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PROCEEDINGS  
OF THE  
COMMITTEE  
OF  
SCIENCE AND CORRESPONDENCE  
OF THE  
ZOOLOGICAL SOCIETY  
OF LONDON.



PART I.

1830—1831.

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ZOOLOGICAL SOCIETY

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PART II

1870-1871

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# LIST

OF

## CONTRIBUTORS.

*With References to the several Articles communicated by each.*

	page
<b>ARNOLD, Mr. J. B.</b>	
Letters on the Naturalization of <i>Sea-Fishes</i> in a Lake chiefly supplied with fresh water .....	126
<b>BANCROFT, E. N., M.D.</b>	
On several <i>Fishes</i> of Jamaica .....	134
<b>BELCHER, Capt. R.N.</b>	
Account of a Collection of <i>Fishes</i> from the Atlantic Coast of Northern Africa, presented by .....	145
<b>BELL, T. Esq.</b>	
Account of a pair of living <i>Acouchies</i> ( <i>Dasyprocta Acuschy</i> , Ill.) .....	6
<b>BENNETT, E. T. Esq.</b>	
Characters of a New Species of <i>Polyborus</i> ? (since ascertained to be the young of <i>Vultur Angolensis</i> , Penn.) .....	13
On the History and Synonymy of the <i>Cereopsis Novæ Hollandiæ</i> , Lath. ....	26
Characters of a New Species of <i>Deer</i> ( <i>Cervus</i> , L.) .....	27
Description of a young <i>Nyl-ghau</i> ( <i>Antilope picta</i> , Pall.) ..	37
Characters of a New Species of <i>Spider-Monkey</i> ( <i>Ateles</i> , Geoffr.) .....	38
Observations on a Collection of <i>Fishes</i> from the Mauritius, presented by Mr. Telfair, with Characters of New Genera and Species .....	59, 61, 126, 165
On the <i>Vultur auricularis</i> , Daud. ....	66
Characters of two Species of <i>Mammalia</i> (one constituting a new genus) from Sierra Leone .....	109
Observations on a Collection of <i>Fishes</i> , formed during the voyage of H.M.S. Chanticleer, with Characters of two New Species .....	112
Characters of a New Species of <i>Pterois</i> .....	128
Characters of New Genera and Species of <i>Fishes</i> from the Atlantic Coast of Northern Africa, presented by Captain Belcher, R.N. ....	146



	page
BOYLE, J. Esq.	
On two Species of <i>Mammalia</i> , from Sierra Leone, presented by .....	109
CARLISLE, Sir A.	
On a Specimen of <i>Labrus maculatus</i> , Bl. taken on the Bri- tish coast, presented by .....	17
COLEMAN, E. Esq.	
On the propensity of Domesticated <i>Quadrupeds</i> to destroy their young when suffering under a deficiency of milk .....	57
COLLIE, A. Esq.	
On the Pouch of the <i>Frigate-bird</i> ( <i>Tachypetes Aquilus</i> , Viell.) .....	62
COOK, Captain.	
On a Collection of <i>Birds</i> from the South of Europe, pre- sented by .....	96
COX, J. C. Esq.	
Observations on the Treatment of the <i>Sylviadae</i> in captivity	13
On the Preservation of a Proper Temperature for Exotic Animals .....	18
On <i>Prolapsus Uteri</i> in Sheep .....	37
CUVIER, M. F.	
Letter on several subjects of Zoological interest .....	57
DESJARDINS, M. J.	
Abstract of the Proceedings of the "Société de l'Histoire Naturelle de l'Isle Maurice," to the 24th of August 1830...	45
DILLWYN, L. W. Esq.	
On the Capture of a Specimen of <i>Labrus maculatus</i> , Bl. in Swansea Bay .....	35
ELLIS, H. Esq.	
On a Collection of <i>Birds</i> from Africa, presented by .....	92
FAYREB, Captain, R.N.	
On the Migration of <i>Birds</i> between the Coasts of Scotland and Ireland .....	145
FIENNES, Hon. TWISELTON.	
On a Hybrid between a Male <i>Pintail</i> and a <i>Common Duck</i>	158
FRANKLIN, Major JAMES.	
Catalogue of <i>Birds</i> , collected on the Ganges between Cal- cutta and Benares, and in the Vindhyan Hills between the latter place and Gurrah Mundela on the Nerbudda, with Cha- racters of the New Species .....	114
FRIEND, Lieutenant M. C.	
On two New Species of <i>Mammalia</i> from New Holland, presented by .....	149
GRAY, J. E. Esq.	
On the Identity of the <i>Ctenodactylus Massonii</i> , Gray, with the <i>Mus Gundi</i> , Rothm. ....	50

	page
On the frequency of the <i>Natter-jack</i> of Pennant ( <i>Rana Rubeta</i> , L.) on the Commons in the neighbourhood of London .....	61
On two Species of the Genus <i>Rhynchæa</i> , Cuv.....	62
On the <i>Vultur Angolensis</i> , Lath. ....	67
Characters of three New Genera, including two New Species of <i>Mammalia</i> from China .....	94
Characters of a New Genus of <i>Fresh-water Tortoise</i> from China .....	106
Observations on the Animal ( <i>Ocythoë</i> ) found in the shells of the Genus <i>Argonauta</i> .....	107
HAY, E. W. A. DRUMMOND, Esq.	
Letter accompanying a present of several Living Animals from the Empire of Marocco .....	145
HEATH, J. M. Esq.	
On two Species of <i>Bats</i> , accompanying a large Collection of Birds from Madras, presented by .....	113
HODGKINSON, E. Esq.	
Account of a Specimen of <i>Gulo Barbarus</i> , L., presented by .....	74
HODGSON, B. H. Esq.	
Description and Characters of the <i>Chiru Antelope</i> ( <i>Antilope Hodgsonii</i> , Abel).....	52
HOLDSWORTH, Rev. R.	
On a Specimen of the <i>Umbrina</i> ( <i>Sciæna Aquila</i> , Cuv.), taken on the South Coast of Devon .....	112
HORSFIELD, T., M.D.	
Observations on two Species of <i>Bats</i> , from Madras, one of them new, presented by Mr. Heath .....	113
HOY, BARLOW, Esq.	
On the <i>Hylurgus piniperda</i> , Latr.....	126
JENKINS, F. Esq. Secretary to the Physical Committee of the Asiatic Society.	
Letter accompanying a Collection of Indian <i>Birds</i> .....	6
KING, Captain P. P., R.N.	
Characters of New Genera and Species of <i>Birds</i> from the Straits of Magellan.....	14, 29
LEACH, W. E., M.D.	
On a Collection of Italian <i>Insects</i> , presented by .....	24
LINDSAY, H. H. Esq.	
On a Collection of <i>Birds</i> from Manilla, presented by ....	96
LODDIGES, Mr. G.	
Notice of a New Genus of <i>Trochilidæ</i> .....	12
LORD, Mr. W.	
On a Collection of <i>Birds</i> made in Shetland, and presented by .....	150

MARTIN, MR. WILLIAM.	page
Report on the Diseased Appearances of a <i>Beaver</i> ( <i>Castor Fiber</i> , L.)	12
On the Morbid Appearances of a <i>Lion</i> ( <i>Felis Leo</i> , L.)	28
On the Anatomy of the <i>Testudo Indica</i> , L.	46
On the Anatomy of the <i>Ruffed Lemur</i> ( <i>Lemur Macaco</i> , L.)	58
On the Anatomy of the <i>Testudo Græca</i> , L.	63
On the existence of a Rudimentary <i>Cæcum</i> in certain <i>Tortoises</i>	74
On the Anatomy of the <i>Alligator Tortoise</i> ( <i>Chelydra serpentina</i> , Schweig.)	129
On the Anatomy of a <i>Monitor</i>	137
MILLER, MR.	
Report on the Circumstances attending the Birth of two <i>Armadillos</i> ( <i>Dasypus sexcinctus</i> , L.)	48
OGILBY, W. Esq.	
On the Identity of the <i>Ctenodactylus Massonii</i> , Gray, with the <i>Gundi Marmot</i> ( <i>Mus Gundi</i> , Rothm.)	50
On two New Species of <i>Phalangista</i> , Cuv.	135
On a New Species of Indian <i>Deer</i> ( <i>Cervus</i> , L.)	136
On two New Species of <i>Mammalia</i> from New Holland	149
OWEN, R. Esq.	
On the Anatomy of the <i>Orang Utan</i> ( <i>Simia Satyrus</i> , L.)	4, 9, 28, 67
On the Anatomy of the <i>Beaver</i> ( <i>Castor Fiber</i> , L.)	19
On the Anatomy of a Female <i>Suricate</i> ( <i>Ryzana tetradactyla</i> , Ill.)	39
On the Anatomy of a Male <i>Suricate</i>	51
On the Anatomy of the <i>Acouchy</i> ( <i>Dasyprocta Acuschy</i> , Ill.)	75
On the Anatomy of the <i>Thibet Bear</i> ( <i>Ursus Thibetanus</i> , F. Cuv.)	76
On the Anatomy of the <i>Gannet</i> ( <i>Sula Bassana</i> .)	90
On the Anatomy of the <i>Sharp-nosed Crocodile</i> ( <i>Crocodilus acutus</i> , Cuv.)	139, 169
On the Anatomy of the <i>9-banded Armadillo</i> ( <i>Dasypus Peba</i> , Desm.)	141
On the Anatomy of the <i>Seal</i> ( <i>Phoca vitulina</i> , Linn.)	151
On the Anatomy of the <i>Weasel-headed Armadillo</i> ( <i>Dasypus sexcinctus</i> , Linn.)	154
On the Organs of Generation of the Female <i>Kangaroo</i> ( <i>Macropus major</i> , Shaw.)	159
On the Anatomy of the <i>American Tapir</i> ( <i>Tapir Americanus</i> , Gmel.)	161
PORTER, Sir R. K.	
On the <i>Tapir</i> ( <i>Tapir Americanus</i> , Gmel.)	94
On the <i>Ant-Bear</i> ( <i>Myrmecophaga jubata</i> , Linn.)	149
REEVES, JOHN, Esq.	
Notice of a living Specimen of the <i>Phasianus Reevesii</i> , Hardw. & Gray ( <i>Phasianus veneratus</i> , Temm.) presented by	77



	page
RICHARDSON, J., M.D.	
<i>Birds and Mammalia</i> collected during the last Arctic Land Expedition under Sir John Franklin .....	132
SHARPE, D. Esq.	
On the Luminous Appearance of the Ocean.....	24
SMITH, ANDREW, M.D.	
Letter accompanying a Collection of <i>Fishes</i> from South Africa .....	11
SPOONER, Mr.	
On the accumulation of Fat in Animals.....	164
SWINTON, G. Esq.	
Letter accompanying a <i>Dugong</i> ( <i>Halicore Dugong</i> , Ill.), presented by .....	113
SYKES, Lieut.-Col. W. H.	
Catalogue of the <i>Mammalia</i> of Dukhun (Deccan); with Observations on their Habits, &c., and Characters of New Species .....	99
Characters of a New Species of <i>Monkey</i> ( <i>Semnopithecus?</i> ) .....	105
TELFAIR, C. Esq.	
Account of a Collection of <i>Birds</i> from the Mauritius, presented by .....	41
Account of a Collection of <i>Fishes</i> from the Mauritius, presented by.....	59, 61, 126, 165
Letter on several Subjects relative to the Zoology of the Mauritius and Madagascar.....	89
THOMPSON, J. V. Esq.	
On the Metamorphosis of <i>Crustacea</i> .....	17
THURSFIELD, R. Esq.	
Account of a Hybrid between the <i>Hare</i> and the <i>Rabbit</i> ...	66
VIGORS, N. A. Esq.	
Observations on the Genus <i>Ortyx</i> , with Characters of two New Species .....	2
Observations on a Collection of <i>Birds</i> from the Himalayan Mountains, with Characters of New Genera and Species .....	7, 22, 35, 41, 54, 170
Characters of a New Species of <i>Humming-Bird</i> .....	12
Characters of a New Species of <i>Ground-Parrakeet</i> ( <i>Platycercus</i> , Vig.) .....	23
Characters of the <i>Phasianus lineatus</i> , Lath. MSS.....	24
On the absence of the <i>os furcatorium</i> in some of the groups of the <i>Psittacidae</i> .....	36
On a Collection of <i>Birds</i> from the Mauritius, presented by Mr. Telfair, with Characters of a New Species of <i>Spoonbill</i> ( <i>Platalea</i> , L.).....	41
On a New Species of <i>Owl</i> ( <i>Strix</i> , L.) from New Holland..	60
On a New Species of <i>Cockatoo</i> ( <i>Plyctolophus</i> , Vieill.)....	61
On the Habits and Economy of the <i>Frigate-Bird</i> ( <i>Tachypetes Aquilus</i> , Vieill.) .....	62

