsandi. *Hindi.*—Bora; Chowli. *Tam.*—Caramunni-payira. *Eng.*—Cowpea; Chinese Beans. *Tel.*—Alusundi.

Habitat.—Extensively cultivated in India.

Varieties:—(1) Big seeded; "Alsunda;" Black; Long podded.

Action:—Seeds are acrid, dry, with a good flavour, laxative, appetiser, galactagogue, tonic, aphrodisiac, diuretic, indigestible, cause flatulence (Ayurveda). Pulse is considered hot, dry and diuretic, and antibilious.

Uses—Pulse is used to strengthen the stomach. In Las Bela (Baluchistan—Sind) seeds are boiled and eaten, and are

considered a good food and to destroy worms in the stomach. (Hughes-Butler) In Cambodia pulse is prescribed in liver complaints with jaundice (Indian Medicinal Plants")

Chavli as a Fodder—*Chavli* is one of the most valuable leguminous fodder crops we have for all kinds of stock. It is rich in proteids in particular, and analyses of the very similar cowpea hay (when completely dried) grown in America are as follows —*

	Cut in full bloom Per cent	Cut when pods forming Per cent	Cut when pods formed Per cent.
Ether extract (fat, &c.)	4 04	3 06	5 01
Proteids	17.86	19 93	21.38
Digestible Carbohydrates &c	52.28	50.58	32.59
Fibre	18.29	18 52	29 05
Ash	7 43	7.91	11.97

This shows that the proteids increase in this case after the pods are formed, as the seeds are very rich in this constituent When ready for feeding off the following co-efficients of digestibility of the various constituents of the fodder have been given by American authorities with cattle —

Dry matter	68	per	cent	digestible.
Fat	59	,,	,,	,,
Proteids	76	,,	,,	,,
Digestive carbohydrates	81	,,	,,	,,
Fibre	60	,,	,,	,,

There is practically no waste in feeding chavli fodder. Even when it is a little mouldy it is eaten freely by stock of every kind, and this is of course a great advantage Altogether it would seem that chavli is likely to fill a large place in the fodder supply of Western India as a crop of exceeding high feeding value, easy to grow, and which stands ahead of all other known annual leguminous fodders for growing in the hot weather under irrigation or in the rainy season In addition to these advantages the long tap root of the plant

penetrates the sub-soil loosening it and making it more porous, and the residue left in the soil after cultivation is always sufficient to produce considerable improvement in the land It is a good soil improver as well as a good fodder crop

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2 See Voorhees—Forage Crops page 66
* See Piper—Forage Plants page 502.
From 'Fodder Crops of Western India' by H H Mann Bulletin No 100 of 1920 of the Department of Agriculture, Bombay Page 198-199

2589 VINCA PUSILLA, Murr

(N O —Apocynaceae)

(*Sans*—Sangkhaphuli *Tam.*Kapa vila) Contains an alkaloid Used in lumbago

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2590 VINCA ROSEA, Linn

(*Punj*—Rattanjot *Bom*—Shada phul *Tel*—Billa-ganneru) Contains an alkaloid which is a heart poison Leaves are applied to wasp-sting

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2591 VIOLA CINEREA Boiss, & V serpens, are plants

(N O —Violaceae)

Hind Sind & Punj—Banafsha. *Kumaon*—Thungtu) indigenous to temperate Himalayas, Khasia Hills and Nilgiri Mountains. *Flowers* of both these plants are used similarly like those of V odorata which see In the Punjab a medicinal oil is prepared from the *flowers* of Viola serpens and is called *Roughan i banafsha*

2592 VIOLA ODORATA, Linn

(N O —Violaceae)

Eng—Wild Violet. *Hind*—Bag banosa, Banaphsa Pers *Bom. etc*—Banafshah (flowers) Guli Banafshah *Ben*—

Banosa *Tam*—Vayilethe, Vayilettu N.B—Flowers and root are known in the bazars as "banafshah."

Habitat—A glabrate or pubescent herb found in Kashmir and the temperate western Himalayas above 5,000 ft.

Constituents—Violet flowers and root contain an emetic principle named 'violine' believed to resemble emetine—the alkaloid of ipecacuanha in some of its characters. It forms salts by its union with acids, it is soluble in alcohol and hardly so in water Flowers also contain in addition to traces of a volatile oil, several peculiar colouring matters and viola-quercitrin, a yellow principle and sugar, the drug also contains "glucoside, methyl salicylic ester"—(Chopra)

Action—*Flowers* are astringent, demulcent, diaphoretic, diuretic and aperient

Uses—*Flowers* are used in bilious affections, lung troubles prolapse of the rectum and uterus and in restraining suppuration, also useful in cough, kidney diseases and liver affections In pulmonary affections the drug acts as a diaphoretic and a nauseating emetic. In large doses it is emetic Usual form of preparation is *syrup* made from the petals of which 1 to 2 drachms may be given to infants for coughs and tightness of the chest. Mixed with almond oil and syrup of senna it makes an excellent demulcent and aperient medicine suitable to children. "An *infusion* (2 drachms of the flower in a pint of warm water) is given as a cooling mixture in fever, in doses of 1 2 ounces."—(Chopra) *Root* is emetic in doses of from one drachm of the powder and upwards. It is frequently used to adulterate Ipecac

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2593 VIOLA SERPENS, Wall

(Hind—Banafsha), used in bilious and pulmonary affections.

2594 VIOLA TRICOLOR, Linn.

Contains a glucoside.

2595 VISCUM ALBUM, Linn

(N O —Loranthaceae)

Eng—Mistletoe *Hind*—Banda, Bhangra, Bhanga. *Ind Baz*—Kishmish-kawal, Kiss-miss *Punj*—Bambaj, Kahbang *Arab*—Kishmish-i-kawaliyan *Arg*—Turapauli

Habitat—Grows in temperate Himalayas and on higher elevations of Madras Presidency

Parts Used—Fresh berries and leaves

Constituents—Berries contain *Viscin* (a glutinous substance) resembling vegetable wax, very elastic, of the consistence of honey and like caoutchouc capable of being drawn into long threads "Drs Ebster and Jarisch were able to extract from mistletoe a substance possessing an action similar to that of digitalis"—(Dr Madaus's Book)

Action—Tonic, antiseptic, emetic, purgative and narcotic "Analogous to cinachona bark in intermittent fevers The hypnotic action is supposed to be due to an influence on the vasomotor nervous centre—(Dr Gaulthier) The blood-pressure reducing substance in mistletoe-extract is probably choline—(Dr Dressler) Arterioles and capillaries become dilated by direct influence—(Dr Holste) Viscum extract is, therefore, an antagonist of vasoconstrictor agents, e g, of hydrastine—(Dr Dess) Medium and large doses weaken the respiratory function—(Dr Nolle) Therapeutic doses stimulate diuresis—(Dr Selig) According to Dr Ebster "viscum has a fairly long-enduring tonic action on rabbits The cardiac minute-volume is increased and only falls again during the advanced stage"—(Dr Madaus's Pocket Compendium) *Decoction of berries* (1 in 10) in doses of ½ to 2 ounces or tincture (1 in 10) in doses of ½ to 2 fluid drachms, is used as tonic, antispasmodic, narcotic and oxytoxic, also emetic and purgative

Uses.—Given to reduce splenic and hepatic enlargements to disperse swellings, and in menorrhagia and haemorrhages Like digitalis it may be given in palpitation of the heart, as

antispasmodic, in hysteria and epilepsy Locally it is applied to mature abscesses

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2596. VISCUM ARTICULATUM, Burm.

(*Hind.*—Pudu. *Santhal*—Katkomjanga). Uses—Given in fever with aching limbs.

2597. VISCUM MONOICUM, Roxb

(*Hind.*—Kuchle-ka-malang *Tam.*—Pulluri). Action—Poisonous. Uses—Substitute for Nux vomica

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2598. VISCUM ORIENTALE Willd.

(*Hind.*—Banda. *Tel*—Sundara-Bandin ka) Used medicinally.

2599 VITEX AGNUS CASTUS

2601. VITEX LATIFOLIA

Is a tree found in Bengal and the East Indies where its *leaves* are used for venomous bites and the *bark* and the *root* in diarrhoea and dysentery —(Chakravarthy)

2602 VITEX LEUCOXYLON, Linn

(*Tel*—Mylellu) Bark and root are astringent, fruit is vermifuge *Root* is used in intermittent fever, *leaves* are smoked in catarrh and headache

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2603 VITEX NEGUNDO, Linn, V paniculata

(N O —Verbenaceae).

Sans—Sephalika, Nirgundi, Svetasurasa, Vrikshaha, Sindhuvaram *Eng*—Five-leaved Chaste Tree *Fr*—Gattilier incise *Hind*—Sambhalu, Sawbhalu, Nirgandi, Nisinda Mewri *Ben*—Nishinda, Nirgundi, Samalu *Bom*—Katri, Nirgundi, Shiwari Nirgunda, Nisinda *Mah*—Nirgunda *Gwalior*—Nigad *Guj*—Nagoda, Shamalic *Tel*—Sindhuvaruma, Tellavavili, Vavili, Nalla-vavili, *Tam*—Chinduvaram, Nirnochchi, Nochchi, Notchi, Vellai noch-chi *Mal*—Indrani, *Can*—Bile-nekki *Burm*—Kiyon-bhanbin *Pers*—Pajankusut *Punj*—Marwan, Maura, Banna, Torbanna, Swanjan, Mawa Amalu (root and leaves), Bari (fruit)

Habitat—Bengal, Southern India and Burma

Parts Used—Root, fruit, flowers, leaves and bark

Constituents—Leaves contain a colourless essential oil of the odour of the drug and a resin, fruits contain an acid resin, as astringent organic acid, malic acid, traces of an alkaloid and a colouring matter.

