Plants of Central Asia

Plant collections from China and Mongolia

(*Editor-in-Chief* : V.I. Grubov)

Volume 5
Verbenaceae—Scrophulariaceae

V.I. Grubov
L.I. Ivanina
O.V. Tscherneva

CPD CERTIFIED
The CPD Certification Service

Plants of
Central
Asia

Volume 5

Plants of Central Asia

Plant Collections from China and Mongolia

Volume 5

Verbenaceae—Scrophulariaceae

V.I. Grubov
L.I. Ivanina
O.V. Tscherneva

CRC Press
Taylor & Francis Group
Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an **informa** business
A SCIENCE PUBLISHERS BOOK

CRC Press
Taylor & Francis Group
6000 Broken Sound Parkway NW, Suite 300
Boca Raton, FL 33487-2742

© 2002 by Taylor & Francis Group, LLC
CRC Press is an imprint of Taylor & Francis Group, an Informa business

No claim to original U.S. Government works

This book contains information obtained from authentic and highly regarded sources. Reasonable efforts have been made to publish reliable data and information, but the author and publisher cannot assume responsibility for the validity of all materials or the consequences of their use. The authors and publishers have attempted to trace the copyright holders of all material reproduced in this publication and apologize to copyright holders if permission to publish in this form has not been obtained. If any copyright material has not been acknowledged please write and let us know so we may rectify in any future reprint.

Except as permitted under U.S. Copyright Law, no part of this book may be reprinted, reproduced, transmitted, or utilized in any form by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying, microfilming, and recording, or in any information storage or retrieval system, without written permission from the publishers.

For permission to photocopy or use material electronically from this work, please access www.copyright.com (http://www.copyright.com/) or contact the Copyright Clearance Center, Inc. (CCC), 222 Rosewood Drive, Danvers, MA 01923, 978-750-8400. CCC is a not-for-profit organization that provides licenses and registration for a variety of users. For organizations that have been granted a photocopy license by the CCC, a separate system of payment has been arranged.

Trademark Notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

Visit the Taylor & Francis Web site at
http://www.taylorandfrancis.com

and the CRC Press Web site at
http://www.crcpress.com

Notes

PLANTS OF CENTRAL ASIA. From the Materials of the V.L. Komarov Botanical Institute, Academy of Sciences of the USSR, Vol. 5. Verbenaceae-Scrophulariaceae. Compilers: V.I. Grubov, L.I. Ivanina and O.V. Tscherneva. 1970. Nauka, Leningrad Division, Leningrad.

This volume is the fifth of illustrated lists of Central Asian plants (within the People's Republics of China and Mongolia) published by the Komarov Botanical Institute, of the Academy of Sciences of the USSR, based on the Central Asian collections of famous Russian travellers and explorers (N.M. Przewalsky, G.N. Potanin and others) as well as of Soviet expeditions and preserved in the Herbarium of the Institute.

The present volume deals with the description of families Verbenaceae, Labiatae, Solanaceae and Scrophulariceae which contain several interesting endemic genera and species that are important for understanding the developmental history of Central Asian flora. Ill. 9 plates and 3 maps.

V.I. Grubov
Editor-in-Chief

Contents

Note	v
Introduction	1
Taxonomy	5
Special Abbreviations	5
Abbreviations of Names of Collectors	5
Abbreviations of Names of Herbaria	6
Family 104. Verbenaceae Jaume—V.I. Grubov	7
Family 105. Labiatae Juss.—O.V. Tscherneva	8
Family 106. Solanaceae Juss.—V.I. Grubov	108
Family 107. Scrophulariaceae Juss.—(L.I. Ivanina	124
Addenda to Russian Original of vol. 5	219
Index of Scientific Names of Plants	232
Index of Distribution Ranges	242

INTRODUCTION[1]

This is the fifth volume of the series Plants of Central Asia and covers the two very large families of order Tubiflorae—Labiatae and Scrophulariaceae—and two smaller Central Asian families Solanaceae and Verbenaceae.

Family Labiatae is represented in the studied territory by 41 genera and 157 species, of which only 1 genus and 22 species are endemic. The Central Asian regions of the former USSR (desert and desert-steppe Kazakhstan, Northern and Central Tien Shan and Eastern Pamir) would add to this list 7 more genera and about 60 species. Family Scrophulariaceae is represented in the studied territory by 18 genera and 152 species, of which 23 species are endemic. Two more genera and about 60 species would add to this list from the Central Asian part of the former USSR.

These two large families, however, are of little florogenetic interest. In Central Asia, they represent plants that have migrated relatively recently, mainly from the Mediterranean and, to a lesser extent, from Eastern Asia *Nepeta, Stachys, Elsholtzia, Phyllophyton, Pedicularis, Lagotis, Oreosolen*). Most species of these families are confined to the mountain borders of our region in the south-east, north-west and specially the west. They are predominantly high-mountain—alpine and hill-steppe—as well as steppe species. Only a few of the species of Labiatae and Scrophulariaceae have contributed to the desert flora of Central Asia, for example *Lagochilus ilicifolius, Schizonepeta annua, Eremostachys molucelloides, Dodartia orientalis.* The endemic species of these families are less indigenous and are essentially neoendemics. The recently established lone endemic Tien Shan monotypic genus *Metastachys*, very poorly differentiated from genus *Stachys*, is no exception. The more typical subendemic East Siberian-Central Asian genus *Cymbaria* with 2 steppe species is clearly of East Asian origin.

In Central Asia we found the so called terminal segments and links of taxonomic chains of Labiatae and Scrophulariaceae extending from outside. There are no indigenous local taxonomic groups—sections, cycles or series. This is also true even for such a large genus as *Pedicularis.*

---

[1]By V.I. Grubov

Distribution of the high-montane monotypic genus *Lancea* should be regarded as a very prominent, but not the only proof of direct floristic links in the past. The major part of the distribution range of *Lancea tibetica* falls in the Himalayas, Tibet and adjoining montane regions of West China (see Map 3) while a small isolated part has been found in the main Hangay mountain range in Northern Mongolia with a disjunction of a thousand kilometres, now falling in the desert expanse of Central Mongolia. Similar instances of distribution are known in other families too, for example among *Megadenia* from Cruciferae and *Mannagettaea* from Orobanchaceae detected by Popov (1954) in the Eastern Sayans and Rhododendron from Ericaceae. Such disjunct distribution ranges represent more a heritage of the cold Pleistocene Age when the alpine species of East Asia may have penetrated uninterruptedly along the high Mongolian plateaus to the north. Popov's view (1954) that *Mannagettaea* and *Megadenia* represented Paleogene subtropical relics, in our opinion, is not adequately substantiated. Neither their distribution ranges, confined to the high mountains in the eastern fringes of Tibet (Qinghai and Weitzan), nor the floristic affinities of host plants (*Salix, Caragana, Ribes*) on which all the known species of *Mannagettaea* parasitise favour such a conclusion. The relationships of these genera, if not extended theoretically, fall within the boreal forest and Mediterranean floras.