	<i>page</i>
On a Collection of <i>Birds</i> from Africa, presented by H. Ellis, Esq., with Characters of New Species .....	92
On a Collection of <i>Birds</i> from the South of Europe, presented by Captain Cook.....	96
On a Collection of <i>Birds</i> from Manilla, presented by H. H. Lindsay, Esq. with Characters of New Species.....	96
<b>YARRELL, W. Esq.</b>	
On the Preservation of <i>Whitebait</i> ( <i>Clupea alba</i> , Yarr.) alive.	13
On the Morbid Appearances of a <i>Rein-deer</i> ( <i>Cervus Tarandus</i> Linn.).....	14
On the Occurrence of the <i>Sylvia Tithys</i> , Scop., in England.	18
On the Assumption of the male plumage by the female of the Common <i>Game Fowl</i> .....	22
On the Anatomy of the <i>Cereopsis Novæ Hollandiæ</i> , Lath.; and on the Relations between the <i>Natatores</i> and <i>Grallatores</i> .	25
On the Sexual Organs of a hybrid <i>Pheasant</i> .....	27
On the specific Identity of the <i>Gardenian</i> and <i>Night Herons</i> ( <i>Ardea Gardeni</i> and <i>Nycticorax</i> ) .....	27
On the Anatomy of the <i>Chinchilla</i> ( <i>Chinchilla lanigera</i> ) ..	31
On the <i>Trachea</i> of the <i>Red-lobbed Curassow</i> ( <i>Crax Yarrellii</i> , Benn.).....	33
Characters of a New Species of <i>Herring</i> ( <i>Clupea</i> , L.) ....	34
On the Occurrence of several North American <i>Birds</i> in England .....	35
On the Anatomy of the <i>Lesser American Flying Squirrel</i> ( <i>Pteromys volucella</i> , Cuv.).....	38
On the Anatomy, &c. of the <i>Ctenodactylus Massonii</i> , Gray ( <i>Mus Gundi</i> , Rothm.).....	48
On the sterno-tracheal Muscles in the <i>Razor-billed Curassow</i> ( <i>Ourax Mitu</i> , Cuv.) .....	59
On the distinctive Characters of the <i>Tetrao medius</i> , Temm. ( <i>T. hybridus</i> , Lath.) .....	73
On two Species of <i>Entozoa</i> found in the <i>Eel</i> .....	132
On the Generation of <i>Eels</i> and <i>Lampreys</i> .:.....	132
On the <i>Brown-headed Gull</i> ( <i>Larus capistratus</i> , Temm.) ..	151
On the Anatomy of the <i>Conger Eel</i> ( <i>Conger vulgaris</i> , Cuv.), and on the Differences between the <i>Conger</i> and <i>Fresh-water Eels</i> .....	159

PROCEEDINGS  
OF THE  
COMMITTEE OF SCIENCE AND CORRESPONDENCE  
OF THE  
ZOOLOGICAL SOCIETY OF LONDON.

---

November 9, 1830.

R. W. Hay, Esq. in the Chair.

The Chairman opened the business of the Meeting, by stating the objects contemplated by the Council in the formation of the Committee. He explained these objects in conformity with the subjoined Extracts from the Minutes and Report of the Council.

*Extract from the Minutes of Council, July 21.*

“On a consideration of the advantages likely to accrue to the Society, by cultivating an extensive correspondence on subjects of Natural History; it was Resolved, that a Committee be appointed, to be entitled ‘The Committee of Science and Correspondence,’ for the purpose of suggesting and discussing questions and experiments in animal physiology, of exchanging communications with the Corresponding Members of the Society, of promoting the importation of rare and useful Animals, and of receiving and preparing reports upon matters connected with Zoology.

“That the Committee be requested, in the first instance, to prepare a Report upon the Animals, for the importation of which it is most desirable that the Council should take measures, whether for purposes of utility or exhibition, under the heads of the several countries in which they are produced; and pointing out the means which should be taken for their preservation, either on the passage or after their arrival; and secondly, to obtain all information possible, upon the subject of the importation and breeding of Fish.”

Oct. 6.

“It was ordered, that the Committee of Science, nominated at the Council of the 21st of July, should be requested to meet at the Society’s rooms, at eight o’clock on Tuesday the 9th of November, and on every subsequent second and fourth Tuesday of the month. It was also Resolved, that the Committee should have power to add to their numbers; and that the members of the Council should be *ex officio* members of the Committee.”

*Extract from the Report of the Council, Nov. 4, 1830.*

“It has been objected to the Council, that but little of their attention has been directed to the advancement of Zoological Science; and the apology which they have to offer is, that their time has been necessarily devoted to the very complicated and extensive arrangements under which the formation of their present establishments has been begun and accomplished. They have latterly been particularly anxious to place the responsibility of detail upon their salaried officers, so that their own time may be principally applied to more general superintendence, and particularly to the encouragement of scientific researches: they have, therefore, endeavoured to establish meetings of such members of the Society as have principally applied themselves to science; at which, communications upon Zoological subjects may be received and discussed, and occasional selections made for the purpose of publication. They propose from time to time to publish in the cheapest form an abstract from the most interesting of these communications; and they trust that the first of these papers will be ready for delivery on the first of January, 1831. They further propose, that these meetings shall take place on the second and fourth Tuesdays in every month; and they have invited, for the 9th of November next, such members of the Society as appeared likely, from their scientific pursuits, to take an interest in their views.

“The Council have moreover suggested that letters be sent to the superintendents of the principal Menageries in Europe, *viz.* at *Paris, Leyden, Munich, Vienna, Madrid, &c.* proposing mutual communication of all observations upon these matters, and an occasional interchange of such animals as may be most easily produced or imported in each country. They have also proposed, that circulars be addressed to the Corresponding Members of the Society, requesting particular information upon such facts of Natural History as it may be desirable to investigate at each place; and they further propose that a prize be offered for the Essay which shall contain the best and most extensive practical knowledge upon the importation and domestication of foreign animals in this and other countries.”

The Chairman concluded his Address by calling on the Members, collectively and individually, to forward the views of the Council, by communicating such facts as might tend to the advancement of Zoological Science.

Mr. Vigors called the attention of the Committee to a Gallinaceous group of America, which supplied in that continent the place of the *Quails* of the Old World. Of this group, or the genus *Ortyx* of modern authors, which a few years back was known to ornithologists by two well-ascertained species only, he exhibited specimens of six species; namely, of *Ort. virginianus* and *californicus*, which had been the earliest described, the former by Linnæus, the latter by Dr. Latham; of *Ort. capistratus*, a species lately named and figured in Sir W. Jardine's and Mr. Selby's “Il-



illustrations of Ornithology"; and of *Ort. Douglasii, Montezumæ*, and *squamatus*, which had been characterized by himself in the "Zoological Journal." In addition to these species he exhibited plates of three others of which he regretted that he could obtain no specimens in London; namely, of *Ort. macrourus*, figured by Sir W. Jardine and Mr. Selby; of *Ort. Sonninii*, figured by M. Temminck in the "Planches Coloriées" [No. 75.]; and of the *Ort. cristatus*, figured in the "Planches Enluminées" [No. 126.] of M. Buffon. To these nine described species, he added two others apparently new to science, and which he characterized under the names of *Ort. neozenus* and *affinis*; stating at the same time his doubts whether both might not be the females or young males of the imperfectly known species *Ort. Sonninii* or *cristatus*.—The following are the specific characters of these birds.

**ORTYX NEOXENUS.** *Ort. brunneus, supra fusco rufoque undulatum variegatus, subtus pallido-rufo maculatus; genis lateribusque colli rufescentibus; caudâ brunneo-fusco rufoque undulatum fasciatâ; cristâ brevi brunneâ.*

Staturâ minor quàm *Ort. californicus*.

**ORTYX AFFINIS.** *Ort. pallidè brunneus; dorso alisque fusco pallidoque rufo variegatis; caudâ pallescenti-brunneâ, fusco alboque undulatum fasciatâ; capite, collo, pectore, abdomineque rufescentibus, hoc albo guttato, illis albo nigroque variegatis; fronte apiceque cristæ elongatæ rufo-brunneæ albescentibus.*

Staturâ minor quàm species præcedens.

Mr. Vigors proceeded to state, that individuals of four of the above-mentioned species, namely, *Ort. virginianus, californicus, neozenus* and *Montezumæ*, had been exhibited in a living state in the Gardens of the Society. Specimens of the former three, he added, were still alive there, having braved the severity of the last winter without any artificial warmth. They were all natives of the northern parts of America. The *Ort. virginianus*, he also mentioned, had bred in this country, and had even become naturalized in Suffolk.

He stated in addition, that Capt. P. P. King, R.N., had pointed out to him, amongst his collection lately brought home from the Straits of Magellan, specimens of a bird which he made no doubt was the same as the *Caille des Isles Malouines* of M. Buffon, figured in the "Planches Enluminées" [No. 222.], and which was subsequently named *Perdix Falklandica* by Dr. Latham. This bird has been added to the genus *Ortyx* by modern authors, but erroneously; as the structure of the wing, in which consists the chief difference between the *Ortyx* of America and the genus *Colurnix* or the *Quails* of the Old World, associates the Magellanic bird more closely with the latter group than with the birds of its own continent. Mr. Vigors mentioned, that the form which characterizes the true *Quails* extends to Australia, where several species are found. And referring to the deviation in form, which partially separates the South American bird from the allied groups of the same continent, and brings it in contact with those of Australia, and through them with those of the old continent, he dwelt upon the beautiful series of geographical affinity, which in this instance united the zoology

of the southern extreme of the New World with that of the nearest portions of the southern hemisphere, in like manner as the zoology of the northern extreme is united with that of the neighbouring continents of Europe and Asia. He pointed out some additional instances, in which the same union might be traced.

Mr. Owen commenced the reading of a paper On the Anatomy of the *Orang Utan* (*Simia Satyrus*, L.).

The subject principally referred to was a young male, probably about four years of age, which had recently been presented to the Society by Mr. Swinton of Calcutta; it reached England in a very debilitated state, and died on the third day after its arrival in Bruton-street.

The morbid appearances met with in its examination were very slight, and of themselves not sufficient to account for the death of the animal. The brain was firm, and its membranes bore no traces of inflammation. The stomach and intestines were also equally free from morbid appearances. The liver was perfectly healthy, which was the more remarkable, as on the third day before death the *faces* were clay-coloured from a deficiency of bile. The heart was healthy, except that it had two or three patches of organized lymph upon its surface, indicating old inflammation: the *pericardium* contained more than half an ounce of fluid: about four ounces of fluid were also effused in the cavity of the chest, and the cellular tissue of the lungs was gorged with *serum*, a circumstance which must have occasioned a great obstruction of the circulation. There existed before death evidence of this effusion, in the slow and laboured breathing of the animal, as noticed by Mr. Martin, who also states that the pulse was 100 and very feeble, but, as far as he observed, without intermission. No other organ exhibited any lesion of structure; the lungs and liver were free from tubercles, the development of which appears to be the most frequent cause of death in animals which, coming from warm countries, have sojourned in our damp climate. The effusion observed may probably be considered as one of the consequences of that debility and exhaustion of the system, produced by a long voyage, improper food, and *diarrhœa*, which terminated in premature death.

The general appearance and position of the abdominal *viscera* in the *Orang* bear much resemblance to those of the human subject. The stomach is thicker and narrower at its pyloric end, and the vilous coat is of less extent. The small intestines are lined by a smooth and uniform membrane, and are without *valvula conniventes*. The position of the *cæcum* is the same as in man: to its extremity is attached the vermiform appendage, which is wider at its commencement; thus exhibiting as a permanent structure in the *Orang*, that which in man is a foetal peculiarity. The *colon* is sacculated, and appears, from the existence of *glandula solitaria* and from the presence of lacteal glands in the *meso-colon*, to take a great share in the functions of digestion. The liver generally resembles the human; the gall bladder is long and tortuous; the *pancreas* is relatively larger, and the spleen more pointed at its extremities than in man; the

hepatic and pancreatic secretions enter the *duodenum* separately, but close together. In the structure of the abdominal ring, the *Orang* recedes further than the *Chimpanzee* (*Simia Troglodytes*, L.) from the human type; the kidneys also differ, and present, like those of the *Monkeys* generally, only a single *papilla*. The palate, unlike that of man and of the *Chimpanzee*, has no pendulous *uvula*.

In external form, the brain resembles the human and that of the *Chimpanzee*: it differs from the brains of other animals in the number and disposition of the *laminæ* of the *cerebellum*; in the posterior fissure of that part; and in wanting the transverse band of fibres posterior to the *pons Varolii*. As compared with that of the *Chimpanzee*, the *medulla oblongata* is shorter in proportion, as are also the anterior lobes; and the *cerebellum* projects further behind the *cerebrum*. The internal structure of the brain has not yet been examined; some previous preparation of that part having been deemed necessary, in order to render it sufficiently firm for dissection.

The structure of the *larynx* is minutely described, and contrasted with the anatomy of the same part in the *Chimpanzee*, in which the laryngeal sacs are not developed as in the *Orang*. The left laryngeal sac in the present instance was the largest, and extended over the top of the *sternum*. In the *Chimpanzee* the laryngeal sac is produced into a cavity in the body of the *os hyoides*, presenting the first indication of the excavation which is carried to so great an extent in the *Monkeys* of the genus *Mycetes*. The thyroid gland is small in the *Orang*. The lungs are entire on each side, and not divided into lobes. The *aorta* gives off by a common trunk the right subclavian and the right and the left carotid arteries, the latter of which is given off in the *Chimpanzee*, as in man, from the arch of the *aorta*.

In the course of his illustrations of the anatomical differences which exist between the *Orang* and the *Chimpanzee*, Mr. Owen frequently referred to Tyson's "Anatomy of a Pigmy," and confirmed many of the descriptions given in that work.

November 23, 1830.

Dr. Waring in the Chair.

The following letter from F. Jenkins, Esq., Secretary to the Physical Committee of the Asiatic Society, was read :

“ Calcutta, 24th March 1830.