Action—*Leaves* are externally antiparasitic and powerfully discutient, internally alterative, aromatic, bitter and vermifuge anodyne *Root* is tonic, febrifuge, expectorant, and diuretic *Fruit* is nervine, cephalic and emmenagogue *Dried fruit* acts as a vermifuge *Flowers* are cool and astringent.

Action and Uses in Ayurveda and Siddha —Tikta kashaya katu rasam, katu vipakam, ushna veeryam, kapha haram, lagu, good for hair, eyes, in colic, swelling, amavatham, worms, kushtam, nausea, ulcers, ear diseases, malaria, kapha haram — (Therapeutic Notes)

Action and Uses in Unani —Hot 2, Dry 2 Piles, spleen, uterine, resolves obstructions, hemicrania, emmenagogue — (Therapeutic Notes)

Uses —Leaves are very efficacious in dispelling inflammatory swellings of the joints from acute rheumatism and of the testes from suppressed gonorrhoea or gonorrhoeal epididymitis and orchitis, also over sprained limbs, contusions, leech bites etc, *fresh leaves* are put into an earthen pot, heated over a fire and applied as hot as can be borne without pain, or the leaves bruised are applied as *poultice* to the affected part A *pillow* stuffed with the leaves is placed under the head for relief of catarrh and headache *Leaves bruised* are applied to the temples for headche *Dried Leaves* when smoked are also said to relieve catarrh and headache Juice of the leaves removes foetid discharges and worms from ulcers Leaves are applied as *plaster* to enlarged spleen *Juice* is used for soaking various metallic powders before making the latter into pills An oil prepared with the juice is applied to sinuses and scrofulous sores Oil may be used also as a *bathing oil* for rubbing on the head in glandular (tubercular) swellings of the neck. This method was tried in three such cases in one case the swelling "went down after the oil was used for a month" (Ind Drugs Report, Madras) Oil is found to effect marvellous cures of sloughing wounds and ulcers Kaviraj Jogendranath Sen, M.A., reports a marvellous cure with *Nirgundi* oil of an old and deep gangrenous wound in the left arm of a patient, given up by allopathic Doctors after three months of medical treatment, as hopeless without the surgical method of amputation of the arm The oil prepared with the juice of *Nirgundi* leaves cured it within three weeks—(D P Sanyal—Jour of Ayurveda, Aug 1924) A compound oil prepared with the juice of *V negundo* and eleven other substances in different

proportions acts as specific for syphilis, venereal diseases and other syphilitic skin diseases A decoction of the leaves with long pepper is given in catarrhal fever with heaviness of head and dulness of hearing—(Bhavaprakash) Roxburgh mentions the use of a decoction of the leaves as a warm bath in puerperal state of women who suffer much from after-pains Leaves are given with garlic, rice and gul as a remedy for rheumatism. In the Konkan, juice of leaves with that of Eclipta alba and Ocimum sanctum is extracted and Ajwan seeds are bruised and steeped in it, and given in doses of half a tola for rheumatism Rheumatic patients will be benefitted by baths of *nirgundi leaves* boiled in water Juice in ½ tola doses with ghee and black-pepper is also given and in splenic enlargement two tolas of the juice with two tolas of cow's urine are given every morning—(Dymock) *Tincture of root bark* in 1 to 2 dr doses is recommended in cases of irritable bladder and of rheumatism *Powdered root* is prescribed for piles as a demulcent for dysentery *Root* is used in dyspepsia, colic, rheumatism, worms, boils and leprosy *Fruit* is prescribed in *powder, electuary* and *decoction* *Flowers* are used in diarrhoea, cholera, fever and diseases of the liver and are also recommended as a cardiac tonic *Seeds* form a cooling medicine for cutaneous diseases and leprosy *Flowers* and *stalks* reduced to *powder* are administered in cases of discharge of blood from the stomach and bowels In Mysore, febrile, catarrhal and rheumatic affections are treated by means of a vapour bath prepared with this plant *Leaves* and *bark* are used in remedies for scorpion sting

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2604 **VITEX PEDUNCULARIS, Wall., var: P. roxburghiana**

(Hind.—Nagball, Nagphemi, Charaigorwa, Munjurgorwa *Ben.*—Boruna, Goda *Assam.*—Osai *Santal.*—Bhadu, Marak *Magh*—Karwru *Cachar*—Hila-anwi *Garo.*—Shelangri *Can.*—Navaladi *Burm*—Kyetyo *Tel*—Navaladi) found in Central Provinces, Bengal, Bihar, Khasia Terai and Orissa is recommended by Vaughan (Br M. Jour., Febry. 1921) as a

substitute for quinine A short time after its administration the patient's blood is found to be entirely free from malaria germs—(Kosmos, Stuttgart) Constituents —"Small traces of an alkaloid are found in the dried leaves"—(Chopra). Action —Antihaemolytic, it has no bitter taste *Tea* or *infusion* of *leaves* or of *root-bark* or *young stem* (1 in 40) is used several times a day by the aboriginal tribes of Ranchi, Bihar and Orissa, for malarial and black-water fevers Preference is given to dark coloured root plant over the pale-coloured variety "Vaughan's method of preparing the infusion consisted in taking 2 ounces of fresh leaf or of leaves dried in the shade and dropping them into 40 ounces of water boiling for 5 to 10 minutes and then leaving them to infuse for another hour The resulting infusion was about the colour of strong cold tea in appearance and in taste, and was given sweetened with a little sugar, in doses of 8 to 10 ounces in 24 hours Concentrated infusions prepared on the lines of infusio gentianae compositum of the B P were also tried by him, but the theraputic effects were not so good He adopted the method of using 1, 2 and 4 ounces of leaves in 40 ounces of water to suit different cases and the results were said to be very striking"—(Chopra) But Chopra's experiments on malarial patients have proved fruitless! It is a non toxic, non-depressant and a safe drug It is a specific for malaria and *Kalaazar* and haemoglobinuric fever—(Medical Annual 1922) In Chota-Nagpur, the *bark* is used for making an external application for pains in the chest—(Rev A Campbell)

2605 VITEX TRIFOLIA, Linn

(*Sans*—Jalanirgundi Sindhuka Surasa Vrikshaha *Hind*—Nichinda, Panikisanbhalu, Sufed sanbhalu *Ben.* and *Duk*—Paniki-Shumbala Pani-samalu *Eng*—Indian Wild Pepper *Tam.*—Nirnochchi Shirunoch-chi. *Tel*—Niruvavili, Shiruvavilli, *Mal*—Nirnoochi, Lagondi *Pers*—Panj-angushte-abi *Can.*—Nira lakki-gida. *Sind*—Valuru *Burm*—Kujubhanbin) is a three-leaved tree found in Coro-

mandel, Konkan and the Deccan Its medicinal properties and uses are similar to those of V negundo Constituents — Essential oil and alkaloid *Infusion* of *leaves* in ½ to 1 ounce doses is used as alterative, diuretic, anodyne and demulcent, and is given in intermittent fevers with scanty urine, rheumatism, enlargement of the spleen, etc *Fruit* is nervine, cephalic, and emmenagogue, employed in amenorrhoea *Leaves* are heated and applied to rheumatic pains, swellings, sprains, contusions, etc "*Macerated leaves* made into a paste with water is used as a cooling application on the forehead in headache"—(Chopra) Root is an anodyne application *Powdered leaves* are used as febrifuge N.B —Properties of V negundo and V trifolia are similar, and both are common bazar drugs—(Chopra)

2606 VITIS ADNATA, Wall, V setosa,

(N O —Vitaceae)

(*Bom* —Kole-zan *Santal* —Bob-lar-nari *Paharia* —Panilari *Tel* —Gudametige, Kokkitaya-ralu *Mah* —Nadena *Kon* —Mhasvel) is met with in hotter parts of India from Garhwal to Assam, Sylhet, Bengal Western Peninsula and Ceylon *Dried tubers are used* as an alterative and diuretic in the form of *decoction* to purify the blood and to render the secretions healthy—(Dymock) *Root powdered* and heated is applied to cuts and fractures by the Santals

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2607 VITIS ARANEOSA, Dalz.

(*Hind* —Kauraj *Bom* —Bender-wel, Gherwel, (root)— *Bom* —Chamarmuli. *Thana Dt* —Bendri) indigenous to West Coast, Western Ghats and Pulney Mountains *Vine* is often given to horses when it first springs up, it is very beneficial once a year *Young shoots* and *leaves* are given to horses as a cooling medicine The tuberous starchy *roots*, sliced and dried are astringent in effect

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2608. VITIS CARNOSA, Wall

(*Hind*—Amal-bel *Ben*—Amal-lata *Bom*—Ambat-bit *Tam.*—Kurudinna) Applied to boils

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2609 VITIS INDICA, Linn

(*Eng*—Indian Wild Vine *Hind* and *Duk*—Panjeri, Jangli-angur *Ben*—Amdhiaka, Amluka *Can*—Sambar-balli. *Mal*—Chemparavalli *Tam.*—Shembara-valli *Tel.*—Sambera *Mah*—Randraksh, Kolejan *Kon*—Savsambar) is a species of the Malabar Coast and Travancore Formerly, *juice of root* with the kernel of the cocoanut was employed as a depurative and aperient It is now given with the addition of sugar to produce an aperient action It is also used as an alterative in decoction, like V adnata, in doses of ½ to 1 ounce Action—Alterative and diuretic *Root juice* mixed with oil is an application in eye-diseases, combined with cocoanut milk it is applied to carbuncles and other malignant ulcers.