Family Solanaceae is far more interesting. This very ancient pantropic family is represented in Central Asia by only 9 genera and 21 species of these, 1 genus and 4 species are endemic and 3 more species subendemic. Endemic genus *Przewalskia* (see Map 2), surprisingly, is characteristic of the most younger Tibetan province whose flora may have formed only after the Glacial period (see Introduction, Vol. 1). This genus is undoubtedly close to genus *Scopolia* but is well distinguished by its unique characteristics and presence of major distinctive features. It was first established by C.I. Maximowicz as a monotypic genus but it is now clear that it comprises 2 distinct species. These are rather small rosetted plants with narrowly tubular axillary flowers and typical swollen fruit in which the accrescent inflated calyx forms an outer coarse membrane for the small pod, dehiscent with an operculum as in *Scopolia*. Such is the fruit structure in subendemic eastern Tibetan species *Scopolia tangutica* but the calyx accrescent in fruit, unlike in *Przewalskia*, is open, cup-shaped, its fringe closed at the top with folds only at the end, as the fruit ripens. The seeds of *Scopolia tangutica* and both species of *Przewalskia* are so similar that they could hardly be differentiated from external characteristics. *Scopolia tangutica* has a large branched stem but the early phase of growth of this species in spring resembles a rosette—a shaft with developed leaves emerges from the soil all at once. Among the eastern Tibetan species, *Przewalskia tangutica* has only a short underground stem and an ovate calyx nearly closed on top but a surface stem is sometimes seen in southern Tibetan *P. shebbearei* but the calyx in fruits is open at the top, with large teeth. The thought arises spontaneously that *Przewalskia* may have developed as a branch of the Tertiary genus *Scopolia* in the course of evolution adapted to the severe conditions of high mountains through neoteny. Since this genus is undoubtedly young, such a high tempo of evolution can only be explained in this manner. Moreover, in the case of *P. shebbearei*, this process is not complete—the surface stem is not yet fully reduced and the accrescent in calyx in fruit is not completely closed above, resembling its form in *Scopolia tangutica* (see Plates IV and V). The latter is a forest and high-montane species of Qinghai and the southeastern border of Tibet; on the contrary, compared to its closely related Chinese forest species *S. sinensis* Hemsl. it represents somewhat the first step towards such a process of evolution.

Another interesting endemic of the same type was the new species of genus *Mandragora* described here from eastern Tibet—Weitzan. According to established concepts, this ancient Mediterranean genus was known in East Asia from the single high-montane species *M. caulescens* distributed in Kam, Eastern Himalayas and in eastern Southern Tibet. Unlike the Mediterranean large-leaved rosetted species, *M. caulescens* has a surface stem, small leaves and broadly campanulate nutant flowers. Our new, proper Tibetan species *M. tibetica* undoubtedly represents the closest relative of Kam-Himalayan species (it has in particular the same form of leaves and scales with the same characteristic ciliate pubescence as in *M. caulescens*) but grows in even more severe dry and cold high uplands of eastern Tibet and is a small densely rosetted plant. Thus, even in this case, evolution evidently proceeded along the line of inherited juvenile stage of the vegetative phase.

The large (with more than 100 species) extratropical genus *Lycium* in the Old World is confined mainly to southern Africa and the Mediterranean and is represented in our territory only by 6 species, of which 1 is endemic and 2 subendemic. The endemic Junggar-Tien Shan *L. flexicaule* and subendemic Mongolian *L. potaninii*, according to A.I. Pojarkova (1950), belong to a series of eastern Asian species while the subendemic Central Asian *L. truncatum* belongs to a series of eastern Mediterranen species. Thus we find here rare instances of 2 branches of an old genus arriving from opposite directions taking root in the Central Asian flora, although it must be conceded that all of these species are very closely related. Unlike the above erythrocarpous species common in Central Asia, melanocarpous *L. ruthenicum* is an extensively distributed Mediterranean desert species.

In our area, there are only 2 species from the large pantropic family Verbenaceae; they provide very striking proof of the direct penetration into Central Asia of the typical eastern Asian warm-temperate forest genus *Caryopteris* (some ten species distributed in China, Korea and Japan). While

C. *tangutica* enters only from the east into the hilly forest Qinghai belt preserving the typical mesophytic features of the genus (tall shrub with broad dentate leaves), its closest relative C. *mongholica* enters the composition of desert-steppe and desert flora of Central Asia to a limited extent over a vast distribution range and is a subendemic. It acquired a totally xerophytic habit—low subshrub with densely pubescent entire, narrowly lanceolate leaves. Its affinity with C. *tangutica* is revealed not only by its flowers, but also by var. *serrata* with interrupted dentate leaves found from time to time along the southern fringe of its distribution range (see Map 1). This species evidently penetrated into Central Asia from the eastern boundary where it encountered no orographic barriers, as early as in the Tertiary period and became a total native long ago.

In this volume, the maps of distribution ranges of species of families Labiatae and Scrophulariaceae were drawn by their respective authors and of families Verbenaceae and Solanaceae by O.I. Starikova, senior laboratory assistant. She also translated all Chinese texts from labels of herbarium specimens and from floristic literature. Further, she rendered much assistance to the authors in drawing up distribution ranges and references to the geographic distribution of species for which the authors express their sincere gratitude. Plates of plant drawings were prepared by artists G.M. Aduevska (plate IV) and T.N. Shishlova.