“ Sir,—I am directed by the President of the Physical Committee of the Asiatic Society to present, in their name, to the Zoological Society, a small collection of Indian Birds, made (for our Society) by Capt. Franklin (one of its most zealous members) during a late geological tour.

“ I am instructed at the same time to state, that it will afford pleasure to the Physical Committee of the Asiatic Society to promote as far as may be in their power, the views of the Zoological Society in this country ; and they will be happy to receive communications of their wishes on the subject.

“ The collection is in charge of Captain Franklin, who is proceeding in the ship *Lady Nugent*, to England. I am, &c. &c.

“ *N. A. Vigors, Esq. Sec. Z. S.*

“ F. JENKINS.”

The collection alluded to in the preceding letter was laid on the table. It was formed by Major Franklin, F.R.S. &c., on the banks of the Ganges, and in the mountain chain of Upper Hindoostan. It contained one hundred and seventy-one species, and was accompanied by drawings of each of the birds, made while they were recent. Mr. Vigors briefly remarked on several of them, as affording interesting illustrations of the extent of the geographical distribution of certain species. He declined to enter at any length into the subject, which he expected would be fully treated of by Major Franklin in a paper which that gentleman was preparing, and which would be communicated to the Committee at an early meeting.

Mr. T. Bell exhibited a pair of living *Acouchies*, (*Olive Cavy*, Penn., *Dasyprocta Acuschy*, Illig.) recently obtained by him from Guiana. Although they are abundant in their native country, he had never, before the arrival of these individuals, seen a specimen of the species, nor was he aware of the existence of even a preserved skin in any English collection. The *Acouchy* is readily distinguishable from the well-known *Agouti* by its smaller size, its lighter and more elegant proportions, its deeper colours, and other characters, which have been well pointed out by Barrère, Buffon, and other naturalists. The most marked difference is found in the tails of the two animals, that of the *Agouti* being little more than a tubercle, while the tail of the *Acouchy* is upwards of two inches in length ; it is slender, and of equal diameter throughout its extent,



and resembles a quill, or a portion of a tobacco-pipe. The animal frequently agitates this organ with a quick tremulous motion. Both the individuals are mild and gentle in their dispositions, but somewhat timid; they are, however, familiar with their master, and run to him whenever he enters the room in which they are kept, and about which they are allowed to range during the day. Their food is entirely vegetable; they are especially partial to nuts and almonds; they drink but little. They are extremely cleanly, and take great pains to keep their fur in order, in cleansing which they mutually assist each other. They leap occasionally in play to a considerable height, and frequently on springing from the ground to an elevation of two feet, descend on the spot from which they rose. Their voice is a short, rather sharp, plaintive pur. The individuals, male and female, show great attachment to each other.

Mr. Vigors exhibited specimens of several species of birds, apparently undescribed, from the Himalayan mountains. These formed part of a collection which Mr. John Gould, A.L.S., had lately received from India, and of which he intended to publish coloured illustrations, to the number of one hundred figures. Several of the plates, representing some of the most interesting of the species, were laid upon the table.

Mr. Vigors having called the attention of the Committee to the expedition with which these birds were made known to science—the specimens themselves not having been more than two months in England, while representations of many of them were already within that short space of time brought before the public,—proceeded to make some remarks upon the geographical distribution of the species. He particularly pointed out the identity of a large proportion of their forms with those of Northern Europe; observing that the elevation of their native mountains placed them on an equality in point of climate with the birds of more northern latitudes. At the same time he added that many of the forms peculiar to Southern Asia and the Indian Archipelago were found intermingled with those of the northern regions. Among the forms similar to the European, he particularized three species of *Jays*, the two first of which exhibited a striking affinity in their markings to our well-known British bird. They were named and characterized as follows:

*GARRULUS LANCEOLATUS.* *Garr. vinaceo-badius; capite sub-cristato, gulá, jugulo, alisque atris; collo anteriori albo lanceolato; pteromatibus remigibusque cæruleo fasciatis, illis albo terminatis; caudá cæruleá, nigro fasciatá, fasciá latá apicali albo terminatá notatá.*

*GARRULUS BISPECULARIS.* *Garr. pallidè badius, uropygio crisosque albis; maculá latá postrictali, caudá, pteromatibus, remigibusque atris; his duabus cæruleo fasciatis.*

*GARRULUS STRIATUS.* *Garr. pallidè brunneus, subtus pallidior; corporis supra subtusque plumis in medio albo longitudinaliter striatis; cristá verticali, remigibus, rectricibusque unicoloribus.*

This latter species was observed to deviate in general colour and markings from the European species, although according in form;

and in the former characters to exhibit a manifest approach to the *Nutcrackers*, or the genus *Nucifraga* of Brisson.

A new species of this latter European form was also observed in the collection; a second species being thus added to a group which had hitherto been supposed to have been limited to one. In the shape of the bill, which was somewhat shorter and stouter at the base than in the European species, it indicated an approach to the *Jays*. Its characters were as follow:

NUCIFRAGA HEMISPILA. *Nuc. castaneo-brunnea; capite subtus, collo anteriori, dorso, pectoreque albo maculatis; capite summo, alis, reatricibusque intensè brunneis; his, duabus mediis exceptis, ad apicem latè albis.*

The two following species of *Woodpecker*, which approached in size and colouring most closely to the European *green Woodpecker*, were also described.

PICUS OCCIPITALIS. Mas. *Pic. viridis, uropygio lutescenti; fronte coccineo; vertice, strigá latá occipitali ad nucham extendente, alteráque utrinque sub oculos postrictali, atris; remigibus reatricibusque fusco atris, harum duabus mediis pallido-fusco striatis, illis externè albo maculatis; guld genisque canis.*

Fœm. *Fronte atrá albo lineatá.*

PICUS SQUAMATUS. *Pic. supra viridis, uropygio sublutescenti; guld juguloque viridi-canis; capite coccineo; strigá superoculari, alterá suboculari, abdomineque viridi-albis, hoc atro squamato; strigá superciliari alteráque utrinque mentali atris; remigibus reatricibusque fusco-atris, illis externè, his utrinque albo maculatis.*

A species of *Hawfinch*, according accurately with the characters of that northern form, was also described.

COCCOTHAUSTES ICTERIOIDES. Mas. *Cocc. capite, jugulo, dorso medio, alis, femorum tectricibus, caudáque atris; nuchá, uropygio, corporeque subtus luteis.*

Fœm. *Olivacco-cana, uropygio abdomineque lutescentibus; remigibus reatricibusque atris.*

As also a small *Owl*, very nearly allied to the *Noctua passerina* and *Tengmalmi* of Europe.

NOCTUA CUCULOIDES. *Noct. brunneo-fusca; capite, dorso, tectricibus alarum, corporeque subtus albo graciliter fasciatis; remigibus externè albo maculatis; reatricibus utrinque fasciis albis quinque notatis; guld albá.*

Among the forms peculiar to India was observed a second species of the singular group which contains the *Horned Pheasant*, or the *Meleagris Satyra* of Linnæus, and which has been lately separated by M. Cuvier under the name of *Tragopan*. Its specific characters are:

TRAGOPAN HASTINGSII. *Trag. dorso brunneo-fusco undulato, abdomine intensè rubro, amborum plumis ad apicem nigris in medio albo guttatis; cristá crissoque atris, illá ad apicem coccined, hoc albo maculato; collo posteriori coccineo; thorace aurantio; regione circumoculari nudá, carunculisque pendentibus luteis; caudá atrá, lutescenti-albo undulatá.*

A species of true *Pheasant*, which seems to have been indicated by former writers from incomplete descriptions or drawings, but never to have been accurately characterized, was also exhibited and named.

PHASIANUS ALBO-CRISTATUS. Mas. *Phas. supra ater, viridi nitore splendens; dorso imo albo fasciato; cristæ plumis albis, elongatis, deorsim recumbentibus, basi subfuscis; remigibus corporeque inferiori fuscis; pectoris plumis lanceolatis albescentibus.*

Fœm. *Corpore supra cristæque breviori fuscescenti-brunneis; abdomine pallidiorè; gulâ, plumarumque corporis apicibus et rhabdibus albescentibus; rectricibus lateralibus atris, mediis brunneis albescenti undulatis.*

A third species was likewise added from the collection to the group of *Enicurus* of M. Temminck, which has hitherto been considered as limited in range to the Indian Archipelago. The following are its characters:—

ENICURUS MACULATUS. *En. capite, collo, dorso superiori, pectore, ptilis, remigibus secundariis, caudæque intensè atris; frontis notâ latâ, maculis confertis nuchæ et sparsis dorsi, pteromatibus, dorso imo, abdomine, rectricibus lateralibus, mediarumque apicibus albis; remigibus primariis fuscis; rostro nigro; pedibus albescentibus.*

Staturâ *En. specioso* æqualis.

Mr. Owen resumed the reading of his paper On the Anatomy of the *Orang Utan* (*Simia Satyrus*, L.). This part of the communication is devoted to the osteology of the animal, which is minutely described and contrasted with that of the *Chimpanzee*. With the skeleton of the *Pongo* (*Pongo Wurmbii*, Desm.) the resemblance is in many particulars almost complete; and the extensive examination which Mr. Owen has made of entire skeletons of both the *Pongo* and the *Orang*, and of numerous *crania* of the latter at various ages, has led him to adopt the opinion of those who maintain that these constitute really but one species, of which the *Orang* is the young, and the *Pongo* the adult. The remarkable differences in the crest of the *cranium*, and in the facial angle, appear to be the result of the action of the powerful muscles of manducation, and of the development of the extremely large *laniarii*.

A marked peculiarity of the *cranium* of the *Orang* exists in the junction of the sphenoid with the parietal bones; a junction which is not found in the *Chimpanzee*, and has been asserted to exist in man alone. Other peculiarities are met with, in the absence of a *crista galli* on the ethmoid bone, and in the non-existence of either mastoid or styloid processes: there is a process from the particular surface of the temporal bone, which is necessary to prevent dislocation backwards of the lower jaw, the auditory process not being adapted to prevent such an accident. The intermaxillary bones are distinct. There are large *foramina* behind the deciduous teeth, which lead to cavities containing the permanent ones; the crowns of the latter are as large as those of the *Pongo*. The *os*

*nasi* is single and triangular ; it has a strong spine at the back part. There are three infra-orbital *foramina* ; and large *foramina* in the malar bone. The anterior condyloid *foramina* are two on each side.

The true *vertebræ* are 23 : 7 cervical, with long simple spines ; 12 dorsal ; and 4 lumbar. There are 8 false *vertebræ*, viz. 5 sacral, and 3 coccygeal. The ribs are 12 ; 7 true, and 5 false. The *sternum* is composed, below the first portion, of a double series of bones alternating with each other : the same structure obtains in the *Pongo*.

The spine of the *scapula* is strongly incurvated upwards. The bones of the arm and hand are much elongated. The thumb is short ; the proximal *phalanges* of the fingers bent.

The *ilia* are narrow, flattened, and elongated. The *femur* is short and straight ; it has no *ligamentum teres*, a deficiency which occurs also in the *Elephant*, the *Sloths*, in *Seals*, the *Walrus*, *Ornithorhynchus*, &c., and by which a greater extent of motion is allowed to the thigh. The *tibia* and *fibula* are shorter than the *femur* : these, like the bones of the fore-arm, have a greater interosseous space than is found in man. The *patella* is very small. The *os calcis* projects far behind. The bones of the *metatarsus* and the *phalanges* are elongated, the first series of the latter being bent. The hinder thumb is very short : in the individual examined it had a metatarsal bone, and two *phalanges*. A nail existed on the thumb of each hinder hand.



December 14, 1830.

G. B. Greenough, Esq. in the Chair.

A letter was read from Dr. Andrew Smith, addressed to N. A. Vigors, Esq. The following are extracts :

“ Cape Town, 8th Sept. 1830.

“ I am sure you will be pleased to learn that I have discovered another species of *Macroscelides*, as well as a new one of *Erinaceus*; and three species of the genus *Otis*, together with one of *Brachypteryx*. The descriptions of these I hope to be able to forward to you in the course of three weeks or a month. The first is designated in our Museum, *Macroscelides rupestris*; the second, *Erinaceus Capensis*; the third, fourth, and fifth, *Otis Vigorsii*, *Ot. ferox*, and *Ot. Afraoides*; the sixth, *Brachypteryx Horsfieldii*. The first was found by myself on the mountains near to the mouth of the Orange river, and the circumstance of its always residing among rocks, together with the difference in its colouring, readily pointed it out as being of a distinct species. As to the colour, the most marked distinction consists in the Cape species having a large tawny rufous or chestnut blotch on the nape and back of the neck. The second, *Erinaceus Capensis*, exhibits considerable affinity to the European species, yet betrays such marked peculiarities as to warrant its being considered as really different from it. The third, *Otis Vigorsii*, inhabits the most dry and barren situations in the south of Africa, and is known among the colonists by the name of *Karor Koran*. The prevailing colour above is a light tawny or reddish yellow, and below tawny gray, passing into dirty white on the belly. The back is variegated by numerous violet blotches or reflections, as well as by whitish spots, and the under parts by transverse narrow zigzag black lines. The fourth is above principally tawny yellow, and below dull blueish gray: it is found in the country toward Latakoo. The fifth is met with on the flats near the Orange river, and is called the *Bushman Koran*. With the exception of a great portion of the quill feathers being white, it resembles much the common *Koran* of the colony, the *Otis Afra*. The sixth is met with in high rocky situations, and agrees in most respects with the generic character of *Brachypteryx*, as described by Dr. Horsfield.”