2610 VITIS LATIFOLIA, Roxb

(*Ben.*—Panibel, Musal Govila *Mah*—Golinda. *Guj*—Janglidrakh *Tam*—Bedisativa *Kon*—Katulam) is a species found in North West India, East and West Coasts and Southwards. *Juice* expressed from the *tender leaves* is used in odontalgia, as a detergent in indolent ulcers, and internally as an alterative *Roots* are astringent.

2611. VITIS PALLIDA, W. & A.

(*Tam.*—Chunnampuvalli), used in rheumatism

2612. VITIS PEDATA, Vahl

(*Sans*—Godhapadi *Ben.*—Goalilata. *Mah*—Ghorpadvel *Tel.*—Pulimada Kamapatige *Tam.*—Edakula. *Kon.*—Sur-

barivel) is usually found in Bengal, Assam, West Coast and Ceylon. *Plant* is "acrid, refrigerant, costive and beneficial in hysteria burning of the skin and diarrhoea."—(N N. Sen Gupta) *Leaves* are astringent and refrigerant They are tied over ulcers *Decoction* of *leaves* checks uterine and other fluxes

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2613. VITIS QUADRANGULARIS, Wall,

or Cissus quadrangularis, or Lycopodium imbricatum or Heliotropium indicum

(*Sans*—Vajravalli, Asthisanhari *Ben*—Hasjora, Harjora, Harbhanga *Hind* and *Bom.*—Harsankar, Harsankari, Harjora, Nallar, Kandavela, Chodhari *Urdu* and *Guj*—Hadsankal, Harjora *Tam*—Pirandal, Purandai, Perundaycodie *Tel*—Nullerotigen, Nalleru, Nullerutigeh *Mal*—Isgangalam parenda *Can*—Sandubalh, Mangaravalli, Mangaroli. Sinh—Hiressa) is a plant found in the hotter parts of India *Powdered root* is used as a specific for the fractures of the bones, with the same effects as plasters externally Dose of the powder is 30 to 40 grains "*Leaves* and *young shoots* are frequently taken with curry in Southern India In Madras, young shoots of the plant, dried and powdered, are burnt to ashes in a closed vessel and administered in dyspepsia and indigestion"—(Chopra) and certain bowel complaints *Leaves* and *young shoots* are also considered as powerful alteratives—(*Ainslie*) *Juice* of *stem* is dropped into the ear in otorrhoea and into the nose in epistaxis It has also a reputation in scurvy and in irregular menstruation—(Dymock) *Stem* beaten into a *paste* is given in asthma—(Balfour) A *preserve* of *stem* prepared by boiling it in lime-water is a useful stomachic—(Moideen Sheriff)

2614 VITIS SETOSA, Wall., or Cissus setosa or C. cordata

(*Hind.*—Harmel, 'Harwal *Duk*—Yek-kisum-ka-bachla *Mah*—Khaj-golicha-vel *Tel*—Baree bach-chali, 'ulla bach-chali. *Tam*—Puli perandai, Puli-naravi) is a plant of Western

Peninsula, from N Circars and Mysore southwards. It is exceedingly acrid *Leaves* are sometimes externally applied as a domestic remedy to promote suppuration of indolent tumours and assist in the extraction of guinea-worm.—(Dymock) It is a useful local stimulant in the form of a *poultice*

2615 VITIS TOMENTOSA, Heyne

(*Santhal*—Ghoralidi *Tel*—Atukula-baddu), used for swellings.

2616 VITIS TRIFOLIA or V carnosa

(*Sans*—Amlaparni. *Hind*—Amalbel, Gidad-drak, Kassar *Ben*—Amal lata, Sone-kesur *Assam*—Maimati *Punj*—Karik, Drikri *Mah*—Ambutvel *Guj*—Khat-khatumbo Tamanya *Tel*—Kadep-tige, Mandula maritige *Sinh*—Walratdugalabu) is found in the hotter parts of India *Poultice* of *leaves* is employed in the treatment of yoke-sores on the necks of bullocks—(Elliot) According to Irvine, seeds and *leaves* are used as an *embrocation*. Stewart remarks that the root ground with black pepper is applied to boils *Root* is used as an astringent.

2617. VITIS VINIFERA, Linn

(N O—*Vitaceae*)

Sans—Dakha, Mridvika, Draksha. *Eng*—Grapes *Fr*—Vigne-Cultive *Ger*—Edlerweinrebe *Hind. Ben. & Duk*—Angur *Bom*—Drakh. *Tel. Tam Can. Mah. & Kon*—Draksha *Tel*—Draksha pondu *Pers*—Kishmish. *Ben*—Drakshya. *Guj*—Mudraka Drakshi. (Dried fruits) *Eng*—Raisins Grapes. *Ger*—Rosinen *Hind*—Kishmish

Habitat.—Grapes are largely cultivated in North Western India, in the Punjab, Kashmir, Baluchistan and Afghanistan

Varieties —'There are many, the more common of them are —(1) "Bhokri" or "Abi", common variety, (2) "Kali" or black or "Hafshi" a long fleshy grape of two kinds, (3) "Abai", a large, round, white, watery grape, (4) "Phakdi", a long, somewhat fleshy, white grape, (5) "Sahebi" or "Kerni", a long white sweet grape, (Pandhri-sahebi & kali-sahebi are two sorts), (6) "Bedana" the seedless, a small, round, sweet and white grape, (7) 'Sultani" or "Royal", a large, round, bitter, white grape, (8) "Sakhri" or sweet, a small, round, white and very sweet grape, (9) 'Pandhari", a small, round fruit, of a greenish white colour and rich sweet flavour commonly cultivated, (10) "Gosai", (11) "Gulabi", (12) "Karawandi" or "Black Prince", (13) "Neelum", and (14) "Kandhari" All these are of the Bombay Presidency [1]

Parts Used —Fruits, ripe, unripe and partly dried ones (raisins), leaves

Constituents —"The analysis of common or "Bhokri' variety when ripe is as under —[2]

On original fruit

Moisture	72 8	to	77 2	p c.
Ash	0 36	to	0 64	„
Acidity (in grams of H_2SO_4)	0 23	to	0 53	„
Total (reducing) sugars	15 69	to	18 60	„

The following are the results when some of the other types of grapes are analysed —[3]

Total (reducing) sugars on original fruit

Phakadi	16 40	per cent		Black Prince	17.10	per cent
Pandhari	18 09	„	„	Khandahari	19 70	„ „
Bhokari or Bhokri	18 60	„	„	Kali Sahebi	22 0	„ „

Chemical analysis of the grape varieties (determinations made on the whole fresh fruit) made by the Agricultural Chemist to the Government of Bombay, Poona —[4]

	Bhokri	Fakdi	Sahebi	Kali-Sahebi	Kandhari	Black Prince	Neelum
Moisture	74.46	79 09	78.84	78 46	76.92	77 41	78.89
Acidity in terms of sulphuric acid	00.55	00.37	00 44	00 44	00.51	00 60	1.28
Total sugars	22.94	16 40	16 61	20.21	18.97	18.13	13.55
Percentage of edible matter	87.3	93.5	89 4	92.1	89.9	85 4	78.2

Fruits contain grape-sugar (glucose), gum, tannin, tartaric, citric, racemic and malic acids, chlorides of potassium and sodium, sulphate of potash, tartrate of lime, magnesia, alum, iron, some albumin, ozotised matters and acid tartrate of potassium Tartaric acid is the characteristic acid of the grapes As—0,05 mg in 100 ccm in fruit juice, and oxalic acid in unripe fruits Raisins contain calcium, magnesium potassium, phosphorus and iron in an assimilable form, besides gum and sugar Seeds contain a dense fixed oil or fat and tannic acid 5 p c. Skins contain tannin Wine contains from 7 to 24% of alcohol.

Action —Grapes are demulcent, laxative, refrigerant, stomachic, diuretic and cooling Raisins (dried grapes) are laxative, demulcent and expectorant, also considered as attenuant, suppurative, nutritious and blood purifier Juice of unripe grapes, and leaves are astringent.

Uses.—*Grapes and Raisins (dried grapes)* have been highly esteemed in India from a very remote period, and "are the most esteemed of all dessert fruits, and English hot-house grapes are considered the finest in the world." *"Sultanas"* are the dried fruits of a seedless variety largely cultivated in Greece "[5] They are recommended in certain forms of anaemia and wasting diseases. The patient is sent to a grape-growing country and ordered to eat one grape every five minutes for so many hours in the day Grapes are also useful in some

cases of bilious dyspepsia, haemorrhages, dysuria, ardour urinae and strangury. Grapes are beneficial in chronic bronchitis, heart-diseases, Bright's disease and gout. *Strained grape-juice* in teaspoonful doses night and morning is given to children for constipation during teething and also to prevent convulsions due to constipation. Grape juice was formely used in Europe in epilepsy. Grape juice is also good for thrush in children, also invaluable in severe colds and fevers. "It is also a good diet given morning and evening during jaundice."* *Juice of sour grapes* is useful for bruises and sprains. Ripe fruits partly dried in the sun and called *raisins* are useful in thirst attendant on fevers, in coughs, catarrh, jaundice, consumption, and in sub-acute cases of enlarged liver and spleen, *the stones or the seeds contained within being rejected.* For acid dyspepsia Chakradatta advises raisins, sugar, honey, and powdered chebulic myrobalans in equal parts to be taken aften washing out the stomach with vomiting. As demulcent and expectorant a linctus is recommended by Sharangadhara. It is made thus:—Take of raisins, emblic myrobalans, dates, long pepper and black pepper, equal parts, rub them together with honey and ghee. An invigorating and nourishing liquor known as *Draksharista* is also recommended by the same; it is prepared as follows:—Take of raisins 6¼ seers and water 128 seers, boil them together till reduced to one-fourth and strain. To the strained decoction add 25 seers of treacle and 8 tolas each of the following substances in fine powder:—*viz:* cinnamon, cardamoms, *tejpatra*, flowers of Mesua ferrea, fruit of Aglaia roxburghiana, black pepper, long pepper and *baberang* seeds, and set aside for fermentation. This liquor is used in consumption, cough, difficult breathing and hoarseness. Fermented juice of grapes, with the flowers of Woodfordia floribunda and sugar popularly known as *Drakshasava* taken in doses of ½ to 2 tolas twice a day after food is very useful as stimulant, tonic, diuretic and diphoretic in anorexia, indigestion and dyspepsia. It also "acted as a good appetiser and tonic in a young woman who was weak and anaemic".—(Ind. Drugs Report, Madras). *Draksha* extract prepared by one palam of dry *draksha* with seeds to be squeezed and boiled with 3 or 4 ounces of water, filtered and juice taken with equal