TAXONOMY

SPECIAL ABBREVIATIONS

Abbreviations of Names of Collectors

A. Reg.	—	A. Regel
Bar.	—	V.I. Baranov
Chaff.	—	J. Chaffanjon
Chaney	—	R.W. Chaney
Ching	—	R.C. Ching
Chu	—	C.N. Chu
Czet.	—	S.S. Czetyrkin
Divn.	—	D.A. Divnogorskaya
Fet.	—	A.M. Fetisov
Glag.	—	S.A. Glagolev
Gr.-Grzh.	—	G.E. Grum-Grzhimailo
Grub.	—	V.I. Grubov
Gus.	—	V.A. Gusev
Ik.-Gal.	—	N.P. Ikonnikov-Galitzkij
Ivan.	—	A.F. Ivanov
Kal.	—	A.V. Kalinina
Kashk.	—	V.A. Kashkarov
Klem.	—	E.N. Klements
Kondr.	—	S.A. Kondrat'ev
Krasch.	—	I.M. Krascheninnikov
Kryl.	—	P.N. Krylov
Kuan	—	K.C. Kuan
Lad.	—	V.F. Ladygin
Ladyzh.	—	M.V. Ladyzhensky
Lee, Lee and Chu, Lee et al.	—	A.R. Lee
Lis.	—	V.I. Lisovsky
Li S.H. et al.	—	S.H. Li et al.
Litw.	—	D.I. Litwinow
Lom.	—	A.M. Lomonosov
Merzb.	—	G. Merzbacher
Mois.	—	V.S. Moiseenko

Nov.	—	V.F. Novitski
Pal.	—	I.V. Palibin
Pavl.	—	N.V. Pavlov
Petr.	—	M.P. Petrov
Pev.	—	M.V. Pevtsov
Pias.	—	P.Ya. Piassezki
Pob.	—	E.G. Pobedimova
Pop.	—	M.G. Popov
Pot.	—	G.N. Potanin
Przew.	—	N.M. Przewalsky
Rhins	—	J.L. Dutreuil de Rhins
Rob.	—	V.I. Roborowsky
Sap.	—	V.V. Sapozhnikov
Schischk.	—	B.K. Schischkin
Serp.	—	V.M. Serpukhov
Shum.	—	E.M. Shumakov
Sold.	—	V.V. Soldatov
Tug.	—	A.Ya. Tugarinov
Wang	—	K.C. Wang
Yun.	—	A.A. Yunatov
Zab.	—	D.K. Zabolotnyi
Zam.	—	B.M. Zamatkinov

Abbreviations of Names of Herbaria

BM	—	British Museum of Natural History, Great Britain, London.
E	—	Royal Botanic Garden, Edinburgh, Scotland, Great Britain.
K	—	The Herbarium, Royal Botanic Gardens, Great Britain, Kew, Surrey.
KYO	—	Department of Botany, Faculty of Science, Kyoto University, Sakyo-ku, Kansai, Kyoto, Japan.
Linn.	—	The Linnean Society of London, Great Britain, London.
PE	—	Institute of Botany, Academia Sinica, Peking (Beijing), China.
TAK	—	Tashkent State University.
TI	—	Botanical Institute, Faculty of Science, University of Tokyo, Hongo, Tokyo, Japan.
TK	—	P.N. Krylov Herbarium, Tomsk State University.
TO	—	Herbarium of the Instituto Botanico dell' Universita, Torino, Italy.

Family 104. VERBENACEAE Jaume[1]

1. **Caryopteris** Bunge.

Pl. mongh.-sinens. (1835) 27; Maxim. in Bull. Ac. Sci. St.-Pétersb. 23 (1876) 389, 31 (1886) 87; Pei in Mem. Sci. Soc. China, 1, 3 (1932) 162.

1. Leaves linear lanceolate, entire, rarely with a few interrupted teeth (var. *serrata* Maxim.), greyish-green above, light-grey beneath. Subshrub up to 0.5 m tall .... 1. **C. mongholica** Bunge.

\+ Leaves lanceolate to broadly elliptical, roughly serrate-dentate, sharply dichromatic, dark green above, ash-grey beneath. Subshrub up to 1.5 m tall .... 2. **C. tangutica** Maxim.

1. **C. mongholica** Bunge, Pl. mongh.-sinens. (1835) 28; Maxim. in Bull. Ac. Sci. St.-Pétersb. 23 (1876) 389, 31 (1886) 87; Franch. Pl. David. 1 (1884) 231; Forbes and Hemsley, Index Fl. Sin. 2 (1890) 264; Pei Ch. in Mem. Sci. Soc. China, 1, 3 (1932) 165; Walker in Contribs U.S. Nat. Herb. 28 (1941) 655; Grubov Konsp. fl. MNR (1955) 233; Chen and Chou, Rast. pokrov r. Sulekhe (1957) 89. —**Ic.:** Curtis's Bot.-Mag. 158, tab. 2916; Rev. hortic. (1872) 451.

Described from East. Mongolia. Type in Paris. Isotype in Leningrad. Map 1.

Steppes and desert rocky and rubble slopes of hills and mountains, rocks, flanks and sandy-pebble floors of gorges, river shoals, fine sands.

IA. Mongolia: ***Cent. Khalkha, East. Mong.*** (in montosis lapidosis Mongolia chinensis [prope Chaschatu], 1831—Bunge, typus; far east. record: near Khalun arshan south of Gan'chzhur, 1899—Pal.). ***Val. Lakes*** (far west. record: left bank of Tuin-Gol river). ***Gobi-Alt., East. Gobi, Alash. Gobi*** (nor. and east.). ***Ordos, Khesi.***

III A. Qinghai: ***Nanshan*** (alpine belt of west. Nanshan near Kuku-Usu river, July 22, 1879; Khagomi area, July 10, 1880—Przew.; Sanchuan, mountains west of Dzhamba river, March 14, 1885, Pot.—far southern find of species; Humboldt mountain range, southern slope, Magyn-Dybsyn area in Chan-sai ravine, 2400–2700 m, along brook, July 24, 1895, Rob.—far western record of species; Loukhushan' mountain range, southern slope, July 17, 1908—Czet.; 5 km south of Aksai settlement on high northern foothills of Altyntag, Aug. 2, 1958—Petr.).

General distribution: East Siberia (river Selenga valley near the state border)[•] Nor. Mong. (Hent. west., Hang. east., Mong.-Daur. west.; far northern find of species—lower Iro river valley), China (Nor.: Pohuashan hills west of Peking (Beijing)—far eastern record; Nor.-West.—far nor.-west. Shanxi).

2. **C. tangutica** Maxim. in Bull. Ac. Sci. St. Pétersb. 27 (1881) 525, 31 (1886) 87; Forbes and Hemsley, Index Fl. Sin. 2 (1890) 265; Danguy in Bull. Mus. nat. hist. natur. 17 (1911) 344; Pei Ch. in Mem. Sci. Soc. China, 1, 3 (1932) 172; Hao in Engler's Bot. Jahrb. 68 (1938) 633; Walker in Contribs U.S. Nat. Herb. 28 (1941) 655. —*C. tangutica* var. *brachyodonta* Hand.-Mazz. in Acta Horti Gotoburg. 13 (1939) 336.