With the above letter Dr. Smith transmitted to the Society a present of sixteen specimens of fishes, obtained in the neighbourhood of the Cape of Good Hope, “ the details relative to which,” he states, “ will be forwarded as soon as possible.” The specimens were exhibited, and Mr. Bennett laid on the table a list in which they were enumerated as the *Sebastes Capensis*, *Agriopus torvus*,

*Sciæna hololepidota*, *Otolithus æquidens*, *Chrysophris globiceps*, *Chr. gibbiceps*, and *Pagrus laniarius*, of MM. Cuvier and Valenciennes; an undetermined species of *Dentex*; a fish allied to *Oblada*, Cuv., and apparently the type of a new genus; a new species of *Scomber*, Cuv.; a *Lichia*?; two species of *Clinus*, Cuv., one of which is probably the *Clinus Capensis*; an undescribed species of *Bagrus*, Cuv., of the section distinguished in the "Règne Animal" by having six *cirri* and a rounded and smooth head; a species of *Scyllium*, Cuv., probably new to science; and a second species of the genus *Rhina*, Schn., which deviates from the type by a slight production of the front of the head, and thus makes an approach to *Rhinobates*, Schn.

Mr. Vigors exhibited several species of *Humming-birds* from the collection of Mr. John Gould, one of which, previously undescribed, had been dedicated to Mr. George Loddiges, F.L.S., &c. It approaches most nearly to the *Trochilus Lalandei*, Vieill., but may be distinguished from that bird (in which the crest is brilliantly green and the throat and breast rich blue,) by the following characters:

TROCHILUS LODDIGESII, Gould. *Troch. cristâ elongatâ, purpureo-lilacind; guld crissoque saturatè cinereis; pectore abdomineque nigris.*

This species is from Rio Grande.

Mr. Loddiges stated that both species belonged to a genus which he had distinguished among the *Trochilidæ* by the name of *Cephallepis*; and promised to bring before the Committee, at an early meeting, the results of his researches on the *Trochilidæ* generally.

At the request of the Chairman, Mr. Martin reported the diseased appearances noticed on the examination of the *Beaver* which recently died in the Society's Menagerie. They were stated to be such as result from great and universal inflammation. On examining the stomach, its lining membrane was found covered with a blush of inflammation, prevailing more especially about its cardiac portion, where a number of dark-coloured spots and patches indicated the existence of gangrene. Both the stomach and the *colon* contained undissolved fibres of bark in considerable quantity, the function of digestion having been for some time past necessarily deranged. Along the course of the small intestines, traces of high arterial action were still presented; in the large intestines the traces of inflammation were more obscure. The *pericardium* was highly inflamed, its inner surface presenting a granulated appearance. The heart also, as well as the lungs, gave evidence of having partaken in the general disease. Much disease existed about the lower jaw, which may probably have been the primary cause of all the mischief, as it must have existed for several months, and necessarily have produced a continued state of irritation in the system. The alveolar processes of the lower jaw, embracing the incisor teeth, were destroyed by *caries*, and the teeth themselves had fallen out.

In the adjacent soft parts there were extensive abscesses, and a wide spread of discoloration, evidencing the progress of the disorganization.

Mr. Cox exhibited a *Nightingale* in fine plumage and full song, which had been for four years in confinement. He stated that the error generally committed by persons attempting to keep these birds and the other species of *Sylviadæ*, was the over care bestowed upon them. A treatment not more tender than that afforded to granivorous species, agreed well with the *Nightingale*, for which it was by no means necessary to provide insects as food; meat scraped fine and mixed with egg forming a sufficient substitute, and furnishing a nourishment at once grateful to the bird and fully adequate to supply its wants.

Mr. Bennett called the attention of the Committee to two birds which had been for some time living in the Society's Garden. In many respects, especially as regards the nakedness of their cheeks, and the nakedness, length, and reticulation of their *tarsi*, they agree with the *Caracaras* (*Polyborus*, Vieill.); but differ from the type of that genus in the greater compression of their beaks; their transverse oval nostrils; their comparatively slender make; and their more vulturine appearance, which is much increased by the soft downy nature of the plumage of their head and neck. From the genus *Morphnus* of M. Cuvier, which they resemble in many particulars, they are at once distinguished by the length of their wings, which reach, when closed, to the extremity of the tail. He stated his opinion that they would be found, on a close examination, (which could only be made after death,) to constitute a new genus. Until the opportunity of determining this question should occur, he associated them provisionally with the *Caracaras*; and having met with no trace of a description of them in any ornithological writer, he proposed for them the following specific character:

POLYBORUS? HYPOLEUCUS. *Pol. ? capite, collo, pectore, abdomineque albis; scapularibus fusco-griseis; dorso tegminibusque fuscis; remigibus nigricantibus; caudâ basi nigrâ, apice fasciâ latâ albidâ.*

Jun. *Fuscus, capite, collo, corporeque subtus dilutioribus, remigibus fusco-nigricantibus.*

The following observations, by Mr. Yarrell, on the subject of his attempts to preserve *Whitebait* alive, were read.

"Several dozens of strong lively fish, four inches in length, were transferred with great care from the nets into large vessels, (some of the vessels, to vary the experiments, being of earthenware, and others of wood and metal,) filled with water taken from the Thames at the time of catching the fish. At the expiration of twenty minutes nearly the whole of them were dead, none survived longer than half an hour; and all fell to the bottom of the water. On examination, the air-bladders were found to be empty and collapsed.

There was no cause of death apparent. About four dozen specimens were then placed in a coffin-shaped box pierced with holes, which was towed slowly up the river after the fishing-boat. This attempt also failed: all the fish were dead when the vessel had reached Greenwich.

"I was told by two Whitebait fishermen that they had several times placed these fishes in the wells of their boats, but they invariably died when brought high up the river. The fishermen believe a portion of sea water to be absolutely necessary to the existence of this species, and all the circumstances attending this particular fishery appear to prove their opinion to be correct."

A report by Mr. Yarrell on the morbid appearances observed in the examination of the Society's *Reindeer*, was read. It is as follows:

"On opening the body and removing the *viscera*, the lungs appeared highly inflamed, of a dark purple colour; and on cutting into their substance, the cells contained matter. The small intestines also bore marks of inflammation, but in a much less degree: the mesenteric glands were diseased, but not to the extent that might have been expected in an animal that had been many years in an artificial state. The external surface of the neck and head exhibited a high degree of vascularity, and the animal appeared to have been under the influence of that periodical determination of blood to the head, which is known to occur in all deer at the annual production of new horns. As far as the brain could be examined by the occipital *foramen*, both the substance and its investing membranes were also inflamed; but I have no doubt the primary cause of death was the inflammation of the lungs."

Several new species of birds belonging to the collection brought home from the Straits of Magellan by Captain King were exhibited. In the absence of that gentleman, the following species were pointed out by Mr. Vigors, which are thus characterized in Captain King's MSS.

*TURDUS MAGELLANICUS.* *Turd. corpore supra grisescenti-olivaceo, subtus pallidè rufescenti; capite supra, remigibus, caudàque fusco-atris; guld albà, fusco-atro lineatà.*

Habitat in Fretu Magellanico.

*PSITTACARA LEPTORHYNCHA.* *Psitt. viridis; fronte, strigd per oculos, caudàque rufis; capite nigro, abdomine imo rufo, variegatis; mandibulà superiori elongatà, gracillimà.*

Staturâ *Psitt. Lichtensteinii* æqualis.

Habitat in insulâ Chiloe.

*PICUS MELANOCEPHALUS.* *Pic. capite corporeque supra nigris, hoc albo maculato; pectore abdomineque albis, illo albo lineato, hoc albo fasciato.*

Longitudo 6 vel 7 uncias circiter.

Habitat in Fretu Magellanico et insulâ Chiloe.



HYLACTES. Novum genus, *Megapodio* affine.

Characteres Generici.

*Rostrum* subelongatum, subtenue, apice subemarginato: *naribus* basalibus, longitudinalibus, membranâ subtumescenti pilisque per mediam longitudinem tectâ.

*Alæ* brevissimæ, rotundatæ; *remige* 5tâ longissimâ.

*Cauda* subelongata, gradata.

*Pedes* fortes; *tarsis* subelongatis, in fronte scutellatis; *digitis unguibusque* elongatis, his fortioribus subcompressis; *halluce* fortissimo, incumbente.

HYLACTES TARNII. *Hyl. saturatè fusco-brunneus*; *fronte, dorso, abdomineque rufis, hoc fusco fasciato.*

Habitat in insulâ Chiloe et Portu Otway Sinu Peñas.

COLUMBA FITZROYII. *Col. vinacea*; *alis, dorso imo, caudâque plumbeis*; *hujus fasciâ, remigibusque atris*; *nuchæ plumis viridissplendentibus*; *fasciâ occipitali albâ.*

Habitat in nemoribus insulæ Chiloe.

CYGNUS ANATOÏDES. *Cygn. albus, remigibus primariis ad apicem nigris*; *rostro pedibusque rubris, illo lato, subdepresso, tuberculo nullo.*

Habitat in sinibus interioribus apud extremitatem meridionalem Americæ.

ANSER INORNATUS. Mas. *Ans. albus: dorso inferiori, caudâ, fasciis nuchæ dorsique superioris femorumque tectricum, pteromatibus, remigibusque atris*; *rostro nigro, pedibus flavescentibus.*

Fœm. *Capite colloque canis*; *dorso superiori corporeque inferiori albis, nigro confertim fasciatis*; *dorso imo, remigibus, rectricibusque nigris*; *ptilis speculoque albis*; *tarsis subelongatis.*

Habitat in Fretu Magellanico.

MICROPTERUS PATACHONICUS. *Micropt. supra plumbeo-grisescens*; *gulâ scapularibusque rufescentibus*; *abdomine speculoque alarum albis*; *rostro virescenti-nigro, ungue nigro.*

Habitat in parte occidentali Fretûs Magellanici.

Staturâ minor *Micropt. brachyptero.*

ANAS CHILOENSIS. *An. fronte, genis, abdomine, uropygio, pteromatibusque albis*; *capite posteriori, collo, dorso inferiori, ptilis, remigibus primariis, caudâque fuscis*; *dorso superiori pectoreque fusco et albo fasciatis*; *remigibus secundariis et tertiis scapularibusque nitidè atris, his albo lineatis*; *abdominis lateribus crissoque rufescentibus*; *strigâ post oculos latâ splendidè purpurascenti-viridî.*

Longitudo circa sexdecim uncias.

Habitat in insulâ Chiloe.

ANAS FRETENSIS. *An. gulâ, genis, collo, pectore, dorsoque anteriori pallidè badiis*; *collo graciliter undulato*; *pectore dorsoque anteriori atro maculato*; *dorso abdomineque imis, crisso, caudâque albis nigro fasciatis*; *dorsi fasciis latis, abdominis gracillimis, caudæ sublterioribus, crissi sparsim undulatis*; *capite supra, remigibus, scapularibusque virescenti-atris*; *his albo in medio linea-*

*tis ; tectricibus plumbeo-canis, fasciá apicali albá : speculo supra viridi, deinde purpureo, fasciá atrá apice albo terminatá.*

Statura *Anatis creccoidis*, Nob.

Habitat in Fretu Magellanico.

It was announced that the whole collection of Capt. King's birds, with the descriptions of the remaining new species, would be brought forward at an early meeting.

December 28, 1830.

W. Yarrell, Esq. in the Chair.

The form of a circular letter, to be addressed to the heads of Menageries and Museums in foreign countries, was submitted to the Committee, and approved of.

A letter was read, addressed to the Secretary of the Society by J. V. Thompson, Esq., dated "Cork, Dec. 16, 1830." In it Mr. Thompson urges, in support of the universality of a metamorphosis among the *Crustacea*, that he has ascertained the newly hatched animal to be a *Zoea* in eight genera of the *Brachyura*, viz. *Cancer*, *Carcinus*, *Portunus*, *Eriphia*, *Gecarcinus*, *Thelphusa?*, *Pinnotheres*, and *Inachus*; and in seven Macrourous genera, viz. *Pagurus*, *Porcellana*, *Galathea*, *Crangon*, *Palæmon*, *Homarus*, and *Astacus*. "These embrace all our most familiar native genera of the *Decapoda*." The *Lobster*, or *Astacus marinus*, Mr. Thompson states, "does actually undergo a metamorphosis, but less in degree than in any other of the above-enumerated genera, and consisting in a change from a cheliferous *Schizopode* to a *Decapode*; in its first stage being what I would call a modified *Zoea* with a frontal spine, spatulate tail, and wanting the subabdominal fins; in short, such an animal as would never be considered what it really is, was it not obtained by hatching the spawn of the *Lobster*." In the other indigenous species of *Astacus*, *Ast. fluviatilis*, the *River Crawfish*, it would appear from the excellent treatise of M. Rathke on the development of its eggs, that the young are hatched in a form according with that of the fully grown animal. Mr. Thompson, however, suspects that some source of error may exist in these observations. "If it should be found otherwise, it can only be regarded as one solitary exception to the generality of metamorphoses, and will render it necessary to consider these two animals for the future as the types of two distinct genera." In illustration of the change of form observed by him in the limbs of the *Lobster*, Mr. Thompson inclosed a sketch of the "cheliferous member of its larva," which is represented as divided to its base, and consisting of, 1. a cheliferous portion; 2. a portion of equal length with the preceding and terminated by natatory cilia (described as the outer division of the limb, or future *flagrum*); and 3. a short rudiment of one of the future *branchiæ*.