2618 VOLKAMERIA INFORTUNATA

See Clerodendron infortunata

2619 VOLUTARELLA DIVARICATA, Benth., or Carduus ramosus.

(N O—Compositae)

(*Bom & Ind Baz*—Badaward *Hind*—Sakayi) is a plant found in Mysore and the Deccan ascending to 3000 feet in the N W Himalayas Plant has tonic, aperient, febrifuge and deobstruent properties It is said to drive away noxious reptiles when kept in the house—(Dymock) It is slightly mucilaginous and is used in coughs—(S Arjun) Constituents—Alkaloid It is used as a febrifuge and is often prescribed in fevers and general debility—(R N Khory)

2620 WAGATEA SPICATA, Dalz.

(N O—Papilionaceae)

(*Hind*—Wagati Wakeri Kuldgajga *Can*—Hooli ganji) indigenous to the Western Presidency *Pods* (tere-pods) contain a large proportion of tannic acid *Roots* are used in pneumonia *Bark* is used as an application for skin diseases

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2621 WALSURA PISCIDIA, Roxb

(N O—Meliaceae)

(*Bom. & Tam.*—Walsura) Action—Stimulant, expectorant, emmenagogue, emetic. Constituents—Saponin Used as a fish poison and in skin diseases

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2622 WEBERA CORYMBOSA, Willd.

(N O—Rubiaceae).

(*Tam*—Kura) Leaves are used in skin diseases

2623. WEDELIA CALENDULACEA, Less.

(N.O —Compositae).

(*Sans*—Pitabhringi *Mah & Ben*—Bhangra, Kesaraja *Hind*—Bhanra *Bom*—Pivalabhangra *Mol*—Pivala-maka *Tam*—Postaley-kaiantageraı) is met with in wet places of Assam, Sylhet and the Eastern & Western Peninsula Leaves are used in cough and in skin diseases For further particulars see Eclipta alba etc

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2624 WITHANIA COAGULANS, Dunal

(N O —Solanaceae)

(*Sans Mah Kon & Ben*—Asvagandha *Eng*—Vegetable Rennet *Gwalior*—Asgandh *Pers*—Arusaka-pas-i-parad, Paner-bad *Arab*—Habbula Kakanage *Hind*—Akri, Punir *Bom*—Kaknaj *Tel*—Panneru-gadda *Tam*—Amukkura *Mal*—Amukiram *Can*—Amakiregadday) common in the Punjab, Sind, Afghanistan and Baluchistan Round capsular *fruit* is used in the fresh state as an emetic and when dried it is used as a stomachic, in small doses it is a remedy in dyspepsia and flatulent colic It and the *leaves* have the peculiar property of coagulating or curdling milk, a small portion is rubbed with a little water or milk and is added to the milk to be coagulated *Dried capsules* also retain the coagulating property in an equal degree A tablespoonful of the *decoction* (1 in 40) is enough to coagulate one gallon of warm milk and gives an excellent curd in about half an hour The active principle named "*withanin*" residing in the numerous small seeds contained within the capsules is a ferment closely allied to the animal rennet It is destroyed by boiling and is precipitated by alcohol, which latter does not, however, affect its coagulating property It can be extracted from the seeds either by glycerine or by a moderately strong solution of common salt, extracts prepared by either means have strong coagulating powers even in small amounts. *Action* —Emetic, alterative & diuretic, coagulates milk

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2625 WITHANIA SOMNIFETRA, Dunal,

or Physalis flexuosa.

(N.O.—Solanaceae).

Sans—Ashvagandha *Eng*—Winter Cherry. *Hind*—Asgandh *Ben*—Aswagandha *Guj*—Asundha, Asana *Goa*—Fatarfoda. *Bom. & Mah*—Asagandha *Tam*—Achuvagandi, Amkulang-kalang, Amukran-kizhangu, Amukkira-kilzhangu

Tel.—Penneroo-gadda, Asvagandhi *Mal*—Pevette *Can*—Sogade-beru, Hirimaddina-gadday, Amukkira-gadday, Hirregadday

Habitat—This shrub is common in Bombay and Western India, occasionally met with in Bengal.

Parts Used—Root and leaves

Constituents—Plant growing in Southern Europe is found to contain a bitter alkaloid "Somniferin" having hypnotic property, also resin, fat and colouring matters "A reducing sugar, phytosterol, ipuranol, mixture of saturated and unsaturated acids and a small quantity of a basic substance supposed to be an alkaloid have been isolated" say Drs D N Majmudar and P. C. Guha, Bangalore

Action—Tonic, alterative, astringent, aphrodisiac and nervine sedative Seeds possess the property of coagulating milk like those of W coagulans, but they also contain poisonous properties Leaves and root are narcotic Root is also diuretic and deobstruent, tonic, alterative and aphrodisiac

Action & Uses in Ayurveda & Siddha—Tikta, kashaya rasam ushna veeryam, katu vipakam, kapha vata haram *Indications*—Vranam, visham, aphrodisiac, strength giving, complexion improved, in kasam, swasam, sooln, pandu, white leprosy, pruritis, Karappan, fatigue—(Therapeutic Notes)

Action & Uses in Unani—Hot 1°, Dry 1°, cough, asthma, uterine diseases, expels balgham and soudi, aphrodisiac, puerperal tonic—(Therapeutic Notes)

Uses—Root and bitter leaves are used as a hypnotic in alcoholism and emphysematous dyspnoea Leaves are used

as an anthelmintic and as an application to carbuncles **Fruits** or *seeds* are used as diuretic, and to coagulate milk. **Root** is used as an application in obstinate ulcers and rheumatic swellings Root is used in doses of about 30 grains in consumption, emaciation of children, senile debility, rheumatism, in all cases of general debility, nervous exhaustion, brain fag, loss of memory, loss of muscular energy and spermator rhoea It infuses fresh energy and vigour in a system worn out owing to any constitutional disease like syphilis, rheumatic fever etc., or from over-work and thus prevents premature decay *Powder* of the root mixed with ghee and honey in equal parts is recommended for impotence or seminal debility, it is to be taken in the evening, followed by milk As nutrient and health restorative to the pregnant and old people a *decoction* of the root is recommended, or its powdr with milk may be taken The decoction boiled down with milk and with ghee added to the mixture is recommended for curing the sterility of women It is to be taken for a few days, soon after the menstrual period *Aswagandha Kashayam*, one in four to one in sixteen, is a good surgical dressing for *Ropanam* For bloody discharge, leucorrhoea etc, *Asvagandha* powder 45 grains and sugarcandy 1 tola is given in cow's milk, morning and evening till cure is obtained For spermatorrhoea, loss of strength etc, a powder consisting of *Asvagandha*, sugar, ghee, honey and long pepper is to be given daily, with milk and rice diet For lumbago, pains in the loins or small of the back, powder of *Asvagandha* and sugarcandy, in ghee is recommended For scrofulous and other glandular swellings *fresh green root* of Asvagandha reduced to *paste* with cow's urine or with water heated is applied to the parts affected In consumption a *decoction* of *Asvagandha root* and long pepper is given with the addition of clarified butter and honey For improving the nutrition of weak children, root reduced to a *paste* is given with milk and clarified butter for a fortnight (Chakradatta) The same recommends also a preparation called *Ashvagandha Ghrita* which is made as follows —Take of the decoction of *Ashvagandha* root 1 part, milk 10 parts, clarified butter 1 part, boil them together and prepare a *ghrita* It is given to promote the nutrition and strength of children An oil popularly known as *Narayana*