---

[1]By V.I. Grubov.

[•]Addition to the original for 2001.—V. I. Grubov.

Described from Nanshan. Type in Leningrad.

Sunny open rocky slopes of mountains and on rocks, from 2000 to 2400 m altitude.

IIIA. Qinghai: ***Nanshan*** (South Tetungsk mountain range, bald slope in lower belt, Aug. 10, 1872; North Tetungsk mountain range, 2300 m, rocks, Aug. 11, 1884—Przew., typus!; Chortenton temple, sunny hillside, 2100 m, clayey-rocky soil, Sept. 7; same site, southern slope, 2400 m, Sept. 8—1901, Lad.; South Tetung mountain range, middle zone on southern slope, rock crevices, July 28, 1908—Czet.; "Kan-Tsao-Tien, alt. 2000 m, Aug. 3, 1908, Vaillant"—Danguy, l.c.; "Kokonor: Min-ho-hsien, um 1900 m"—Hao, l.c.; "Tien-Tang-Ssu, on an exposed, gravelly river bank, Ching."—Walker, l.c.).

General distribution: China (Nor.-West., Cent.—Hubei, South-West.—Sichuan).

Family 105. LABIATAE Juss.[1]

1. Style attached above base of ovary lobes; nut with lateroventral attachment and large scar, often covering 1/2 height of nut; corolla uni- or bilabiate but invariably with poorly developed upper lip.. .... 2.
\+ Style attached at base of ovary lobes; nut with basal, rarely with basodorsal or ventral attachment and minute scar; corolla bilabiate or subregular .... 4.
2. Stamens 4, well developed; corolla unilabiate. .... 3.
\+ Stamens 2, 2 upper (posterior) ones reduced; corolla bilabiate .... 3. **Amethystea** L. (*A. coerulea* L.).
3. Flowers large, 16–20 mm long; upper lip poorly developed, bipartite or 2-lobed; lower lip considerably longer, with highly developed midlobe .... 1. **Ajuga** L. (*A. lupulina* Maxim.).
\+ Flowers small, 5–8 mm long; upper lip totally lacking, all 5 lobes of corolla recurved, exposing stamens and style ....2. **Teucrium** L. (*T. scordioides* Schreb.).
4. Calyx bilabiate with short entire lips; upper lip usually with orbicular appendage, less commonly without appendage but then with small umbo, shedding at time of seed maturation; lower lip usually persistent on plant; upper lip of corolla 3-lobed .... 4. **Scutellaria** L.
\+ Upper lip of calyx invariably without appendage; upper lip of corolla not usually 3-lobed. .... 5.
5. Stamens enclosed in tube of corolla or exserted, ascending upward or directed forward. .... 6.
\+ Stamens exserted, pendent as though resting on slightly arched 1-lobed entire lower lip of corolla .... 40.
6. Stamens enclosed in corolla tube .... 7.

[1]By O.V. Tscherneva.

+ All stamens, or at least 2 longer ones, exserted from corolla tube .. ..10.
7. Corolla tube with well-developed hairy ring inside; filaments villous; leaves sagittate at base.. .... 27. **Metastachys** Knorr. [*M. sagittata* (Regel) Knorr.].
+ Corolla tube with uneven and poorly developed hairy ring inside or without it. Filaments glabrous; leaves not sagittate at base. .....8.
8. Calyx with 10 divergent subulate teeth; corolla tube with irregularly and poorly developed hairy ring inside; upper lip of corolla bifid at tip .... 5. **Marrubium** L. (*M. vulgare* L.).
+ Calyx with 5 teeth; corolla tube without hairy ring inside; upper lip of corolla entire or slightly emarginate ....9.
9. Perennial; upper lip of corolla entire; leaves palmatisect; stem and petiole densely villous. .... 6. **Lagopsis** Bunge.
+ Annual; upper lip of corolla slightly emarginate; leaves undivided, entire or indistinctly serrate; stem with finely crispate pubescence, petiole ciliate .... 33. **Antonina** Vved. [*A. debilis* (Bunge) Vved.].
10 (6). Anther lobes divaricate, orbicular, joined at tip; arranged on single plane as pollen scatter. ....39. **Elsholtzia** Willd.
+ Anther lobes divaricate, divergent or parallel, oblong or ovate, not joined or indistinctly joined at tip into single lobe; not arranged on single plane as pollen scatter. .... 11.
11. Connectives of 2 anterior (lower) stamens linear filiform, jointed with anther filaments freely or fixedly, with regularly developed lobe on postenor end and some modified (reduced) ones on anterior end ....30. **Salvia** L.
+ Stamens differently arranged. ....12.
12. Corolla and calyx subregular...13.
+ Corolla invariably distinctly bilabiate; calyx either bilabiate or subregular ....14.
13. Only 2 lower (anterior) stamens developed; upper (posterior) underdeveloped, transformed into filiform staminodes, without anthers; nuts trigonous, glandular at tip....................... 37. **Lycopus** L.
+ All stamens similar, developed; nuts ovate, obtuse, without glands, sometimes with hairs at tip... 38. **Mentha** L.
14. 2 fertile stamens with 2 approximate parallel, oblong-linear, slightly curved lobes disposed on somewhat enlarged connective and overhanging from it. .... 31. **Perovskia** Karel.
+ Stamens 4, all fertile; if 2, connective not enlarged and anther lobes not linear or overhanging..15.
15. Corolla with lips of unequal length, upper lip usually concave or convex, pubescent outside, rarely nearly flat but then either leaves

end in spine or calyx with oblique or indistinctly bilabiate limb.... .... 16.

\+ Lips of corolla poorly differentiated, upper lip invariably nearly flat, leaves invariably without spine, calyx either subregular or (in *Thymus* L.) bilabiate .... 37.

16\. Upper stamens longer than lower, latter sometimes not developed. .... 17.

\+ Upper stamens shorter than lower .... 24.

17\. Flowers somewhat inverted due to contortion of corolla tube; upper lip of corolla under which, in its normal position, lie stamens and style, occupies place of lower lip and vice versa; calyx with oblique limb. .... 8. **Lophanthus** Adans.

\+ Flowers not 'inverted'; if inverted (some species of *Phyllophyton* Kudo), calyx distinctly bilabiate .... 18.

18\. Two pairs of stamens not parallel to each other. .... 19.

\+ Two pairs of stamens parallel, arcuately ascending under upper lip. .... 20.