A specimen of the *Labrus maculatus*, Bloch, presented to the Society by Sir A. Carlisle, was exhibited. When quite recent, its rich

[No. II.] ZOOL. SOC. PROCEEDINGS OF COMM. OF SCIENCE, &c.

716 1831

deep blue colouring was stated to have been extremely beautiful; but this had already disappeared considerably, although the specimen had been but twelve days in spirit. Still enough remained to show how defective in this particular is the figure in Bloch's *Ichthyology* [No. 294.], which appears to have been taken from a dried specimen, and exhibits scarcely a trace of the rich colouring of the recent fish.

The Chairman brought to the recollection of the Committee the recent addition to the British Fauna of a species of *Warbler* (the *Sylvia Tithys*, Scop.) nearly allied to the *Redstart*, *Sylvia phœnicurus*, L., but distinguished from that bird by its dark slate-coloured breast, and by the dusky-black colour of its two middle tail-feathers. The first occurrence of this bird in England was recorded in the 5th volume of the "*Zoological Journal*," page 102, by Mr. John Gould, who has since ascertained that two other individuals have been met with; one in the neighbourhood of Bristol, the other at Brighton. Both these specimens were obtained during the last summer. The Chairman added, as a peculiarity of this bird, that its egg, as described and figured by continental writers, is white; while the eggs of all the nearly allied species are pale blue.

A communication by J. C. Cox, Esq., F.L.S., &c., was read, on the subject of preserving a proper temperature for exotic animals. Mr. Cox commences by remarking on the capability of animals for enduring great extremes of temperature, and instances the experiments of Sir Joseph Banks and Sir C. Blagdon, in which a heat of at least  $230^{\circ}$  was borne without great inconvenience; while, on the other hand, Captain Parry and his men were exposed to a temperature of  $-40^{\circ}$  and even lower: thus showing that the human frame is susceptible of a range of temperature of probably  $200^{\circ}$ , without injury to life. Such extremes can, however, be submitted to but for a short period. To keep animals, natives of tropical climates, in good health, they should be preserved from too great extremes; and as it is important to imitate as much as possible the character of the climate from which they are brought, the hygrometric state of the atmosphere should be attended to almost equally with the temperature. The hot winds of the Desert (Mr. Cox remarks), together with the absorbent nature of the sandy soil, render the general state of the atmosphere in the central parts of Africa that of extreme dryness; but this is an exception to intertropical regions in general. In Guiana and La Plata, for instance, and in Ceylon, the thick woods exhale a considerable degree of moisture, far exceeding that of our own country; the mean dew point of the atmosphere of London being  $44^{\circ}5$ , while that of intertropical regions is from  $70^{\circ}$  to  $75^{\circ}$ . Animals from such climates, it is suggested, require a moist atmosphere, and this may readily be produced by watering the flues used for heating the houses in which they are kept. Analogous to this is the advantage obtained in the cultivation of stove plants by keeping the houses well-watered. The

neglect of supplying to the air a sufficient quantity of simple and innoxious moisture is attended with two evils. Not only are the animals kept in an atmosphere too dry for their healthy preservation; but the dry air, greedily absorbing moisture, becomes impregnated with the excreted fluids of the animals in confinement; and thus the secreting surfaces of the lungs are at once exposed to a constant stimulus from increased and rapid exhalation, and to the additional stimulus inflicted by the continual breathing of air loaded with saline and irritating particles. In well-constructed houses it is of the first importance that the fluids of the animals should be conducted from the buildings. Ventilation should also be perfect not only through the body of the building, but through each individual cage or den. This is doubly necessary where the air is vitiated, not only by the animals themselves, but by numerous visitors. For the general regulation of the admission of cold air a convenient plan is to have a leaden or iron weight balanced in a vessel of mercury, attached to a sliding sash, which will thus rise or fall in proportion to the height of the mercury. Mr. Cox regards it as of no importance, as to the effect produced on the atmosphere, by what means an increased temperature is preserved, whether by flues or steam or hot water, if the degree obtained be the same: the only reason for preferring one to another is the greater facility it may afford of keeping up an equable temperature.

Mr. Owen read a portion of his notes made at the dissection of the *Beaver* which died lately at the Society's Gardens. He limited himself on this occasion to the description of the organs connected with digestion. The salivary organs and those of deglutition were treated of in detail: the former parts, which are remarkably developed in all the *Glires*, were especially examined on account of the peculiar nature of the animal's food; while the latter claimed particular attention from the recent interesting discovery by Mr. Morgan of a peculiar construction of the *fauces* in the *Capybura*, and some others of the Rodent order.

Of the salivary glands the *parotid* are the largest. They are united, like the lateral lobes of the thyroid gland in man, by an anterior transverse portion; and form together a conglomerate mass which extends across the front of the neck to within a short distance of the upper part of the *sternum*, covering the *larynx* and its muscles, and passing backwards on each side as far as the mastoid process. There are, however, two ducts, one on each side, which terminate in front of the molar teeth. The *submaxillary* glands are quite distinct from the parotid, and are each about the size of a walnut: their ducts pass under the jaw and terminate at the side of the *frænum linguæ*. The *sublingual* glands are very small.

Between the membrane of the palate and the bone, in the narrow space between the rows of molar teeth, a layer of mucous glands is situated: and a thick stratum of the same kind of glands exists also immediately exterior to the membrane of the *fauces*.

The soft palate extends backwards from the posterior edge of the



bony palate as far as the circular aperture of the posterior *nares*. The sides of the soft palate are continuous with the tongue, and, becoming gradually contracted, form *fauces* of a funnel shape, the posterior aperture of which just admits a black-lead pencil of the usual size for drawing. The membrane covering the posterior part of the *dorsum* of the tongue is continued smoothly and uninterruptedly to the *epiglottis*, without the production of any fold of membrane in front of this part, nor was there any corresponding duplicature above, or at the sides of, the *fauces*: so that here no structure existed that would allow any part of the *fauces* to be protruded in a conical form into the *pharynx*, beyond the opening of the *glottis*, as in the *Capybara* and *Guinea-pig*.

The *fauces* of the *Rut* are formed after the same type as those of the *Beaver*: a type which is peculiar, inasmuch as there is properly speaking no *velum pendulum palati*, the membrane forming the roof of the *fauces* being continued straight, without duplicature or reflection, to the posterior aperture of the *nares*: this aperture is of a circular form, on a horizontal plane, and situated immediately above the *glottis*.

The muscular apparatus of the *fauces* consists of a pair of muscles which arise, one from each side of the tongue, and ascend, the fibres diverging a little; their action is to contract the commencement of the *fauces*, being analogous to the *palato-glossi*: besides these there are, at the narrower part of the *fauces*, circular fibres, apparently continued from the superior *constrictor* of the *pharynx*, and analogous to the *palato-pharyngei*.

There are no palatal arches, neither were any tonsils detected.

The peculiar cardiac gland much resembles tonsils in structure, being composed of numerous small glands or follicles, forming an aggregate of about 14 lines in length and half an inch in thickness, which pour a viscid secretion, by numerous apertures, into the interior of the stomach.

The *pancreas* is of considerable extent, measuring in length nearly two feet, and following the course of the *duodenum* down to the iliac region and up again as far as the umbilical, being attached to the intestine by a process of mesentery: it is thin and narrow, and has one small branch or process lying parallel with its body where it passes behind the liver, and a few others at the curvature of the *duodenum*. Its duct, somewhat larger than a crow-quill, enters the small intestine at the extremity of the gland, one foot and nine inches from the *pylorus*, and one foot and six inches from the termination of the *ductus choledochus*.

At the commencement of the *colon* there are two pouches of an oval form, from the union of which the rest of the intestine proceeds with very distinct *sacculi*. An analogous structure exists in the *cæcum* of the *Guinea-pig*, where however the two *sacculi* appear rather to belong to the *cæcum*, being partially separated from the *colon* by a circular production of the lining membrane in a valvular form.

January 11, 1831.

Sir Thomas Phillipps, Bart., in the Chair.

An Address by Mr. J. V. Thompson "To the Members of the Zoological Society, and the Zoologists of the United Kingdom in general," was read, soliciting such support, by subscription, as may enable him to continue, without further loss, his "Zoological Researches and Illustrations." This Address is printed, together with a list of the subjects of some of the succeeding Memoirs, on the cover of the Fourth Number of the Researches, which was at the same time laid on the table.

An Extract was read from a Letter addressed by Daniel Sharpe, Esq., to Mr. Bennett, in which the writer describes the luminous appearance of the ocean as observed by him on several nights during his passage to Lisbon. A considerable sparkling was visible in the water close under the vessel's side, particularly in the spray just thrown off from the bow, and also occasionally when a wave broke: it gradually vanished as the water became quieter. The appearance was that of a number of small sparks not brighter than the smallest stars. When a bucket full of the water was taken up, nothing was visible until it was stirred or shaken, when it was instantly filled with spangles, which disappeared as the water settled: the most elegant effect was when the waves or spray broke over the deck, which then became covered with stars for a few minutes. Mr. Sharpe states that he collected a great quantity in a glass, and examined them carefully with a microscope the next morning, in the expectation of observing minute *Crustacea*, &c., to which the appearance he describes has frequently been attributed. He could, however, detect nothing but an abundance of small fibres and shreds of, apparently, animal matter, and did not find even one entire animal. Hence he is disposed to infer that, in some instances at least, the phosphorescence of the sea arises from the quantity of particles of dead fishes, &c., always floating on its surface; although he confesses himself unable to explain the reason why these shine only when the water is disturbed.

It was remarked that Commerson and others have attributed the phenomenon described to the putrefaction of animal matters: and M. Bory de St. Vincent has declared that marine *animalcula* take no share in it. Sir Joseph Banks, Dr. Macartney, and others, on the contrary, have referred it to the presence of marine animals, principally *Crustacea*; and the existence of such, as the cause of this appearance, has been recently insisted on by Mr. J. V. Thompson.

Dr. MacCulloch has also attributed it to the latter cause; and states that every marine animal that he has examined is luminous. Assuming the observations of M. Bory de St. Vincent and those of Dr. MacCulloch to be equally correct in the instances which fell under their notice, it is worthy of inquiry whether any, and what, differences exist in the luminosity of the ocean, when it is occasioned by marine animals, or when it is owing to other causes.

Mr. Yarrell exhibited a female of the common *game Fowl* which had assumed the plumage of a male. The dull brown colour of the breast was varied by an intermixture of the jet black plumage peculiar to the male; the feathers of the neck and those on the sides of the tail were long, slender, hackled and bright in colour; all the tail feathers were more or less curved; and the spurs were half an inch in length. This bird very closely resembled the representation attached to Dr. Butter's paper on this subject in the third volume of the "Memoirs of the Wernerian Society." A portion of the body of the bird was also shown, the disease of the sexual organ pointed out, and its appearance contrasted with preparations of the same parts from healthy birds. The cause of this change in the external character is fully detailed in John Hunter's "Animal Economy," in the Wernerian Memoirs before mentioned, and in a paper by Mr. Yarrell, published in the "Philosophical Transactions" for 1827.

Mr. Vigors resumed the exhibition of the birds from the Himalayan Mountains, which he had commenced at the Meeting of the 23rd Nov.; and named and characterized the following apparently new species:

ALCEDO GUTTATUS. *Alc. cristatus, supra ater, maculis rotundis albis guttatim notatus; subtus albus; colli lateribus pectoreque atro maculatis.*

Statura *Alc. maximi.*

MUSCIPETA PRINCEPS. *Musc. capite, collo, dorso summo, alis, reatricibusque duabus mediis nigris; corpore inferiori, dorso imo, fasciâ latâ alarum, maculis paucis remigum secundariarum, reatricibusque lateralibus aurantio-coccineis; rostro fortiori.*

Longitudo circiter 9 uncias.

LANIUS ERYTHROPTERUS. *Mas. Lan. nuchâ dorsoque griseis; capite supra, alis, caudâque atris; corpore subtus, strigâ superciliari, remigumque apicibus albis; alis maculâ latâ rubrâ notatis.*

Fœm. *Capite griseo; dorso, alis, reatricibusque virescenti-olivaceo notatis; harum apicibus flavis.*

Statura *Lan. Collurionis.*

PARUS MONTICOLUS. *Par. capite, collo, pectore, abdomine medio, alis, reatricibusque atris; genarum maculâ latâ nuchalique parvâ, tegminum remigum secundariarum reatricumque apicibus, et remigum primariarum reatricumque lateralium pogoniis externis albis; abdominis lateribus flavis.*

Staturâ paulo minor *Par. majori.*



**PARUS XANTHOGENYS.** *Par. capite cristato, guld, pectore, abdomine medio, strigd utrinque colli, scapularium maculis, alis, caudæque atris, his albo notatis; dorso scapularibusque virescentigriseis; genis, strigd superciliari, maculâ nuchali, abdominisque lateribus flavis.*

Statura præcedentis.