Taila is recommended for internal administration in doses of 3 drops daily increased by 1 drop to 10 drops in consumption, emaciation of children and rheumatism and as an *enema* in dysentery and anal fistulae, the oil is made thus —Take of *Ashvagandha*, root of Sida cordifolia, Aegle marmelos, Cissampelos pareira, Solanum jacquini, Pedalium murex, Melia azadirachta, root of Calosanthes indica, Boerhavia diffusa, Clerodendron phlomoides, each 2 parts Make a decoction To this add sesamum oil 40 parts, and a paste of Daemia extensa (*uterance*) 10 parts, *Acacia* catechu, Cardamoms, Nardostachys jatamansi, Acorus calamus, Clematis triloba Pterocarpus santalinus (red), rock salt, Withania somnifera, Tylophora asthmatica, Foeniculum vulgare, Pinus deodara, Desmodium gangeticum, Urania picta, and Valeriana hardwickii each 2 parts Boil the whole for one hour Used as drops into the nose in deafness, and as an inunction over the body in hemiplegia, tetanus, rheumatism, and lumbago As a galactagogue the decoction of the roots of *Ashvagandha*, Batatas paniculata and Liquorice, is recommended to be given in cow's milk In rheumatism a *ghrita* prepared with a decoction and paste of the root is used internally and an oil prepared with a decoction of the root and a number of aromatic substances in the form of a paste is used externally For skin diseases *Ashvagandha* powder well mixed in oil is applied to the skin For improving sight, a mixture of *Ashvagandha* powder, liquorice powder and juice of emblic myrobalans is recommended to be taken About half a drachm of *Ashvagandha root* taken with milk or clarified butter acts as an aphrodisiac and restorative to old men — (Sharangadhara) A mixture of the powders of Ashvagandha and Ipomoea roots in equal parts placed in a vessel smeared with ghee, is given in doses of 1 tola in cow's raw milk (as soon as drawn) as an aphrodisiac and invigorator Compound *decoction* of *Ashvagandha* 3, Ipomoea root 2, long pepper 4 and honey 5 parts is also recommended in doses of ½ to 1 ounce in cow's milk, for consumption, seminal debility, and to help the nutrition of weak children The drug is also used in scorpion-sting

2626 WOODFORDIA FLORIBUNDA, Salisb,

W. fruticosa, kurz, Lythrum fruticosum, Linn.

See Grislea tomentosa

(N O —Lythraceae)

(*Sans*—Dhataki, Dhauri, Agnijvala *Hind*—Dhauta *Ben*—Dhai-phul *Hind & Ben*—Dhai *Punj*—Dha *Bom.*—Dhaiphul, Dhauri, Dhayatis *Nepal*—Daheri *Mah*—Pulsathi *Guj*—Dhavadina *Tel*—Seringi, Sirinji, Jaji, Errapurvu. *Mal & Can*—Tamrapushpi *Tam*—Dhathari-Jargi) is a large shrub common in many parts of India Bright red *flowers* contain tannin 20 p c Flowers are stimulant and astringent, dried ones are astringent and tonic *Infusion of flowers* and *leaves*, is used as tea *Flowers* are added to prepared liquids in making most of the *Aristas* and *Asavas* for causing alcoholic fermentation, before the pots containing the materials are sealed and put away *Flowers* are used as *powder* in doses of 2 drachms in curdled milk in cases of dysentery, diarrhoea, and other bowel complaints and internal haemorrhages, in leucorrhoea and menorrhagia, powder is given with honey A powder consisting of these flowers, *Mocharas* and *Ajamoda*, all in equal parts and in powder is recommended in doses of 2 drachms in curdled milk and honey in menorrhagia and dysentery *Externally*, powdered flower is sprinkled over foul ulcers and wounds for diminishing their discharge and promoting granulations (Sharangadhara) For the same purposes a *decoction* of flowers is used as a *lotion* In the dysentery of children, following combination is given in the form of powder or decoction with the addition of honey — Take of the flowers of Woodfordia floribunda, *bel* fruits, bark of Symplocos racemosa, root of Pavonia odorata and fruits of Pothos officinalis in equal parts, 2 tolas in all and prepare a decoction in the usual way A *Confection of Dhataki* is used in doses of 1 to 2 drachms as stimulant and astringent, given in dysentery and to check haemorrhages and chronic discharges such as menorrhagia and leucorrhoea This was tried and had given "satisfactory result in dysentery"—(Ind Drugs Report Madras) It consists of, in addition to the above ingredients

honey and Andropogon muricatus Dried *flowers* are useful in disorders of the mucous membranes, haemorrhoids and derangements of the liver, they are also considered a safe stimulant in pregnancy In the Konkan, *leaves* are used in bilious sickness, juice of *leaves* is applied to the crown of the head, while the patient is made to hold a mouthful of sesamum oil This causes the oil in his mouth to become yellow from absorption of bile Fresh oil is then given repeatedly until it ceases to turn yellow The drug is also used in headache and fever

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2627 WOODFORDIA FRUTICOSA, Vurz

(See —W floribunda), is another species common in deciduous forests of Kurnool and South Kanara (*Tam* —Velakkai *Kon* —Dhauri)

2628. WRIGHTIA ANTIDYSENTERICA, Grah

See Holarrhena anti-dysenterica

2629 WRIGHTIA TINCTORIA, Br., or W rothii

(N O —Apocynaceae)

Sans —Hyamaraka, Asita kutanja, (seeds —Indrayavam) *Eng* —Sweet Indrajao *Hind Mah & Guj* —Mitha Indrajava, Gode Indrajava *Gwalior & Ben* —Indrajav *Bom* —Kalakuda, Kalakado *Pers* —Indarjow (seeds) *Mal* —Kotakappala. *Tam.*—Vetpala verai, Vepoalai, Vetpalai, (seed) Vetpalarisi *Tel* —Ankudu, Ankud—kodisha, Tedlapala

Habitat.—A deciduous tree with milky juice found in Central India, Western Peninsula, Coromandal coast, Coimbatore and Godavery districts.

Action.—Astringent, stomachic; tonic and febrifuge

Action & Uses in Ayurveda & Siddha —Mathura rasam, seetha veeryam, mathura vipakam, tridosna haram, vatic pains

Seeds —flatulence, pitta vayu diseases rakta athisaram kudal vriddhi —(Therapeutic Notes)

Action & Uses in Unani—Hot 2°, Dry 2° Uterine sedative, sedative of vayu *Leaves* —Astringent, aphrodisiac, palpitation of heart chronic cough —(Therapeutic Notes)

Uses —*Decoction of leaves and bark* (1 in 10) in doses of ½ to 2 ounces, is used as stomachic, tonic and febrifuge, in combination with other vegetable bitters given in bowel complaints and during convalescence from fevers and other acute diseases *Seeds* are sweet and tonic, and are given in seminal weakness *These seeds should not be confused with the bitter seeds of Holarrhena anti-dysenterica Leaves* when chewed relieve toothache

N B —This plant which is often confounded with that of Holarrhena antidysenterica, has white jasmine-like flowers with a fragrant odour while the flowers of Holarrhena are odourless Further, the bark is of reddish brown colour and smooth appearance as compared with Holarrhena bark which is thicker and is of a dirty white or buff colour and has a markedly bitter taste The seeds of Holarrhena resemble oats they are very bitter and are contained in long follicles about the thickness of a quill They have a tuft of hairs on the end most remote from the foot stalk, whilst in the Wrightia seeds the tuft is on the end next to the foot stalk —(Chopra s "I D of I" P 327)

2630 WRIGHTIA TOMENTOSA Roem.

(*Tam.*—Thonthapala), used in snake bite and in scorpion sting See Nerium tomentosa

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2631 XANTHIUM STRUMARIUM, Linn., X. indicum,

(N O—Compositae)

Is a gregarious weed (plant) (*Sans.*—Arista Shankini *Hind.*—Shankhahuli Chota-gokhru *Ben.*—Ban-okra *Bom.*—

Dhupa. *Mah* —Shankeshwar *Sind. & Punj* —Kullan *Tam.* —Marhe-matta, Marul-umathan, Marlu-mutta *Tel* —Veritel-nep) found in fallow paddy fields and tank beds of the hotter parts of India and Ceylon (usually near houses), and the western Himalayas up to the height of 5000 ft Fruit contains fat 38 6 p c , ash 5 2 p c , albuminoids 36 6 p c , sugar, resin, organic acids, (oxalic acid) and a glucoside named 'Xanthostrumarin" related to datiscin *Whole plant* is diaphoretic, sedative, sudorific, diuretic and sialagogue Other actions resemble those of *Jaborandi*, (a drug prepared from the leaves of a Brazilian shrub Pilocarpus pennatifolius) *Decoction* (1 in 10) of the plant in doses of ½ to 1 ounce is given in urinary and renal complaints, in gleet, leucorrhoea, menorrhagia and long standing cases of malarial fevers Dose of *dried leaves* in powder is 10 grains *Root* is a bitter tonic useful in cancer and struma *Prickly fruit* is cooling and demulcent and is given in small-pox

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2632 XANTHOCHYMUS PICTORIUS

See Garcinia xanthochymus

2633 XIMENIA AEGYPTICA

See Balanites roxburghii

2634 XIMENIA AMERICANA, Linn & Willd

(N O —Olacaceae)

Used as a substitute for sandalwood

2635 XYLIA DOLABRIFORMIS, Benth

(N O —Papilionaceae)

(*Sans* —Sirnsapa *Tam* —Irul) *Decoction of bark* is used in worms leprosy, vomiting, diarrhoea, gonorrhoea and ulcers Oil from seeds is used in rheumatism piles and leprosy

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2636 XYRIS ANCEPS, Lamk

(N.O —Xyridaceae)

(*Tel* —Kochelachipullu) Leaves are boiled in oil and used in itches, leprosy and skin diseases

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2637 XYRIS INDICA, Linn

(N O —Xyridaceae).