19\. Upper stamens turned downwards, lower ascending; lobes of disc barely perceptible; midlobe of lower lip of corolla without unguiform taper ....
..7. **Agastache** Clayt. ex Gronov. [*A. rugosa* (Fisch. et Mey.) Kuntze].

\+ Upper stamens ascending, lower directed forwards; lobes of disc well developed; midlobe of lower lip of corolla with unguiform taper toward base. .... 10. **Schizonepeta** Briq.

20\. Upper lip of corolla with exserted fold inside; pedicel flattened .... 14. **Lallemantia** Fisch. et Mey [*L. royleana* (Benth.) Benth.].

\+ Upper lip of corolla glabrous inside; pedicel not flattened .... 21.

21\. Calyx more or less tubular, with 5 teeth, with oblique limb, more rarely bilabiate, but invariably without nodules in corners between teeth .... 22.

\+ Calyx distinctly bilabiate with nodules in corners between all or some teeth. .... 13. **Dracocephalum** L.

22\. Calyx with oblique limb; anther lobes diverging at 180°, leaves longer than broad; leafy bracts differing from cauline leaves. .... 11. **Nepeta** L.

\+ Calyx bilabiate; anther lobes diverging at right angle or parallel; leaves more or less orbicular or reniform, broader than long; leafy bracts similar to cauline leaves .... 23.

23\. Anthers with perpendicular lobes, approximate such that they are cruciate; calyx without hairy ring inside .... 12. **Glechoma** L. (*G. hederacea* L.).

\+ Anthers with parallel lobes; calyx with hairy ring inside .... 9. **Phyllophyton** Kudo.

24. (16). Calyx bilabiate; its lower lip appressed to upper concealing mouth of calyx after anthesis .... 15. **Prunella** L. (*P. vulgaris* L.).
+ Calyx not bilabiate .... 25.
25. Upper lip of corolla concave or galeate, more rarely convex or flat but invariably highly pubescent outside. .... 26.
+ Upper lip of corolla flat, glabrous or very weakly pubescent. ....29. **Chamaesphacos** Schrenk (*Ch. ilicifolius* Schrenk).
26. Acaulous plant with highly rugose leaves forming rosette .... 17. **Lamiophlomis** Kudo [*L. rotata* (Benth.) Kudo].
+ Plant with well-developed stem, foliated throughout length. .... 27.
27. Lobes of style unequal; posterior lobe much shorter than anterior; less commonly, similar, but then filaments of all or only upper stamens with appendage at base .... 28.
+ Lobes of style identical or subidentical; filaments without appendage at base. .... 29.
28. Appendages of upper filaments spur-like, glabrous, or lacking; calyx teeth repandous, with long cusp (awn) emerging from notches or orbicular-ovate, with subulate cusp at tip; leaves invariably undivided .... 18. **Phlomis** L.
+ Appendages of upper filaments fimbriate; teeth of calyx deltoid, shortly subulate; leaves pinnatisect, more rarely undivided. .... 16. **Eremostachys** Bunge.
29. Lower lip of corolla with 2 hollow cornet-like appendages anthers with transversely dehiscent lobes .... 21. **Galeopsis** L. (*G. bifida* Boenn.).
+ Lower lip without appendages; anthers with longitudinally opening lobes .... 30.
30. Nuts (less distinctly even ovary lobes) acutely trigonous, obtuse at tip. .... 31.
+ Nuts (and ovary lobes) ovate, more or less rounded at tip .... 28. **Stachys** L.
31. Upper part of stem densely, imbricately foliated, villous-lanate, broadly rhomboid or orbicular leaves white-villous on both surfaces .... 19. **Eriophyton** Benth. (*E. wallichii* Benth.).
+ Plants of different habit .... 32.
32. Corolla more or less with elongated tube considerably exserted from calyx; calyx teeth quite soft, not subulate or prickly; lateral lobes of lower lip of corolla small, with 1 or more acute teeth along margin .... 22. **Lamium** L.
+ Corolla with tube enclosed in calyx or slightly exserted; calyx teeth more or less subulate or prickly .... 33.

33. Subshrubs with spines (modified bracts) at base of whorls (sometimes spines present in leaf axils as well); upper lip of corolla bipartite or emarginate at tip .... 26. **Lagochilus** Bunge.
+ Herbs and subshrubs, without spines in whorls and leaf axils; upper lip of corolla undivided .... 34.
34. Anther lobes strongly divergent; leaves ovate, undivided .... 35.
+ Anther lobes parallel; leaves of different form, deeply split....... 36.
35. Flowers small, 5–7 mm long; corolla not longer or insignificantly longer than calyx, tube without hairy ring inside; nut with short, erect hairs at tip .... 23. **Chaiturus** Willd. [*Ch. marrubiastrum* (L.) Spenn].
+ Flowers markedly large, 1–1.5 (2) cm long; corolla slightly longer than calyx, tube with hairy ring inside; nut glabrous .... 20. **Stachyopsis** M. Pop. et Vved.
36. Corolla pink, tube enlarged upward, with hairy ring inside and upper lip faintly concave, more or less narrowed at base; calyx funnel-shaped, not longer than 9 mm, with 5 nerves. .... 24. **Leonurus** L.
+ Corolla yellow, tube narrow, without hairy ring inside, upper lip galeate, not narrowed at base; calyx tubular-campanulate, very large, 13–18 mm long, with 10 nerves (5 of them less distinct .... 25. **Panzeria** Moench.

37 (15). Only 2 lower stamens fertile, upper transformed into staminodes or lacking .... 32. **Ziziphora** L.
+ Stamens 4, normally developed .... 38.
38. Calyx regular or subregular .... 39.
+ Calyx bilabiate .... 36. **Thymus** L.
39. Calyx with 15 nerves, glabrous in throat; nuts glaborous or pubescent at tip .... 34. **Hyssopus** L.
+ Calyx with 10–13 nerves, with hairy ring in throat; nuts finely glandular at tip. .... 35. **Origanum** L. (*O. vulgare* L.).

40 (5). Annual; calyx hairy in throat, 5-toothed, upper tooth of calyx in fruit broader than rest, membranous, broadly ovate, decurrent on calyx tube, its fringes concealing 2 adjoining teeth; filaments of upper stamens often with appendages in the form of hairy tuft .... 41. **Ocimum** L. (*O. basilicum* L.).
+ Small shrub; calyx without hairs in throat, bilabiate, slightly inflated in fruit, with unmodified teeth; filaments without appendages .... 40. **Isodon** (Schrad.) Kudo [*I. pharicus* (Prain) Murata].