**PARUS MELANOLOPHUS.** *Par. griseus; capite cristato pectoreque atris; genarum, nuchæ, tegminumque alarum maculis albis; remigibus reatricibusque fuscis; maculâ sub alis rufâ.*

Staturâ *Par. atro paulo minor.*

**PARUS ERYTHROCEPHALUS.** *Par. supra pallidè brunnescenti-canus, subtus rufescenti-albus; guld, strigd superciliari, reatricumque lateralium pogoniis externis albis; capite supra rufo; strigd latâ per oculos ad nucham extendente, thoraceque atris.*

Statura *Par. pendulini, Linn.*

**FRINGILLA RODOPEPLA.** *Fring. supra brunnea; capite, nuchâ, dorsoque lineis fuscis rosaceoque nitore notatis; strigd utrinque superciliari, guld, thorace, maculis alarum, uropygio, corporeque subtus rosaceis.*

Longitudo circiter 7 uncias.

**FRINGILLA RODOCHROA.** *Fring. supra brunnea; capite, nuchâ, dorsoque lineis fuscis, illo rosaceo tinctis; fronte, strigd utrinque superciliari, guld, pectore, corpore subtus, uropygioque rosaceis; alis immaculatis.*

Longitudo circiter  $5\frac{1}{2}$  uncias.

**CARDUELIS CANICEPS.** *Card. brunnescenti-canus; alis caudæque nigris; circulo angusto frontem rictum gulamque circumcingente coccineo; fasciâ alarum aureâ; thorace, maculis paucis alarum, uropygio, abdomine imo, crisso, reatricum externarum pogoniis internis, mediarumque apicibus albis.*

Statura *Card. communis.*

**PICUS HYPERYTHRUS.** *Mas. Pic. corpore supra nigro, albo-maculato, subtus rufescenti-badio; capite crissoque coccineis; strigd utrinque per oculos extendente albâ; mandibulâ superiori nigrâ, inferiori albâ.*

Fœm. *Capite nigro albo-lineato.*

Statura *Pic. medii, Linn.*

**COLUMBA LEUCONOTA.** *Col. capite canescenti-atro; crisso caudæque nigris; nuchâ, corpore subtus, dorso medio, caudæque fasciâ latâ mediâ, albis; tegminibus alarum vinaceo-canis; dorso superiori scapularibusque brunnescenti-canis; remigibus, fasciisque alarum brunnescenti-fuscis.*

Statura *Col. Palumbi, Linn.*

**OTIS HIMALAYANUS.** *Ot. niger; alis albis; dorso medio scapularibusque pallido-rufo brunneoque variegatis; dorso imo pallido-rufo undulatum sparso; cristæ collique plumis anterioribus et posterioribus confertis, elongatis.*

Mr. Vigors exhibited a living specimen of a new species of *Ground Parakeet*, which had lately been added to the Society's Menagerie. Its native place was not ascertained: but from the more graduated

form of the tail and the plumbeous colour of the bill, it was conjectured to have belonged to some of the Australian islands; the *Parakeets* of which are distinguished by these characters from the allied groups of the same genus *Platycercus* of the Australian continent. The lively and active gait of this bird, as distinguished from the slow and climbing motions of the *Parrots* in general, was particularly noticed. Its colour was a uniform green without any markings. It was named and characterized as

PLATYCERCUS UNICOLOR. *Plat. corpore viridi concolore; rostro basi plumbeo, apice nigro.*

Mr. Vigors also exhibited a specimen of the *lineated Pheasant* of Dr. Latham [*Gen. Hist. vol. viii. p. 201. sp. 14.*] which had lately been received from the Straits of Malacca. The bird accorded accurately with Dr. Latham's description, as communicated to him by Dr. Buchanan from a living specimen in an aviary in India, and afforded evident proof of being a distinct and strongly marked species. It may be characterized as follows:

PHASIANUS LINEATUS, Lath. MSS. *Phas. supra cano-griseus; fasciis gracilibus nigris undulatus; capite, cristá elongatá, gulá, collo anteriori, corporeque infra nigris; abdominis laterum plumis in medio lineis gracilibus albis notatis; caudá albo nigroque undulatim sparsá.*

A large collection of *Insects*, of various orders, presented to the Society by Dr. Leach, was exhibited. It was chiefly formed in the neighbourhood of Rome and Florence; and notes were appended to the greater number of the species, indicating the precise locality of each, the time of its appearance, its food, comparative rarity, &c.

The attention of the Committee having been directed to that part of the Minutes of the Council which referred to the preparation of a Report on the animals which it was desirable for the Society to import:

It was resolved,

That Sir Thomas Phillipps, Mr. Vigors, Mr. Owen, Mr. Cox, and Mr. Bennett, be requested to prepare, for the consideration of the Committee at its next Meeting, a Report on the animals for the importation of which the Council should be recommended to take measures.

The following Resolution was also submitted to the Committee, and adopted:

Resolved,

That Mr. Morgan, Mr. Yarrell, and Mr. Vigors, be requested to prepare a series of questions on points relating to the generation, gestation, parturition, and suckling of the *Kangaroo*, in order that the same may be submitted to the Council, with a request that directions may be given to the Superintendents of the Society's establishments to obtain information thereon.

January 25, 1831.

Sir Thomas Phillipps, Bart. in the Chair.

A specimen of the *Cercopsis Novæ Hollandiæ*, Lath., which had recently died at the Society's Menagerie in the Regent's Park, was exhibited.—Mr. Yarrell stated that having examined the body of the bird, he had remarked that its trunk was much shorter than that of the true *Geese*, and more triangular in its shape: the pectoral muscles were large and dark coloured. The *trachea* was of large, but nearly uniform, calibre, without convolution, and attached in its descent to the right side of the neck as in the *Heron* and *Bittern*; in the form of its bone of divarication and *branchiæ* it most resembled the same part in the *Geese*. The muscles of voice were two pairs; one pair attached to the shafts of the *os furcatorium*, the other to the inner lateral surface of the *sternum*. The lobes of the liver were of large size, morbidly dark in colour; their substance broke down under the finger on the slightest pressure. The stomach, a true gizzard, was of small size as compared with the bulk of the bird. The first duplicature of intestine was six inches in length, at the returning portion of which the biliary and pancreatic ducts entered; from thence to the origin of the *cæca* four feet six inches; the *cæca* nine inches each; the *colon* and *rectum* together five inches: the whole length of the intestines was seven feet five inches. The stomach and intestinal *viscera* were loaded with fat; the other parts exhibited nothing remarkable.

Internally this bird, which was a male, resembled the true *Geese*; but externally, in the character of the bones, particularly in the rounded form of the edge, and great depth, of the keel of the *sternum*, and the lateral situation of the *trachea* in reference to the cervical *vertebræ*, it was decidedly similar to the *Ardeidæ*.

Mr. Yarrell availed himself of the occasion to remark that the *Natatores* of Mr. Vigors's systematic arrangement in Ornithology were placed between the *Grallatores* or *Waders* on the one side, and the *Raptores* or *Birds of Prey* on the other: and that the order contained five groups, two of which, the *Alcadæ* and *Colymbidæ*, were called normal, containing those birds which were considered to be the types of the true *Swimmers*, and three groups, *Anatidæ*, *Pelecanidæ*, and *Laridæ*, called aberrant, as deviating from the type, and exhibiting some characters which connected them either with the *Grallatores* or the *Raptores*. Some of the *Laridæ* and *Pelecanidæ* in the length of their wings, their consequent power of flight, and the mode of taking their food in the air, exhibited their obvious affinity to the *Birds of Prey* on the one hand; while some of the *Anatidæ*, by their lengthened legs and neck, and their habit of passing much

[No. III.] ZOOLOGICAL SOCIETY. PROCEEDINGS OF THE COMM. OF SCIENCE.

of their time on land or frequenting shallow pools of water, showed an equal affinity to some of the *Waders*. This was the case with the *Cereopsis*, and occurred also in the *Semipalmated Goose* and in another *Goose* now living in the Society's Gardens, the *Anser jubatus*, Spix.

It was stated that in proportion as these birds departed from the characters of the true *Geese* in their external appearance and habits, and in both approached to the *Ardeidæ*, they would also be found on examination to resemble them in their internal organization. In proof of this an extensive series of parts of the skeletons of birds from the true *Divers* to the *Cranes* was exhibited, and the peculiarities pointed out. The keel of the breast-bone in the *Ducks* and true *Geese* was shown to be of considerable depth, with its inferior edge nearly straight; those of the *Semipalmated Goose* and *Cereopsis* were shown to be much deeper in the keel, and the inferior edges much more convex; and comparison with the same parts from the *Spoonbill*, *Hérons*, *Bitterns*, and *Storks*, showed the approximation to the *Ardeidæ* in form. The peculiarities of the whole series indicated, between the two extreme points, the development of the powers of flight as contrasted with the maximum of the powers of diving, in a succession of characters as easily recognisable in the skeletons as in the external appearances of the birds themselves, and supplied a valuable auxiliary chain of affinities to assist the naturalist in his views of arrangement.

On the subject of the *Cereopsis* Mr. Bennett observed, that having lately had occasion to investigate the history of that bird, he had met with some facts respecting it which might not be without interest. After noticing the mistakes in Dr. Latham's original description and figure, which have been already corrected by MM. Temminck and Vieillot, he pointed out certain errors in those given by the two last-named writers, as compared with the bird on the table, and with seven living specimens in the Society's Collection, all of which, he believed, had been hatched in this country. Thus in the description of the latter author it is said, "la tête est couverte d'une peau nue, ridée et jaune, depuis la base du bec jusqu'au-delà des yeux"; and in that of the former, "une peau ridée et jaunâtre couvre le front"; but this supposed naked skin does not exist in nature, and although represented in M. Vieillot's figure, is very properly omitted in that of M. Temminck. The latter indeed is, with the exception of the legs being coloured of a dingy yellow instead of a deep orange, a very characteristic representation. No synonyms had hitherto been added to the original name; but Mr. Bennett stated that he had little doubt, both from the description and locality, that a bird mentioned by Labillardière as seen at Esperance Bay, on the south coast of New Holland, and named by M. Vieillot, in the "Nouveau Dictionnaire d'Histoire Naturelle," *Le Cygne cendré*, was of the same species. To this bird it would appear, from d'Entrecasteaux's Narrative, that the unfortunate Riche had applied in his MSS. the name of *Anas Terræ Leeuwin*. On a specimen, in all probability not distinct, brought home by Labillar-



dière, M. Vieillot founded a new species of Goose, *Anser griscus*, described at length in the second edition of the "Nouv. Dict. d'Hist. Nat." If this assumption be correct, the same individual must have afterwards served as the type of his figure of the *Cereopsis*; for only a single specimen of that bird existed until very lately (or indeed probably still exists) in the gallery of the Paris Museum, in which Labillardière's specimen was deposited.

A specimen was exhibited of a small species of *Deer* from Chili, which had lived in the Society's Menagerie for upwards of twelve months, and which Mr. Bennett stated that he believed to be new. It is a female, and consequently does not offer the accessory characters which zoologists have been in the habit of deriving from the horns. The other distinctive marks are as follows:

*CERVUS HUMILIS.* *Cerv. parvus, obesus, brevipes; facie latâ, brevi, obtusâ; fissurâ infra-orbitali mediocri; caudâ subnullâ: corpore toto rufo, anticè nigrescenti, posticè fronte pedibusque inferioribus saturatioribus, infra dilutiori.*

Alt. ad humeros vix  $1\frac{1}{2}$  ped.: long. caudæ vix unciam superans.

Mr. Bennett added that he was informed by Captain P. P. King, R.N., that a second skin of the same species had been brought to England by him; that the young was spotted with yellow, and had a yellow stripe on each side of the back; and that the animal was plentiful at Concepcion, and found even as far south as the Archipelago of Chiloe, living, he believed, in small herds.

A hybrid *Pheasant* belonging to the Society having lately died at the Garden, Mr. Yarrell observed that he had examined its body, a preparation of a part of which, together with the preserved skin, was then on the table. He remarked that in mules produced between animals placed at different degrees of distance from each other in the scale of Nature, it was a point of some interest to ascertain the relative state of the sexual organs, which it might be expected would be found more or less perfect, depending on the extent of the distance interposed between the parent animals. The bird in question was a male, bred between the *pheasant* and the *common fowl*, but most allied in appearance to the former. The sexual organs appeared to be perfect and of large size for the period of the year.

Three examples of the *Ardea Nycticorax*, Linn., were placed on the table. On these Mr. Yarrell observed that the Menagerie of the Society had furnished an interesting link in this species, in a young bird which united in its plumage the brown spotted wing of the *Gardenian Heron* with the black head and ash-coloured back of the *Night Heron*: thus exhibiting the change from the young to the adult bird, and proving that the two supposed species are really but one.

Two living specimens were exhibited of the *Suricate*, *Ryzæna*



*tetradactyla*, Illig., which had recently been added to the Society's Collection. Both individuals were extremely gentle, and suffered themselves to be handled and played with, without evincing any uneasiness.

At the request of the Chairman, Mr. Martin reported the morbid appearances observed in the *Lion* which recently died at the Society's Gardens. Before removing the skin, the whole of the body presented a remarkably bloated appearance, which was found on examination to be owing to general *emphysema*. This was suspected by Mr. Martin to be the result of morbid arterial secretion; it could not have been caused by putrefaction, the animal having been dead but a few hours, and the body being still warm. The same appearance had been not unfrequently observed by Mr. Spooner, the Veterinary Surgeon of the establishment, in animals worn out by lingering chronic disease. On examining the lungs, their cellular structure was found completely obliterated, except in one small portion, where alone any oxygenation of the blood could have taken place. They presented a dark appearance on the surface, with a hardness or density of structure which must have resulted from long-continued inflammation. They were also partially studded with tubercles. On cutting into them, purulent matter oozed from the incision, and several abscesses, though not large, were discovered. The liver was dark, and so soft as to break down with the slightest touch. The spleen presented no decided trace of disease. The intestines adjacent to the liver were tinged with a dark and somewhat purplish hue; but although distended with air presented nothing remarkable. The stomach contained only a little bile and *mucus*.