(*Sans* —Dadumari *Hind* —Dabi-dulea *Ben* —China-ghas). The drug is a cure for ringworm

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2638 YEAST

(*Eng* —Yeast *Pers & Hind* —Khamir) is the name applied to any of the various species of the minute fungi of the genus Saccharomyces, (see Torula saccharomyces) It is best known as a ferment thriving in saccharine solutions, breaking up the sugar molecule into carbon dioxide and alcohol In domestic economy, it is used in leavening bread, the porosity of the latter being due to the escaping carbon dioxide It is also the essential principle in alcoholic fermentation. In medicine, it has proved of value as an application to foul gangrenous) ulcers and as an internal remedy in putrid fevers. The active principle of yeast is in the form of the yeast fat—Ceridin 3 p c and it is found that the therapeutic action of yeast is entirely due to this absenc The therapeutic action of yeast in cases of furunculosis, acne, and similar skin diseases has been known Dr Mosse says that three tablespoonfuls of yeast daily cured many obstinate cases of furunculosis, which did not yield to any other treatment. The use of Ceridin instead of yeast permits of accurate dosage, presents the medicament in a palatable form and obviates the two great disadvantages of yeast treatment, viz., the large quantities that have to be taken, and the secondary effects, due to fermentation etc. *Ceridin* is useful for boils, furunculosis, acne, endometritis, leucorrhoea, cervical catarrh and as an aperient Cerd e

(patented drug) is for adults in the form of pills, each pill containing the effective dose of 1½ grs of the fat —Dose is 1 to 3 pills three times a day, and for children, in the form of tablets each containing ½ grain of ceridin and 3½ grains of sugar of milk, dose is 1 to 3 tablets three times a day An extract of yeast that may take the place of insulin, the specific for diabetes, has been discovered by L B Winter and W Smith in the Biochemical Laboratory at Cambridge Great similarity to the pancreatic extract for treating diabetes, which was isolated at the University of Toronto, has been shown by this newly discovered solid substance from yeast The production of an insulin substitute from yeast is considered a great step in advance, for it is expected that it will greatly reduce the cost of preparation of an anti-diabetic drug Insulin today is almost prohibitive in cost, since it is difficult to prepare and must be taken continually —(Am Jour Pharm)

2639 YEAST BEER

Is the ferment used in brewing beer It is a more or less pure culture of the saccharomyces cerevisivae It consists of numerous round or elliptical cells varying in size, it is viscid and frothy and has a peculiar odour and taste Its chief constituent is *Invertin* It is a popular remedy for boils, dose is one or two tablespoonsfuls *Nuclein* is a liquid prepared from yeast and stated to contain 5 p c nucleinic acid Doses of 1 fluid drachm three times a day, persisted in for some time, are stated largely to increase the number of leucocytes which destroy noxious bacilli Good results are reported in tuberculosis, tonsilitis, diphtheria, etc Levurine is a French preparation made from yeast It is recommended for boils and carbuncles. Dose is 1 fluid drachm with meals

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2640 YEAST TODDY

(*Eng*—Toddy *Hind.* & *Duk*—Sendhi, *Tam* *Tam* & *Tel*—Kallu *Can*—Henda, *Sinh*—Ra *Malay*—Tu ak) is a saccharine juice obtained by the excision of the spadix, or

young flowering branch of the Palmyra, Cocoanut and other Palms There are many kinds of Toddy in India, and they are named according to the plants from which they are produced Toddy is valuable as the basis of a very useful stimulant application the *Toddy Poultice*, which is to the Indian what the Yeast Poultice is to the European surgeon It is prepared by adding freshly drawn Toddy to rice flour till it has the consistence of a soft poultice and subjecting the mixture in an open vessel to heat over a gentle fire stirring constantly till fermentation commences, or it "begins to rise," as it is commonly expressed Thus, spread on a cloth and applied to the parts, acts as a valuable stimulant application to gangrenous or sloughing ulcerations, carbuncles, indolent ulcers etc 'It hastens the separation of the slough and establishes subsequent healthy action Toddy left exposed to the air rapidly undergoes vinous fermentation, and becomes converted into *Arrack*, one of the most intoxicating drinks of India Thus *Arrack* subjected to distillation until it has a specific gravity of 0 920, may be employed as Proof Spirit in the preparation of tinctures and for other pharmaceutical purposes, and in the formation of cold evaporating lotions."—(Dr E J Waring)

2611 YUCCA GLORIOSA, *Linn*

(N O —*Liliaceæ*)

Fruit is purgative root is deterrent

2612 ZANONIA INDICA, *Linn*

(N O —*Cucurbitaceæ*)

quiet the nervous irritation of boils, sciatica and to chest in cough and asthma Fruits possess acrid, cathartic properties Fresh juice is said to be an efficacious antidote to venomous bites

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2643 ZANTHOXYLUM ACANTHOPODIUM, DC,

Z hamiltonianum, Z oxyphyllum

(N O —Rutaceae)

(*Hind* —Tumra *Ben* —Tambul) are species found in the Himalayas and from Kumaon to Sikkim, Assam and Burma, having properties similar to Z alatum Constituents Dipentene, O-phellandrene, Linalool (methyl-o-cinnamate), cinnamic methyl ester and essential oil Uses same as Z alatum

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2644 ZANTHOXYLUM ALATUM, Roxb

(N O —Rutaceae)

Is a shrub (*Sans* —Tejbal, Trimburu, Tumburu *Hina* —Tumru, Tejmal *Ben* —Nepalidhania *Lepcha* —Tungrukung) common in the temperate Himalayas, in Bhutan and in the Khasia Hills found also in the darjeeling dist *Bark* contains a bitter crystalline principle identical with berberine, a volatile oil and resin, *carpels* contain a volatile oil, resin, a yellow acid principle and a crystalline solid body "Xanthoxylin" consisting of O C and H Carpels of the fruits yield an essential oil isomeric with turpentine like eucalyptus oil in odour and properties, the essential oil possesses antiseptic, *disinfectant* and deodorant properties *Bark* of this and several other species of the same genus contains *berberine* Seeds and bark are used as aromatic tonic in fever, dyspepsia and cholera. *Infusion* and *decoction* of bark (1 in 10) are used in doses of 1 to 2 ounces *Fruit* as well as the branches and thorns are used as a remedy for tooth-ache, also deemed stomachic and carminative

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2645 ZANTHOXYLUM BUDRUNGA, Wall

(*Sans*—Tinaburu *Hind*—Budrung *Ben*—Tambul *Assam*—Brojonali. *Tam*—Retsamaram) is a tree indigenous to tropical Himalayas and Assam *Constituents*—Its *fruit* has the odour of lemon peel and contains in its outer coat a fragrant balsam and in the spicy seeds an aromatic oil There is an alkaloid 0 24% *Action*—Astringent, stimulant, stomachic and tonic Aromatic *root* is sudorific, emmenagogue and febrifuge

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2646 ZANTHOXYLUM HAMILTONIANUM, Wall

(*Nepal*—Purpuray-timur) Uses same as Z alatum

2647 ZANTHOXYLUM OVALIFOLIUM, Wight

Contains essential oil Uses same as Z alatum

2648 ZANTHOXYLUM OXYPHYLLUM, Edgw

(*Nepal*—Timur) Uses same as Z alatum.

2649 ZANTHOXYLUM RHETSA, DC

(*Bom. & Goa*—Chirphal, Koklee, Tessul. *Tel*—Rhetsa-maram *Can*—Jisumi mara, Jummina *Sinh*—Katukina) is a plant of the Western Peninsula, from Coromandel and Konkan southward, occasionally cultivated in Ceylon Constituents—Essential oil. *Fruit* is useful as a condiment in curries It has stimulant, astringent, aromatic, stomachic and digestive properties and is prescribed in urinary diseases, dyspepsia arising from atrabilis, also in some forms of diarrhoea, so also the *bark* is used *Root-bark* is reputed in Goa to be purgative of the kidneys *Bark* is aphrodisiac and bitter aromatic. *Fruit* with *Ajwan* seeds is powdered, steeped in water and distilled, and the distillate is given as a

which militates against the extensive use of the grain for human food."—(B G A Dept Bulletin).

"As a producer of fodder, maize probably stands only second to *jowar* among the crops of the world, and it may even be doubted whether it is not in many cases considerably its superior It produces almost as much good fodder per acre as *jowar*, it can be safely grown over a larger range of country than its rival, and it can be fed at any stage of its growth far more safely than is the case with *jowar*

Calculated on an even basis of 75 per cent of water, maize grown at Poona and Manjri in 1912, 1914 and 1915 gave the following figures on analysis —

	(1)	(2)	(3)	(4)
	p c	p c	p c	p c
Water	75 0	75 0	75 0	75 0
Ether Exract (oil, etc.)	0 5	0 4	0 5	0 6
Albuminoids (i.e Nitrogen x 6¼)	1 5	1 3	1 3	1.7
Digestible carbobydrates	14 0	15 2	14 0	13 1
Woody fibre	7 6	6 7	7 3	7 3
Ash	1 4	1 4	1 9	2 3
	100 0	100 0	100 0	100 0
Containing nitrogen	23	20	21	24

It will be seen that, calculated on a similar basis of water, the composition of this maize fodder is not widely different from that of jowar already reported Very little alteration in composition and very little change in digestibility occur if the fodder is dried

Uses —*Maize* grain when well-cooked is a very nourishing article of food-diet in consumption and relaxed condition of the bowels For invalids and children under the names of *Polenta* (Maize meal), a kind of porridge prepared in Italy from the coarsely ground grains, is used, and *Maizena* (Maize flour) in Europe "*Maize starch* or *corn flour* is largely used as a substitute for arrowroot and for making biscuits In many parts of the world the young *unripe* cobs, which are very sweet, are boiled and form a favourite vegetable" In