1. Ajuga L.

Sp. pl. (1753) 561; Maxim. in Bull. Ac. Sci. St.-Pétersb. 29 (1883) 180.

1. **A. lupulina** Maxim. in Bull. Ac. Sci. St.-Pétersb. 23 (1877) 391; Hance in J. Bot. (London) 16 (1878) 111; Forbes and Hemsley, Index Fl. Sin. 2 (1902)

315; Danguy in Bull. Mus. nat. hist. natur. 17 (1911) 346; Dunn in Notes Bot. Gard. Edinburgh, 6 (1915) 194; Paulsen in Hedin, S. Tibet, 6, 3 (1922) 45; Kudo in Mém. Fac. Sci. and Agr. Taihoku Univ. 2 (1929) 286; Rehder and Kobuski in J. Arn. Arb. 14 (1933) 30; Walker in Contribs U.S. Nat. Herb. 28 (1941) 655. —*A. lupulina* Maxim. f. *humilis* Sun in Acta Phytotax. Sin. 11, 1 (1966) 36. —**Ic.**: Maxim, l.c. tab. 3, figs. 10–15.

Described from Qinghai (Tetung river basin). Type in Leningrad.

Sandy banks of rivers, clayey-rocky soils mountain slopes as well as humus-rich soils in alpine belt of mountains.

IIIA. Qinghai: *Nanshan* (in mountains south of Tetung river, along mountain slopes and southern ravines, July 13, 1872, typus!; South Kukunor mountain range alpine zone, 3150–3500 m, June 7, 1880—Przew.; South Kukunor mountain range, both slopes, clayey-rocky soil, more rarely wet humus soil, 3600 m, Aug. 7, 1901—Lad.; Kukunor lake, Uiyu area, humus soil, Aug. 13, 1908—Czet.; Ganshiga river valley, left tributary of Peishikhe river [discharging in Tetung in area of a stud farm], 3350–3720 m, 1958—Petr.; "Jong-Ngam, alt. 3200 m, July 7, 1908, Vaillant"—Danguy, l.c.; "Ta P'an Shan, moist, grassy slopes, very common, Ching"—Walker, l.c.). *Amdo* (alpine zone of Mudzhik range, June 18, 1880—Przew.).

IIIB. Tibet: *Chang Tang* ("between Naktsong-tso and Selling-tso, 4636 m, Sept. 11, 1901, Hedin"—Hedin, l.c.), *Weitzan* (along Yantszytszyan river, 3900 m, along sandy banks of river, June 23, 1884—Przew.; Yantszytszyan basin, Chzhabuvrun area, 4200 m high, on wet humus and wet clay, July 10, 1900—Lad.; "Radja and Yellow River gorges, alt. 3050 m, No. 14129, June, 1926 [typus *A. lupulina* f. *humilis*]; Jupar Range, No. 14373, Rock"—Rehder and Kobuski, l.c.).

General distribution: China (North, North-West, South-West).

2. Teucrium L.

Sp. pl. (1753) 562.

1. **T. scordioides** Schreb. Fl. Vert. Unilab. (1774) 37; Juzepczuk in Fl. SSSR, 20 (1954) 50; Fl. Kirzig. 9 (1960) 10; Fl. Kazakhst. 7 (1964) 297. —**Ic.**: Fl. Uzbek. 5, Plate 25, fig. 2; Fl. Kazakhst. 7, Plate 35, fig. 2.

Described from Crete island. Type in Geneva (?).

Wet, sometimes solonetz meadows, marshy sites, sandy and rocky banks of rivers, brooks, lakes and riverine floodplains.

IB. Kashgar: *Nor.* (Kurlya, along water front, No. 5885, July 14, 1958—A.R. Lee (1959)). *East.* (nor. boundary of Turfan valley, north-west of Toksun, Pacha-salgan picket, bog pool, Sept. 3, 1929—Pop.).

IIA. Junggar: *Jung. Gobi* (Dutai area, between Shikho and Chipeitsza, wet meadows, Aug. 3, 1947—Shum.; 3–4 km nor.-west of Kuitun settlement on old Shikho-Manas road, sasa zone, herbage-sedge swampy meadow, July 6, 1957—Yun. et al.; 2 km north of Kuitun settlement in cattle-breeding farm region, swampy meadow, No. 395, July 6, 1957—Kuan). *Tien Shan* (Savan dist., from Paotai to Shaomyn'tsz, along Manas river, on wet site, No. 1598, June 29, 1957—Kuan). *Dzhark.* (along Ili river near Kul'dzha, May 26, 1877—A. Reg.).

General distribution: Fore Balkh., Jung.-Tarb.; Europe, Mediterr., Balk.-Asia Minor, Fore Asia, Caucasus, Middle Asia, West. Siberia (south).

Note. In Chen and Chou's "Rast. pokrov r. Sulekhe" (1957), *Teucrium* sp. was cited for Khesi region. Without plant material, it is difficult to comprehend to which species of the genus this reference pertains. We have not seen any material of this genus from Khesi. region.

3. Amethystea L.

Sp. pl. (1753) 21.

1. **A. coerulea** L. Sp. pl. (1753) 21; Bunge in Ledeb. Fl. alt. 1 (1830) 19; Turcz. in Bull. Soc. natur. Moscou, 25 (1852) 416 (Fl. Baic.-dah. 2, 2); Franch. Pl. David. 1 (1884) 245; Diels, Fl. C. China (1901) 552; Forbes and Hemsley, Index Fl. Sin. 2 (1902) 310; Dunn in Notes Bot. Gard. Edinburgh, 6 (1915) 190; Kudo in Mém. Fac. Sci. and Agr. Taihoku Univ. 2 (1929) 302; Krylov, Fl. Zap. Sib. 9 (1937) 2294; Kitag. Lin. Fl. Mansh. (1939) 377; Volkova in Fl. SSSR, 20 (1954) 70; Grubov, Konsp. fl. MNR (1955) 233; Fl. Kazakhst. 7 (1964) 299; Dashnyam in Bot. zh. 50 (1965) 1641. —**Ic.:** Curtis's Bot. Mag. tab. 2448; Fl. Kazakhst. 7. Plate 35, fig. 4.

Described from Siberia. Type in London (Linn.).

On sandy-pebble floors of gorges, shoals and banks of rivers, rubble and rocky slopes of mountains talus and rocks.