The muscles generally were pale and flabby, as might have been anticipated, where a chronic disease had wasted the vital energies, and where the blood, impeded in its passage through the lungs, had long ceased to be sufficiently oxygenated.

Mr. Owen commenced the reading of his account of the Myology of the *Simia Satyrus*, L. He confined himself to the notice of such muscles as are peculiar to that animal, and have not any analogues in the human frame; of those which, if analogous, deviate remarkably in their proportions and attachments; and lastly, of such as have been considered as of doubtful existence in the *Orang*.

The *occipito-frontalis*, which escaped the observation of Tyson and Dr. Traill (Wernerian Trans. iii.) in the *Chimpanzee*, and which some physiologists have asserted to be peculiar to man, is distinctly developed in the *Orang Utan*. Portions of this muscle were also found on the head of a *Chimpanzee* that had been flayed with great care, the rest having been removed with the scalp, to which the tendinous part closely adheres.

The following muscles of the face were described, *corrugator supercilii*, *levator labii superioris atæque nasi*, *levator anguli oris*, *zygomaticus major*, *depressor anguli oris*, *orbicularis palpebrarum* and *orbicularis oris*. On reflecting the inner membrane of the lips,

the *depressores labii superioris* and *levatores labii inferioris* were found of considerable breadth and strongly developed: their action in protruding the lips in a conical form has been frequently noticed by those who have had opportunities of observing the living animal.

The *platysma myoides* is of greater extent than in the human subject, and some of the fibres have a different direction, bearing a resemblance to the cervical portion of the *panniculus carnosus* in some quadrupèds, as the *Beaver* and *Guinea-pig*.

The muscles of mastication, and the articulation of the lower jaw were described.

The *digastricus* has not any connection with the *os hyoides*, the anterior fleshy portion being altogether wanting in the *Orang Utan*. It is inserted by a strong round tendon into the angle of the lower jaw. This circumstance is interesting in connection with the memorable dispute between Dr. Monro (primus) and the French anatomists, concerning the actions of this muscle; and it is remarkable that Winslow, with his accustomed ingenuity, should have alluded to such a disposition, in illustrating his opinions of the actions of the *digastricus* on the lower jaw in the human subject. Some peculiarities in the *mylo-hyoideus*, *genio-hyoideus*, and *omo-hyoideus* were noticed.

The peculiar muscle discovered by Tyson in the *Chimpanzee*, and called by him *levator claviculæ*, arises in the *Orang Utan* from the *occiput* and transverse process of the *atlas*. In the *Chimpanzee* which Mr. Owen dissected, he also found it arising from the transverse process of the *atlas*, and not from the second or third cervical vertebra. It is inserted broadly into the humeral extremity of the *clavicle*.

Neither in the *Orang Utan* nor in the *Chimpanzee* is there any true *ligamentum nuchæ*. The part commonly so called in the human subject, consisting also in these animals only of the inelastic commissural tendons of the *trapezii*, the *rhomboidei* and the *serrati postici superiores*. To give additional support, however, to the head of the *Orang Utan*, which preponderates so far anterior to the *occipital foramen*, the origins of the *rhomboidei* are extended upwards to the occipital bone, to which they broadly adhere, beneath the *trapezii*. In the *Chimpanzee* this disposition does not occur, but in both animals the *rhomboideus* is a single muscle, without division into a greater and lesser portion.

Three muscles supply the place of the *pectoralis major* in the *Orang Utan*. Their proportions and attachments were minutely described; and while speaking of these with reference to each other, it was found convenient to apply to them the names of *sterno-humeralis*, *costo-humeralis*, and *sterno-costo-humeralis*.

The reading of the remainder of this part of the anatomy of the *Orang Utan* was postponed to a future meeting of the Committee.

Several species of *Birds* belonging to the collection recently made by Capt. Philip P. King, R.N., during his survey of the Straits of Magellan, were exhibited. Other birds from the same collection had been named and characterized at the Meeting on the 14th of

December : and on the present occasion Capt. King pointed out the distinctive characters of the following species which he believed to be new.

**SYNALLAXIS ANTHOÏDES.** *Syn. supra brunnea, plumis in medio fusco latè striatis, tectricibus alarum superioribus rufo tinctis; subtus pallidè cinerea; reatricibus lateralibus ad marginem externum, fasciâque alarum, rufis.*

*Statura Syn. Spinicaudæ.*

**DENDROCOLAPTES ALBO-GULARIS.** *Dend. corpore supra abdominisque lateribus rufo-brunneis; remigibus secundariis, dorso imo, caudâque rufis; mandibulâ inferiori ad basin, gulâ, jugulo, pectore, abdomineque medio albis, hujus plumis brunneo ad apicem marginatis; rostro sursum recurvo.*

*Longitudo circiter 7½ uncias.*

**TROCHILUS FERNANDENSIS.** *Troch. ferrugineo-rufus; capitis vertice splendenti-coccineo; remigibus fuscis.*

*Longitudo 5 uncias.*

*Habitat in insulâ Juan Fernandez.*

**TROCHILUS STOKESII.** *Troch. corpore supra viridi-splendente, subtus albo viridi-guttato; capite supra, guttisque confertis gulâ lazulino-splendentibus; remigibus fusco-atris; remigum omnium, mediis exceptis, pogoniis internis albis.*

*Longitudo 4½ uncias.*

*Habitat in insulâ Juan Fernandez.*

**PHALACROCORAX IMPERIALIS.** *Phal. capite cristato, collo posteriori, corporeque supra intensè purpureis; alis scapularibusque viridi-atris; remigibus reatricibusque duodecim fusco-atris; corpore subtus, fasciâ alarum, maculâque dorsi medii sericeo-albis; rostro nigro; pedibus flavescentibus.*

*Statura Phal. Carbonis.*

*Habitat in sinibus interioribus oræ occidentalis.*

**PHALACROCORAX SARMIENTONUS.** *Phal. capite, collo, dorsoque imo atro-purpureis; pectore abdomineque albis; dorso superiori, scapularibus, alisque viridi-atris; remigibus reatricibusque duodecim atris; gulâ, genis, femorumque tectricibus superioribus albo-notatis; rostro nigro; pedibus flavescentibus.*

*Statura præcedentis.*

*Habitat in Freto Magellanico.*

**PHALACROCORAX ERYTHROPS.** *Phal. capite, collo, corporeque supra purpureo-atris; pectore abdomineque albis; genis parçè albo-notatis; facie nudâ rubrâ; remigibus, reatricibus duodecim, rostroque sub-brevis atris; pedibus flavescentibus.*

*Staturâ paulo minor præcedentibus duobus.*

February 8, 1831.

N. A. Vigors, Esq. in the Chair.

It was announced that the Council had Resolved, "That the Meetings of the Committee are open to every Member of the Society." In this resolution the Committee cordially concurred; and also in the propriety of distributing cards of the Meetings to the Members of the Society residing in or near London.

The skeleton and parts of the *viscera* of one of the Society's specimens of the *Chinchilla*, (*Chinchilla lanigera*), were exhibited, and the following notes by Mr. Yarrell were read.

"On the death of one of the specimens of this interesting little animal in the collection of the Zoological Society, the Museum, previously containing a preserved skin, was enriched with a skeleton and preparations of parts of the *viscera*. Of these additions I have been permitted to furnish a description, which I was the more desirous to do, as no notice of the internal parts of this animal has appeared, that I am aware of, except as far as regards its dentition; and on this part of the subject I was anxious to correct an error I had committed in a short notice published in the fourth volume of the 'Zoological Journal,' page 317, from the prescribed use of limited materials.

"It may be necessary to state that at the time of examination all the *viscera* had been preserved some months in a weak solution of spirit.

"The lungs are composed of three small lobes on each side. The heart is flattened in form from behind forwards, measuring  $\frac{1}{10}$ ths of an inch across its base, and but  $\frac{1}{10}$ ths in depth; the want of *apex* gives it a rounded and muscular appearance. The liver exhibits two large and equally-sized lobes, and two smaller lobes. The stomach, a single cavity, measures from the entrance of the *œsophagus* round the great curve to the pyloric contraction 5 inches  $\frac{1}{10}$ ths, the greatest breadth 2 inches  $\frac{1}{10}$ ths, the depth 1 inch  $\frac{1}{10}$ ths; the spleen is small and elongated. The length of the small intestines from the *pylorus* to the end of the *ilium* 3 feet 10 inches; the *cæcum* and first portion of the *colon* are of large size, made up of three half-circular convolutions, one central, with one of smaller dimensions on each outer side, containing numerous cells and divisions, strengthened by muscular bands and *septa*; the whole length of *cæcum*, *colon* and *rectum*, measures 4 feet 10 inches. With the exception of the *cæcum* and commencement of the *colon*, which as I have stated are voluminous, all the intestines are of very small



calibre. The kidneys vary somewhat in shape ; one measures  $\frac{1}{10}$ ths of an inch in length and  $\frac{1}{10}$ ths in breadth, that on the opposite side is much more spherical. The specimen is a female, and the uterine *cornua* measure each  $3\frac{1}{2}$  inches in length.

“ Of the skeleton, when mounted, the whole length from the nose to the end of the tail is 13 inches  $\frac{1}{10}$ ths ; the upper surface of the *cranium* from the *occiput* to the inter-orbital space is in form triangular and flat, the width at the *occiput* 1 inch  $\frac{1}{10}$ th, of the inter-orbital space  $\frac{1}{10}$ ths, the whole length of the head 2 inches  $\frac{2}{10}$ ths, the mastoid processes and auditory cells of very large size, the external *meatus* also large, oval, directed upwards and backwards ; the *zygoma* narrow and slender posteriorly, but deep and stronger at its junction with the malar bone, which has an ascending bony division between the orbits and temporal *fossæ* ; the nasal bones narrow, convex, and of parallel diameter ; the lower jaw is curved, broad and strong, the course of the *incisor* teeth is visible, and the alveolar cavities of the molar teeth are well defined externally ; the coronoid processes are wanting, apparently as if broken off during the preparation of the skeleton, but have obviously been of very small size ; the condyle elongated from before backwards, the plate deep, and the posterior angle of considerable length. Dentition  $\frac{2}{10} - \frac{8}{10}$  : the exposed portion of the *incisors* measures  $\frac{1}{10}$ ths of an inch in length ; the molar teeth are all made up of three parallel portions or bony *laminæ*, each portion invested with a thin coat of enamel and closely united, the base of a molar tooth presenting six lines of enamel and three cavities ; the anterior third of the first molar tooth on each side, above and below, is smaller than the other two portions, and gives to these teeth a triangular-shaped crown ; the posterior third portion of the last molar tooth on each side above is nearly round, and gives an increase of surface to these also ; in the molar teeth of the lower jaw the fold of enamel between the first and second portions of the bony *laminæ* of each tooth does not reach quite to the outer edge, and the two portions of bone appear therefore to be only partially separated. The direction of the parallel *laminæ* of all the molar teeth is not at right angles with the line of the maxillary bones, but inclining obliquely from without backwards.

“ The length from the *atlas* to the end of the tail is 11 inches  $\frac{1}{10}$ ths ; cervical *vertebræ* 7, dorsal 13, lumbar 6, sacral 2, and caudal 23. The *scapulæ* are small, measuring 1 inch from the external angle to the articulation with the *humerus*, the spine is but little elevated, the *acromion* ample, the clavicles perfect ; length of the *humerus* 1 inch  $\frac{2}{10}$ ths, the bone strong and furnished with an elongated crest descending from the head ; from the *olecranon* to the carpal articulation 1 inch  $\frac{1}{10}$ ths, the *ulna* and *radius* firmly ankylosed throughout the distal half of their length ; thence to the end of the longest of the five toes  $\frac{1}{10}$ ths of an inch. The ribs 13 pairs. The bones of the *pelvis* slender and elongated ; from the crest of the *ilium*, which is but little produced, to the inferior edge of the *ischium* is 1 inch  $\frac{2}{10}$ ths ; the *ossa pubis*, slight in structure, advan-



cing but little, the *symphysis* elongated, and the *obturator foramen* of large size. The *femur* is straight, strong and smooth, and measures 1 inch  $\frac{8}{10}$ ths; the *tibia* 2 inches  $\frac{1}{10}$ ths; the *fibula* is complete and forms the external *malleolus*; from the *os calcis* to the end of the longest toe 2 inches  $\frac{1}{10}$ th; the toes four in number, of which the outer one is the shortest, the third from the outside the longest, the second and fourth equal.

“In the published observations before referred to I stated that the *Chinchilla* appeared to be closely allied to Mr. Brookes’s new genus *Lagostomus*, and the character of the skeleton of the *Chinchilla* compared with the figure and description of *Lagostomus* in the 1st part of the 16th volume of the ‘Transactions of the Linnean Society’ confirms the general similarity. Still, the more complicated structure of the teeth, and the existence of an additional toe on each of the feet, require for the *Chinchilla* the generic distinction claimed for it by Mr. Bennett and by Mr. Gray.

“The resemblance of the skeleton of the *Chinchilla* to that of the *Jerboa* is also remarkable, particularly in the form of the head, in the excessive development of the auditory cavities, and the small size of the anterior extremities compared with the hind legs.”