Greece the silky *stigmata* (stigmas) are used in *decoction* in diseases of the bladder and in America under the name of Corn-silk of which a liquid extract is sold as a remedy in irritable conditions of the bladder with turbid and irritating urine It has a marked diuretic action The *meal* is used as a *poultice* and a gruel is also made of it The *cake*, after the oil is extracted, ground into meal is a valuable food. In the Konkan an *alkaline solution* is prepared from the *burnt cobs* and is given in lithiasis "Maize *cob-heads* are usually eaten parched or boiled while green, and *ripe-grain* is also parched and made into *lahis* (Marathi) and after grinding is used as flour In the Deccan, the crop is often grown for its fodder, though the grain is allowed to ripen and the ears are readily sold in towns, for roasting The green fodder is excellent being very sugary It may be either fed green or dried and stacked. Maize is a most valuable food for both man and beast It is said to be more nutritious than most other cereals, including wheat, and with the outer husk removed, it is easily digestible In America and Europe, as a food stuff for all kinds of farm-stock, especially cattle, pigs and poultry, maize is of greatest importance, and is one of the most extensively used grains of the world"

2654 ZEHNERIA HOOKERIANA, Arn

(N O —Cucurbitaceae)

(*C P* —Bankudri) Used in fever and diarrhoea

2655 ZEHNERIA UMBELLATA, Thw

nut *Root* is stimulant and invigorating In confections it is generally combined with onions, cumin, sugar and butter It is also given in gonorrhoea and dysuria With cumin and sugar, root-juice is given in cold milk for spermatorrhoea

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2656 ZEUXINE SULCATA, Lindl

(N O —Orchidaceae)

(*Ben* —Shwet-huli) occurs in the plains of South India. Locally its tubers are used as salep

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2657 ZINGIBER CASSUMUNAR, Roxb, or Z purpureum & Z chiffordii

(N O —Scitaminaceae)

(*Sans* —Vana-ardraka *Eng* —Wild Ginger *Hind.* & *Ben* —Ban-ada *Mah* —Nisa, Malabari halad *Bom* —Nisan. *Tel*—Karu-allamu, Karu-pasupu) is a plant found from the Himalayas to Ceylon Its uses are similar to those of Officinal ginger, it is carminative, stimulant in diarrhoea and colic. *Root* has a pungent odour similar to a mixture of camphor and nutmeg *Root* is found to contain more mucilage and sugar than that of Curcuma aromatica This drug yielded to analysis —Essential oil, fat and soft resin, sugar, gum, acids, starch, crude fibre, ash, moisture, albuminoids, modifications of arabin etc It is stomachic, carminative and stimulant Useful in diarrhoea and colic Other uses are similar to those of Z officinale

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2658. ZINGIBER OFFICINALE, Roscoé

(N O —Scitaminaceae)

Sans —Srangavera, Sringa-beram, (dried) — Sunta; **Nagara**; Nagaram, Visoushada, Maha-oushadam, Mahaushada;

arsas, anaham, hrith-rogam, udhara rogam, externally in kapha, swellings, headache —(Therapeutic Notes)

Action and Uses in Unani —Hot 2°, Dry 2° Dries the ruthoobath, carminative, digestive, aphrodisiac, sedative of pains due to Rheei, removes viscid matter, strengthens memory, removes obstruction in the vessels, used in nervous diseases, incontinence of urine, in balgham, diseases Fresh —Hot 3°, Dry 1° —(Therapeutic Notes)

Uses —Ginger is prepared from the dried rhizomes Ginger being aromatic and pleasantly pungent, is commonly used as a spice and in the preparations of condiments, curries, ginger bread, and a *conserve* and *syrup* are made from the fresh younger rhizomes *Rhizomes* are also pickled Dried ginger is of two kinds peeled and unpeeled, the latter being merely the cleaned rhizomes dried in the sun In the case of the dry specimen the outer layer should be scraped off When the fresh drug is used for extracting the juice, the supernatant fluid alone should be used and the sediment (*chunnam*) discarded "Ginger was at one time much employed for spicing beer, and the modern equivalent, ginger-beer, is highly esteemed today as a beneficial cordial in cold weather"—(Chopra) ✓ *Dry ginger* is much used as a carminative adjunct along with black pepper and long pepper under the name of *trikatu* *Ginger* is extremely valuable in dyspepsia, flatulence, colic, vomiting, spasms and other painful affections of the stomach and the bowels unattended by fever, for cold, cough, asthma, dyspepsia and indigestion is highly recommended a preparation called "*Allaepauk*" or Ginger-jam or Conserve, it consists of ginger-juice, water and sugar in sufficient quantities, boiled down to the consistence of a syrup, and to which are added saffron, cardamoms, nutmeg and cloves all in powder, and preserved in a well stoppered bottle, chinaware or earthernware For indigestion with want of appetite, etc, equal parts of ginger-juice, lemon-juice and rock salt, well mixed together or equal parts of ginger and rock-salt should be taken just before meals Ginger with rock-salt taken before meals cleans the tongue and throat, increases the appetite and produces an agreeable sensa-

tion For biliousness and delirium through biliousness, two tolas of ginger-juice mixed well with seven tolas of cow's milk and boiled down to half its volume and then a sufficiency of sugar-candy powder added to it, is recommended to be taken in suitable doses at bed time, or two tolas each of ginger juice, mango-juice, fine sugar and cow's ghee well mixed and melted down to half the quantity is to be taken morning and evening daily Relaxed sore-throat, hoarseness and loss of voice are sometimes benefited by chewing a piece of ginger so as to produce a copious flow of saliva Ginger juice rubbed on and around the navel is said to cure all kinds of diarrhoea A tola each of the juice of ginger and onion mixed together and given relieves nausea, vomiting and retching Ginger juice mixed with sugar-candy and given twice daily is a good remedy for diabetes (both types-mellitus and insipidus) *Dry ginger* is generally used as a corrective adjunct to purgatives to prevent nausea and griping It is best given either in powder in doses of 10 to 30 grains, which may be taken with 5 grains of carbonate of sodium or potash in gout and chronic rheumatism, or in the form of *infusion* (1 in 20) in doses of 1 to 2 ounces every hour For indigestion, want of appetite etc. powder mixed with ghee or hot water serves as a nice remedy In cases of dyspepsia, loss of appetite and piles Bhavaprakash prescribes a compound powder "*Samasarkara Churna*", It is made thus —Take of cardamoms 1 part, cinnamon 2 parts, flowers of Mesua ferrea 3 parts, black pepper 4 parts, long pepper 5 parts, dried ginger 6 parts, sugar in quantity equal to all the other ingredients, powder and mix Dose is about a drachm. The same recommends a *confection* named *Saubhagya Sunti* much used as a carminative tonic in dyspepsia and in disorders of the alimentary canal in females after confinement It is made as follows —Take of clarified butter 16 tolas, milk 4 seers, sugar 6¼ seers, dry ginger 1 seer, boil them together so as to make an electuary Then add coriander 24 tolas, fennel seeds 40 tolas, *Baherang* seeds, cumin seeds, nigella seeds, long pepper, black pepper, ginger, tubers of Cyperus rotundus, leaves called *Tejapatra*, flowers of Mesua ferrea, cinnamon and cardamoms each 8 tolas in fine powder and stir with a ladle till cold. In painful affections of the bowels, stomach,

etc, *infusion* of dry ginger is given with the addition of a tablespoonful or two of Castor oil to the dose of the infusion Dry ginger with *Sajjikhara* and a little of asafoetida is also a popular home remedy in such cases, or a mixture of *Sonth* 4 parts and Aniseed 1 part fried in half the quantity of ghee and the whole powdered is taken daily in suitable doses, mixed with jaggery In chronic rheumatism, *infusion* of *Sonth* (1 in 24)taken warm just before going to bed, the body being covered with blankets so as to produce copious perspiration, is often attended with the best results The same treatment has also been found beneficial in colds or catarrhal attacks and during the cold stage of intermittent fever Bhavaprakash gives a preparation named *Sunta ghrita* made with a decoction and paste of ginger root clarified butter and *Kanjika* as usual It is useful in rheumatism. Malabar Vaidyas hold that juice expressed from fresh ginger in gradully increasing doses is a strong diuretic in cases of general dropsy whatever the cause may be This method was tried "in three cases of ascites with dropsy arising from cirrhosis of liver of recent origin and there was, when the juice was so administered, complete subsidence of ascites and disappearance of the dropsy "The fresh juice of the drug acted as a strong diuretic The patients passed gradually increasing quantities of urine daily *It did not prove efficacious in dropsy of chronic Bright's disease and chronic heart disease, on the other hand such cases became worse under its use Long-standing cases of cirrhosis with ascites did not derive the slightest benefit from its administration* It have no doubt that fresh ginger juice when properly administered will be found beneficial in cases of early cirrhosis of the liver with ascites and dropsy of the lower limbs The dose and method of administration —Fresh juice of ginger expressed from 5 tolas weight of the drug mixed with an equal quantity of sugar is to be given on the first day in the morning This is to be increased by juice expressed from 2½ tolas weight of ginger daily until the juice from 25 tolas weight is administered The quantity is to be diminished in the reverse order every day till it comes back to juice from 5 tolas weight If there is still any dropsy left another course ought to be gone through

in the ascending and descending order The patient should be put on milk and *conjee* diet This deserves a further trial"—(Dr Koman in the Ind Drugs Report, Madras) In sciatica and other forms of rheumatism a compound oil named *Saindhavadya Taila* is recommended in Chakradatta for local application, it is made as follows —Take of dry ginger 40 tolas, rock salt, long pepper-root and plumbago root 16 tolas each, marking nuts 20 in number, fermented rice water 16 seers, sesamum oil 4 seers, boil them together and prepare an oil in the usual way Internally asafœtida fried in the infusion of *Sonth* and castor root with the addition of *sanchal* salt is given, this is said to be useful for the relief of gouty pains also In headache ginger paint or *plaster* made by rubbing *Sonth* with a little water applied to the forehead affords relief A *paste* made of *Sonth*, cinnamon castor-root and clove taken in equal parts, is applied to the head to cure neuralgic head ache or ginger juice mixed with milk is recommended by Chakradatta to be used as snuff Toothache and face-ache are sometimes relieved by the same application to the face In the collapse stage of cholera, powdered ginger is rubbed to the extremities to check the cold perspiration, improve the local circulation, and to relieve the agonising cramps of that terrible disease In cases of fainting etc, dry ginger rubbed to thin *paste* with water, is a nice *anjan* applied to the eyelids or the *powder* of *Sonth* and *Omum* or of *Sonth*, black pepper and long pepper snuffed up the nostrils in small pinchfuls like ordinary snuff is very successful in cases of fainting, stupor, delirium and senselessness through brain fever etc In vapinismus powdered *Sonth* well mixed with castoroil or with the paste of castor-root, is applied to the painful parts Follow-