IA. Mongolia: *Cen. Khalkha* (upper Kerulen, near foot of Bain-Erkhit, mountain range, in steppe, 1899—Pal.; near Ikhe-Tukhum-Nor lake, on way to Mishikgun, June 1923—Zam.; near foot of Bichikte, dry river-bed and close to it, loam and pebble, Aug. 31, 1925—Gus.; Ubur-Dzhirgalante river, between sources and Agit mountain, rubble bed of dry streams, Sept. 2, 1925—Krasch. and Zam.; Bichikte-Dulan-Khada ridge, dry bed, Aug. 28, 1926—Glag.; Utat, Aug. 8, 1927—Terekhovko). *East. Mong.* (lower Kerulen, in Mergen-Khamar gorge, 1899—Pal.; Shilin-Khoto town, steppe, 1954—Ivan.). *Val. Lakes* (rocky southern slopes of dry desert mountains above Tuin-Gol river, Sept. 1, 1924—Pavl.). *Gobi-Alt.* (Dundu-Saikhan mountain ranges, southern slope, humus soil in midbelt of mountains, July 13, 1909—Czet.; Bain-Tsagan hills, rubble places on south. slope, Aug. 4; same site, rubble slope, Sept. 16—1931, Ik.-Gal.). *East. Gobi* (rocky slope of Del'ger-Khangai mountain range, July 30, 1931—Ik.-Gal.).

General distribution: Jung.-Tarb.; Fore Asia, West. Sib. (Altay), East. Sib. (south), Far East (south), Nor. Mong. (Hent., Hang., Mong.-Daur.), China (Dunbei, North, North-West, South-West), Korean peninsula, Japan.

4. Scutellaria L.

Sp. p.l. (1753) 598.

1. Upper lip of calyx on back with arcuately concave appendage rounded at tip .... 2.
\+ Upper lip of calyx with only small umbo on back. .... 6. **S. kingiana** Prain.
2. Flowers in axils of ordinary leaves, gradually decreasing in size or aggregated into unilateral sided racemose inflorescence with leafy bracts, quite similar to caulous leaves but somewhat smaller. ..... 3.

\+ Inflorescence not unilateral leafy bracts sharply different from caulous leaves, more or less membranous ....7.

3. Flowers in racemose inflorescence, leafy bracts similar to caulous leaves but smaller ....4.

\+ Flowers in axils of ordinary leaves, gradually decreasing in size... 5.

4. Corolla blue; leaves dense, subcoriaceous, glabrous or very insignificantly pubescent on upper surface, pitted-punctate beneath; nuts small, up to 1 mm long. .... 3. **S. baicalensis** Georgi.

\+ Corolla yellow; leaves not coriaceous, pubescent and grainy yellow on both surfaces; nuts very large; about 2 mm long.................. .... 13. **S. viscidula** Bunge.

5. Leaves pitted-punctate beneath ....6.

\+ Leaves not pitted-punctate beneath.................. 4. **S. galericulata** L.

6. Leaves small, 0.3–1.4 cm long; internodes elongated, leaves shorter than internodes; nuts very finely tuberculate .... 1. **S. alaschanica** Tschern.

\+ Leaves very large, 1–3.5 cm long; internodes shortened, leaves longer than internodes; nuts large and papillate-tuberculate .... 10. **S. scordiifolia** Fisch. ex Schrenk.

7. General colour of flowers pink-violet or blue, very rarely grainy yellow; leafy bracts ovate-lanceolate or lanceolate, 0.5–1 cm long and 1.5–4 mm broad, concave, carinate, narrowed at base, green or violet; nuts finely tuberculate, black............ 5. **S. grandiflora** Sims.

\+ General colour of flowers yellow, sometimes with greenish or purple-violet spots on upper or lower lip of corolla; leafy bracts ovate or ovate-lanceolate, usually rather flat, more often membranous, light green or purple; nuts finely tuberculate, densely covered with short stellate hairs, grey ....8.

8. Leaves without tomentose pubescence, green on both surfaces .. 9.

\+ Leaves (at least in juvenile stage) with more or less well-developed tomentose pubescence beneath (sometimes on upper surface as well) ....10.

9. Leaves with comparatively more teeth (4–7 on each side), usually with scattered or fairly abundant long thickened hairs above, densely glandular-pitted beneath and with short or long, squarrose hairs along views .... 12. **S. supina** L.

\+ Leaves with few teeth (1–4 on each side), some leaves sometimes entire, with diffuse or fairly dense (especially beneath) pubescent thickened hairs and stalked glands on both surfaces .... 8. **S. paulsenii** Briq.

10. Leaves pinnately incised-dentate, generally deeper than half breadth of half-blades .... 9. **S. przewalskii** Juz.

\+ Leaves comparatively less deeply crenate or dentate .... 11.

11. Leaves green above, diffusely arachnoid, whitish beneath, densely appressed-tomentose; leafy bracts, calyces, pedicels and stem with long, rather thick lustrous hairs. .... **2. S. albertii** Juz.
 + Leaves greenish on both surfaces, pubescence poorly manifest beneath; leafy bracts, calyces, pedicels and stems with long, rather thick hairs or hairs totally lacking .... 12.
12. Leafy bracts broadly ovate, shortly acuminate, with short appressed hairs all over surface and, additionally, with scattered fine stalked glands; stems mostly with intense anthocyanin coloration .... **7. S. krylovii** Juz.
 + Leafy bracts ovate, rather thick squamose hairs in pubescence along with stalked glands; stems generally greenish or lilac in lower part .... **11. S. sieversii** Bunge.

1. **S. alaschanica** Tschern. in Novosti sist. vyssh. rast. (1965) 220. —? *S. rivularis* auct. non Wall.: Walker in Contribs U.S. Nat. Herb. 28 (1941) 657. —**Ic.:** Tschern. l.c.

Described from China (Alashan range). Type in Leningrad.

On open rocky-loamy slopes and precipices.

IA. Mongolia: *Alash. Gobi* (between Huang He river and mountains, 1871; Alashan mountain ranges slopes and precipices, July 9, 1873—Przew., typus!; Tszosto gorge, southern slope, May 18; Khote-Gol gorge, at all levels, rocky-humus soil, June 19—1908, Czet.; ? "Ho Lan Shan, exposed, dry, clayey cliffs, No. 1154, 1923, Ching"—Walker, l.c.).

General distribution: endemic.

Note. Highly characteristic species intermediate between *S. galericulata* L. and *S. scordiifolia* Fisch. but well differentiated from both. Known so far only from Alashan range where it has been collected time and again. The literature (Walker, l.c.) mentions the occurrence of *S. rivularis* Wall. in Alashan range but the study of *S. rivularis* described from Nepal shows that this species has extended into more humid regions of China: South, East and Taiwan. There are no further reports of *S. rivularis* from the Alashan range. The habitat conditions cited by Walker on the label correspond to those of our species and thus we assume that *S. rivularis* Walk. non Wall. does not differ from *S. alaschanica* Tschern. Unfortunately, it has not been possible to verify this assumption.