(5) Take 1 tola of extracted juice of ginger and 1 tola of Gigantic swallow-wort (*mudar*) roots and pestle well in a mortar to be made into pills of the size of black pepper In cholera cases administer this pill with luke-warm water—(Bhishagratna Pdt J L Duveji) Ginger is used in scorpion-sting

General—After the flowers have disappeared and the stems have withered, ginger is ripe for collection The rhizomes are dug up and prepared for the market in different ways In Jamaica, the best ginger is prepared by washing the rhizomes, removing their outer coatings with a sharp knife, washing them again, and finally drying them in the sun Some times, the rhizomes are parboiled before drying, the process being known as 'bleaching' This process has nothing to commend it and may seriously affect the active principle if carried to excess The peeling is a matter of great importance owing to the fact that the essential oil, to which the aromatic character of ginger is due, is present in the epidermal tissue, so that excessive scraping may impoverish the quality of the spice

Several varieties of dried ginger are recognised, according to the country of origin and the methods of preparing it 'Plantation ginger' consists of rhizomes formed in winter time by small portions of rhizome (each containing an 'eye') planted in the previous spring 'Ratoon ginger' consists of new rhizomes formed by allowing portions of the first crop of rhizome to remain in the ground when the plantation ginger is harvested The ratoon ginger is of inferior quality, the rhizomes being smallest and more fibrous than those of plantation ginger In India ginger is cultivated in many places, and the process of cultivation is very similar to that followed in Jamaica Cochin ginger takes the highest rank among Indian gingers, but the districts of Rungpur, Midnapore and Hooghly in Bengal, Surat and Thana in Bombay and Kumaon in the United Provinces, are also noted for production of good ginger—(Chopra's "I D of I" pp 257 & 258)

Sunth (dried ginger) is thus prepared—The green is first sun-dried, cleaned and soaked in water The outer skin

is scraped off and the scraped ginger washed and again sun-dried Both ginger and *sunth* are used as condiment and also medicinally

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2659 ZINGIBER ZERUMBET, Smith.

(*Sans*—Sthulagranthi *Hind Ben & Punj*—Mahabari-bach Nar-kachur *Mal*—Kathu-inshi-kua) is a plant widely cultivated throughout India This wild ginger has the aromatic flavour of Zingiber officinalis mixed with some hitterness Rhizome is used like the Official ginger It is employed as a hot remedy for coughs, asthma worms, leprosy and other skin diseases—Baden Powell) Further uses same as Z officinalis

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2660 ZIZIPHORA TENUIOR, Linn

(N O—Labiatae).

(*Eng*—Wild thyme *Ind Baz*—Mishk i-Taramashir *Pers*—Ranga-shiraz) is found in Persia and Baluchistan *Infusion* of the flowering plant (1 in 20) is used in doses of ½ to 1 fluid ounce as stimulant, aphrodisiac, carminative, lithontriptic, emmenagogue and expectorant It is similar to phudina and *bhadaranboye* Large doses cause haematuria, it is given in cough and other chest affections, uterine diseases such as amenorrhoea, dysmenorrhoea etc

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2661. ZIZYPHUS GLABRATA, Heyne., Z. trinerva

(N O—Rhamnaceae)

(*Sans*—Vata-dalla *Tam*—Carookoova, Karukatta *Tel*—Kakoopala) is found in Eastern Bengal and Bhutan, Western Peninsula and the Nilgiri Mountains *Decoction of leaves* is given to purify the blood in cases of cachexia and as an alterative in old venereal affections—(Ainsle)

2662. ZIZYPHUS JUJUBA, Mill & Lamk, Z Inecalera, Z anoplia,

(N O —Rhamnaceae).

(*Sans*—Badari, Kola *Eng*—Jujube fruit *Fr*—Jujubier Cotonneux *Ger*—Stumpfblattriger Judendorn *Hind*—Baer, Bor *Ben*—Kul Kula *Pers*—Kunar *Guj*—Bei *Mah*—Bori Bor *Sind*—Berjangri *Tel*—Regu *Tam*—Elandai Ilandai *Mal*—Ilantha *Can*—Bogari, Barihannu, found wild and cultivated in many parts of India and Burma There are three main varieties of jujube fruit which are commonly grown viz wild ber *sooji mithi* (sweet budded) and *sooji khati* (sour budded) The wild variety includes innumerable sub varieties all of which bear small, almost tasteless berries and possess myriads of thorns The sub-varieties grow anywhere unattended and yield abundant fruit to the poorer classes and way farers The two *sooji* varieties are raised in gardens or in the neighbourhood of wells, by budding on the wild varieties —(Bom Govt Dept Agri Bulletin) *Fruit of the wild variety* is very acid and astringent Action —Stomachic It is eaten raw and also preserved by drying *Fruits of the cultivated varieties*, 'which resemble the crab apple in flavour and appearance and whose pulp is mealy and sweet,' are more palatable and less acid When ripe and dried it is a mild laxative and expectorant Fruit is often eaten with vegetables it is also made into a *preserve* by removing the stone and adding chillies and salt and the whole is made into a cake This is good for checking bilious complaints and improving digestion "The dried powder of the fruit is called *borkut*' in Marathi[3] *Fruit* contains mucilage and sugar in addition to fruit acids *Bark* contains much tannin and a crystallizable principle, Zizyphic acid Fruit purifies blood and assists digestion Bark is astringent and a simple remedy in diarrhoea, in the form of *powder or decoction* *Powdered bark* is a domestic dressing to old wounds and ulcers *Root* is useful as a *decoction* in fever and delirium *Juice of the root-bark* is used as a purgative and externally in gout and rheumatism *Tender leaves*

ra *Mal*—Toran *Tam*—Surai *Tel*—Banka *Mal*—Todali *L Burma*—Mayankai *U Burma*—Turan, Mitha-Tabu) is native of Eastern Himalayas, South India, Western Ghats and Ceylon Flowers with an equal quantity of the petioles of the betel leaf and half as much lime are given in four-grain pills twice a day for menorrhagia—(Dymock) "The fruit, when ripe, is eaten (and is a great support to the people of the Ghats from March to May)"—(Bom Gov Agri Dept Bulletin)

2667 ZIZYPHUS SORORIA

(*Sans*—Karkandhu Ben—Seya-kul) is another species found in Bengal and East Indies, whose *fruits* are small and have an astringent sourish taste, but when ripe and dried are used as an expectorant and the *leaves* as an alterative

2668 ZIZYPHUS VULGARIS, Lamk

(*Sans*—Soubira *Hind*—Titm-ber, Kandiari *Punj*—Sanjit. *Bom*—Khorasani-bora *Unnab Eng*—Jujub berries *Fr*—Jujubier-cultive *Ger*—Gemeiner-Judendorn *Arab*—Unnab *Pers*—Sinpo i Jilani) is found in the Punjab, Himalayas, Kashmir and Baluchistan The best (dried) *fruits* mixed with honey are used as demulcent and expectorant in pectoral complaints Dried fruits are suppurative, expectorant and blood purifier Syrup of the dried fruits is used for bronchitis *Bark* is used to clean wounds and sores *Gum* is used in certain affections of the eyes and *leaves* when chewed destroy the power of the taste of disagreeable medicines—(Dymock) *Fruit* contains mucilage and sugar Bark and leaves contain tannin, wood contains a crystallizible acid, viz zizyphic acid tannin and sugar Following are useful Home Remedies—(1) Take of Z vulgaris 1 lb, sugar 2 lbs, and pure water 3 lbs Prepare a syrup Dose is from ½ to 1 drachm. diluted with twice its quantity of cold water Used in the early stage of fever, bronchitis and pneumonia (2) Take of Z. vulgaris 7, Cordia latifolia 10, dry ginger 10, Cichorium

endivia 3 drs, Viola odorata 2 drs, and water 12 ounces Prepare an infusion Dose is one third part every three hours, in constipation, biliousness, etc

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2669 ZIZYPHUS ZYLOPRA or ZIZYPHUS XYLOPYRUS, Willd

(*Tam* —Kottai *Tel* —Gotti) is a species found in Ceylon and East Indies with edible kernel

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2670 ZORNIA DIPHYLLA, Pers

(N O —Papilionaceae)

(*Santhal* —Tandi-Jhapni *Mal* & *Tam* —Nelammari), growing wild in Southern India Roots induce sleep in children

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2671 ZYGOPHYLLUM SIMPLEX Linn

(N O —Zygophyllaceae)

(*Punj* & *Bom* —Alethi *Sind* —Putlani) is found in sandy deserts, Sind, Punjab and Arabia The Arabs beat up the leaves in water and apply the infusion to the eyes in oothalmia Seeds are an anthelmintic

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THE END