2. **S. albertii** Juz. in Bot. mater. Gerb. Bot. inst. AN SSSR, 14 (1951) 399; Juzepczuk in Fl. SSSR, 20 (1954) 147; Grubov in Bot. mater. Gerb. Bot. inst. AN SSSR, 19 (1959) 549; Fl. Kazakhst. 7 (1964) 311. —**Ic.:** Fl. Kazakhst. Plate 36, fig. 5.

Described from Kazakhstan (around Dzharkent). Type in Leningrad.

Dry rubble slopes, dry pebble river-beds, exposed mottled rocks and wormwood steppes.

IIA. Junggar: *Jung. Alt.* (Urtak-Sary, West of Sairam lake, July 19, 1878—Fet.; Urtak-Sary, 1800 m, Aug. 4, 1878—A Reg.; Toli, on slope, No. 2480, Aug. 4; same site, No. 2762, Aug. 9; Ven'tsyuan', No. 1464, Aug. 14; north of Toli, 700 m, Aug. 16—1957, Kuan; along road from Borotala valley to Sairam-Nur lake, valley of Urtak-Sary river, wormwood-snakeweed steppe, Aug. 18, 1957—Yun. et al.) *Tien Shan* (Sairam, July 1877; Piluchi, north of Kul'dzha, 900–1200 m, July 22; Talki, July 1878—A. Reg.; Urumchi region, beyond Tasenku river, Biangou area, arid southern slope in spruce belt, Sept. 25, 1929—Pop.; high, about 200 m, right terrace of Manas river, near Chendokhoze river estuary, May 28, 1954—Mois.; Kuitun—Gobi, rocky ravine, No. 1089, June 27; Savan, on slope, No. 1294, July 8—1957, Kuan; Ulan-Usu river valley, worm-wood-chee grass steppe, July 16, 1957—Yun. et al.; along road from Urumchi to Karashar, on slope, 1570 m, No. 5942, July 21, 1958—Lee and Chu; B. Yuldus basin, residual mountain on right bank of Khaidyk river, 3–5 km from Bain-Bulak, Aug. 10, 1958—Yun.). *Dzhark.* (Aktyube, north of Kul'dzha, May 13; along Ili river, May 14—1877, A. Reg.; Ili, on slope, No. 3148, Aug. 7, 1957—Kuan).

General distribution: Jung.-Tarb. (southern slopes of Junggar Alatau).

3. **S. baicalensis** Georgi, Bemerk. Reise im Russ. Reich. 1 (1775) 223; Forbes and Hemsley, Index Fl. Sin. 2 (1902) 294; Kudo in Mém. Soc. Sci. and Agr. Taihoku Univ. 2 (1929) 269; Kitag. Lin. Fl. Mansh. (1939) 385; Walker in Contribs U.S. Nat. Herb. 28 (1941) 657; Juzepczuk in Fl. SSSR, 20 (1954) 103; Grubov, Konsp. fl. MNR (1955) 233; Dashnyam in Bot. zh. 50 (1965) 1641. —*S. macrantha* Fisch. ex Reichb. Ic. Bot. 5 (1827) 52; Franch. Pl. David. 1 (1884) 240; Dunn in Notes Bot. Gard. Edinburgh, 6 (1915) 177; Chen and Chou, Rast. pokrov r. Sulekhe (1957) 90. —**Ic.:** Reichb. l.c. tab. 488, fig. 681 (sub nom. *S. macrantha*); Fl. SSSR, Plate 5, fig. 5.

Described from Transbaikal. Type not known.

Rocks, rocky slopes, fine sand, in steppe zone.

IA. Mongolia: *Cis-Hing.* (Khaligakha area, arid sand steppe, July 23, 1899—Pot. and sold.), *East. Mong., Alash. Gobi* ("Nan Ssu Kou, No. 138, Ching"—Walker, l.c.) *Khesi* (Suchzhou, Sept. 11, 1890—Marten; "r. Sulekhe"—Chen and Chou, l.c.).

General distribution: East. Sib. (south), Far East (south), North Mongolia (Hent., Mong.-Daur.), China (Dunbei, North), Korean peninsula, Japan.

4. **S. galericulata** L. Sp. pl. (1753) 599; Forbes and Hemsley, Index Fl. Sin. 2 (1902) 294; Krylov, Fl. Zap. Sib. 9 (1937) 2296; Juzepczuk in Fl. SSSR, 20 (1954) 90; Grubov, Konsp. fl. MNR (1955) 234; Fl. Kirgiz. 9 (1960) 14; Fl. Kazakhst. 7 (1964) 302. —*S. galericulata* L. var. *genuina* Regel, Tent. Fl. Ussur. (1861) 118; Danguy in Bull. Mus. nat. hist. natur. 20 (1914) 84. —? *S. galericulata* var. *angustifolia* auct. non Regel: Danguy in Bull. Mus. nat. hist. natur. 20 (1914) 84. **Ic.:** Fl. Kazakhst. Plate 35, fig. 5.

Described from Europe. Type in London (Linn.).

Wet coastal and swampy meadows, coastal scrubs, wet banks of rivers, brooks and lakes, forest and forest-steppe belts.

IA. Mongolia: *Cis-Hing.* (Khalkhin-Gol river, Symbur area, Sept. 1, 1928—Tug.). *East. Mong.* (near Khailar town, wet meadow on river bank, April 7, 1951—S.H. Li et al. (1951); ? "Vallée du Kéroulen, June 1896, Chaff."—Danguy, l.c.). *Bas. Lakes* (Ulangom, under shadow of pea shrubs, along river, July 2, 1879—Pot.).

IIA. Junggar: *Jung. Gobi* (Guchen vicinity, July 1876—Pev.; Savan district, Mogukhu reservoir, near water, No. 1569, June 25; environs of Shikheitsz, No. 1172, July 2; north of Kuitun station, swampy meadow, No. 385, July 6; 3 km east of Kuitun station, in swamp, No. 431, July 7—1957, Kuan; north of Kuitun station, along Shikho-Manas road, grass-sedge swampy meadow, June 30, 1957—Yun. et al.). *Zaisan* (Ch. Irtysh river, left bank in Dzhelkaidar area, tugai (vegetation-covered bottomland), July 9; same site, right bank, in Burchum estuary,