Mr. Yarrell having concluded the reading of his Notes, it was remarked that MM. Isidore Geoffroy-Saint-Hilaire and Dessalines d’Orbigny had proposed, in the ‘Annales des Sciences Naturelles’ for November 1830, the creation of a new genus, *Callomys*, to include the *Chinchilla* and the *Viscaccia*. The latter animal is the *Dipus maximus*, De Bl., and consequently the type of the genus *Lagostomus*, described by Mr. Brookes in a paper read before the Linnean Society in 1828, and published in the Transactions of that body in 1829, in which the system of dentition and the osteology are treated of in detail. The *Chinchilla*, long known in commerce but only recently made known to science, was described as the type of a distinct genus, under its common name, by Mr. Bennett in 1829, and by Mr. Gray in August 1830: its true characters seem even now to be unknown to the French authors above referred to, who appear to be acquainted with its skin alone, and never to have examined either its teeth or the number of its toes. In these respects it deviates from the characters of their proposed genus; a genus which cannot be adopted, inasmuch as it is composed of heterogeneous materials, and as the two types included in it have both previously been described and designated as distinct groups.

Specimens were exhibited of the *tracheæ* of various *Gallinaceous Birds* included in the genera *Pauxi*, *Crax* and *Penelope* of M. Temminck; and Mr. Yarrell observed that these birds have each, as far as they have yet been examined, been found to possess a specific difference in their organs of voice. Among the *tracheæ* placed on the table was that of the *Red-knobbed Curassow*, *Crax Yarrellii*, Benn., a new species lately described from the Society’s Menagerie, and which had recently died. The *trachea* of this species differs from all those previously known, but most resembles that of the

*Crax Alector*, L. ; while in external characters the bird approaches the *Crax globicera*, L., from which it is distinguished by the redness of its cere and by a prominence on each side under the base of the lower jaw, in addition to the globose knob near the base of the upper. The tube in the *Crax Yarrellii* is straight throughout its whole length, except a short convolution imbedded in cellular membrane placed between the shafts of the *os furcatorium*. The *trachea* is narrow, and the fold, invested and supported by a membranous sheath, gives off one pair of muscles, which are inserted externally below the *apex* of the *os furcatorium*. The lower portion of the tube, immediately above the bone of divarication, sends off a pair of muscles to be inserted upon the *sternum*. The upper pair of muscles (furculo-tracheal) influence the length of the tube above the convolution. The inferior pair (sterno-tracheal) have the same power over the bronchial tubes and that portion of the *trachea* which is below the convolution.

Several specimens were laid on the table of a *Clupea* taken in the mouth of the Thames, which Mr. Yarrell regarded as distinct from the common *Herring* of our coasts, the *Clupea Harengus*, Linn. He dedicated it to Dr. Leach, who, he was informed, has often stated that the British coast possessed a second species of *Herring*. The *Clupea Leachii* is much deeper in proportion than the common *Herring*, an adult fish 8 inches long being 1 inch  $\frac{3}{4}$ ths deep, while a common *Herring* of the same depth measures 10 $\frac{1}{2}$  inches in length. The dorsal and abdominal lines of the new species are much more convex ; the latter is keeled, but has no serration. The under jaw has three or four prominent teeth placed just within the angle formed by the *symphysis* : the upper *maxillæ* have their edges slightly crenated. The eye is large. The scales are smaller than in the other species, and there is no distinct lateral line. The back and sides are deep blue with green reflections, passing into silvery white beneath. The dorsal fin is placed behind the centre of gravity ; but not so far behind it as in the common *Herring*. The number of the fin-rays and of the *vertebræ* differ in the two species as follows :

	D.	P.	V.	A.	C.	Vertebræ.
<i>Clup. Harengus</i>	17 ..	14 ..	9 ..	14 ..	20 ....	56
<i>Clup. Leachii</i>	18 ..	17 ..	9 ..	16 ..	20 ....	54

The new species differs also from the common *Herring* in flavour, being much more mild. It is now full of roe, while the adult common *Herrings* ceased spawning in November, and having retired subsequently to the deep waters are not at present to be met with on the southern coast. Mr. Yarrell added, that there was reason to believe that a third species of *Herring*, of a larger size than either of the others, occurred sometimes on our eastern coast. He also mentioned that he had obtained last summer from the Thames, the two *Shads* regarded by M. Cuvier as the *Clupea Alosa*, Linn., and the *Clupea fallax*, LaCép.

Mr. Yarrell stated that he had received a letter from Mr. Dill-

wyn, mentioning the capture in Swansea Bay of a specimen of the *Labrus maculatus*, Bloch ; being a second instance of the occurrence of this fish on the British coasts within a few weeks.

Mr. Yarrell also stated that the *Summer Duck*, *Anas sponsa*, Linn., male and female, had been shot recently near Dorking. The *Anas occidua* had also occurred in this country : and another American and Northern species of bird, the *Alauda alpestris*, Linn.

The Chairman resumed the subject of the Himalayan birds, and exhibited and described the following species.

PHÆNICURA CÆRULEOCEPHALA. *Phæn. atra, abdomine strigâque alarum longitudinali albis ; capite pallidè cæruleo.*

Statura *Phæn. communis.*

PHÆNICURA LEUCOCEPHALA. *Phæn. corpore apiceque caudæ atris ; abdomine, crisso, uropygio, caudâque rufis ; capite supra albo.*

Statura *Phæn. ruberculæ.*

PHÆNICURA RUBECULOÏDES. *Phæn. capite, collo, corporeque supra atro-cæruleis, capitis summo splendidiore ; abdomine albo ; pectore rufo.*

Statura *Phæn. cæruleocephalæ.*

PHÆNICURA FULIGINOSA. *Phæn. corpore fuliginoso-plumbeo ; caudâ rufâ.*

Staturâ paullo major quam præcedens.

EMBERIZA CRISTATA. *Mas. Emb. capite cristato corporeque atris ; alis caudâque rufis.*

Fœm., aut Mas jun.? *Capite subcristato corporeque fuscis, abdomine imo pallidiori ; alis caudâque rufescentibus, fusco tinctis.*

Statura *Carduelis communis.*

LAMPROTORNIS SPILOPTERUS. *Mas. Lamp. supra plumbeo-caenus, plumis ad apicem fusco marginatis ; subtus albus, rufo tinctus ; uropygio rufescenti ; remigibus atris viridi splendidibus, maculâ albâ ; caudâ brunneâ ; gulâ intensè rufâ.*

Fœm. *Supra pallidè brunnea, subtus albescens, brunneo tincta.*

Statura *Lamp. cantoris.*

MYOPHONUS HORSFIELDII. *Myoph. cærulescenti-ater, fronte, humeris, marginibusque plumarum pectoris splendidè cæruleis.*

Statura *Myoph. cyanei*, Horsf.

PHASIANUS STACEII. *Phas. stramineo-albus, supra frequenter, subtus parcè nigro fasciatus, dorso abdomineque imis rufescentibus ; capite cristato fusco ; caudâ fasciis latis nigris, ad basin internè rufis, ornatâ.*

Longitudo corporis ab apice rostri ad apicem caudæ, 3 pedes 4½ uncias.

OTIS NIGRICEPS. *Ot. corpore supra pallidè badio, rufo-brunneo graciliter undulato ; collo, maculis parcis alarum, abdomineque albis ; capite cristato, tectricibus alarum exterioribus, remigibus, notâque grandi pectorali nigris.*

Longitudo corporis ab apice rostri ad apicem caudæ, pedes 4 ; latitudo, 4½.

The Chairman also directed the attention of the Committee to a remarkable deficiency observable in some of the groups of the *Psittacidae*, viz. the absence of the *os furcatorium*. This deficiency he had observed in the osteology of the *Psittacus mitratus*, the *Platycercus eximius*, and the *Psittacula galgula*; skeletons of the two last of which species were exhibited. He observed that this extraordinary deficiency evinced the approaching affinity of that group of birds to the *Rasores*, one of the most conspicuous groups of which, the typical *Struthionidae*, exhibited a like deficiency, indicating a corresponding failure in the powers of flight.



February 22, 1831.

N. A. Vigors, Esq. in the Chair.

A specimen was exhibited of a young *Nyl-ghau*, (*Antilope picta*, Pall.) which was born at the Society's Farm in January last. The mother of this individual had borne two young about twelve months since, while in the possession of His late Majesty. On the present occasion she had also borne two, one of which is still living. The differences between the young and the adult animal were pointed out. The latter is well known. The former is generally of a dull reddish fawn colour, which is brighter on the lower part of the legs. A line along the belly, descending a short distance down the inside of the legs, together with a line on the fore part of the hock, is white. The under lip, a line along its under surface, and a crescent-shaped spot mounting on each side round the base of the lower jaw, are also white. A spot above the front of the eye, and one behind the angle of the mouth are white, as are also the inside of the ears. A black line passes along the middle of the nose, and spreading out between the eyes, becomes suffused and lost. From between the ears a black line passes along the middle of the back to the root of the tail. A black line passes down the front of the fore legs, commencing near their upper part, expanding in front of the knees, then contracting, and afterwards dilating again above the base of the hoof, which it surrounds. Above the pastern on the inner side is a white spot; and there is a white spot just above the hoofs both on the outer and inner side. On the front of the lower part of the hinder legs there is a black line, and the pastern and feet are black. Above the pastern the limb is surrounded in front by a broad half ring of white; and there are two white spots, nearly uniting in front, above the hoofs. The ears at their base for more than half their length, together with their extreme tip, are of the general fawn of the body becoming much lighter towards their outer margin: but a broad black blotch occupies nearly their upper half, with the exception of the extreme tip. The tail is white beneath, and its tip is black.

Mr. Cox adverted to the prevalence among *Sheep* of *prolapsus uteri*, which he stated to be almost universally fatal to the animals afflicted with it, and for the relief of which he pointed out a simple and efficient method. In a sheep suffering from this cause he removed the protruded parts by the application of a ligature; the animal was subsequently turned out to grass, and became as healthy and as fat as any of the flock with which it was associated. Mr. Brookes stated that *prolapsus* is equally frequent in some other animals, and gave the history of a case in which profuse and almost



fatal hæmorrhage ensued from cutting away the displaced parts : he fully agreed in the propriety of removing them by ligature.

Mr. Bennett called the attention of the Committee to one of the *Spider-Monkeys*, (*Ateles*, Geoff.,) at present living in the Society's Garden, which he regarded as a new species. He named and characterized it as the

ATELES FRONTALIS. *At. ater*, maculâ frontali semilunari albâ.  
Statura *At. atri*, F. Cuv.

By the white patch on the forehead and the radiation of the hair from the back of the neck, this monkey approaches the *At. hybridus*, described in the 'Dictionnaire Classique d'Histoire Naturelle,' by M. Isidore Geoffroy-Saint Hilaire. In the latter, however, the colours of the body are varied and generally light, the darkest tint which is mentioned as occurring on the specimen described being the pure brown of the head and anterior limbs. In the Society's individual, on the contrary, the whole of the hairs, with the exception of the frontal patch, are jet black : the naked parts of the skin are also black, except a flesh-coloured space on the face including the eyes, nose, and lips. It has been suspected that as the lighter-coloured species of *Ateles* advance in age they acquire the black which is so generally prevalent in the group; but this change of colour yet remains to be proved.

Some notes by Mr. Yarrell of an examination of the body of the *lesser American Flying-Squirrel*, (*Pteromys volucella*, Cuv.,) were read. The individual examined had lived in the Society's Collection for upwards of a year.

The pectoral muscles, and also the muscles of all the limbs were well marked and of large size; the clavicles perfect; and the general character of the bones similar to that of the *Squirrels*. The heart was comparatively large, and the lungs were formed of two unequally sized lobes on each side, bearing evident marks of inflammation; the chest was capacious, the diaphragm being situated very low down, and dividing the body into two nearly equal cavities. The liver was composed of six lobes, varying in size, deeply divided, and placed three on each side; the gall-bladder was small, elongated, and collapsed. The stomach in form and position resembled that of the *Squirrel*; it was triangular, the apex forming the pyloric portion; the breadth  $1\frac{1}{10}$ th of an inch, and 1 inch in depth. The length of the small intestines was  $19\frac{1}{2}$  inches; the *cæcum* 1 inch; the *colon* and *rectum* 7 inches; the *cæcum* also resembled that of our *Squirrel* in form, but the membrane connecting its inner surface being more free, the *cæcum* was less curved upon itself. The kidneys measured each  $\frac{5}{10}$ ths of an inch in length by  $\frac{3}{10}$ ths in breadth; they were inflamed; and both ureters were also diseased and enlarged. The subject was a female, and the uterine *cornua* measured each 1 inch in length. The whole length of the intestinal canal was 28 inches; the length of the animal from the nose to the origin of the tail  $4\frac{1}{2}$  inches.

The stomach, *cæcum*, and portions of the skeleton were laid on the table. Mr. Brookes remarked that the cartilage which, passing from the *carpus*, affords support to the volitant membrane in the *Flying-Squirrels*, is found in all the *Pteromyes* and *Sciuropteri*; but that it does not exist in *Galeopithecus*.

One of the specimens of *Suricate* (*Ryzæna tetradactyla*, Illig.), which were exhibited to the Committee on the 25th January, having died, the following notes respecting its anatomy were read by Mr. Owen.

“ The specimen was a female, and measured, from the end of the snout to the vent, 11 inches. On opening the body it was observed that the bile had exuded through the *peritoneum*, and had stained the ensiform cartilage close to which the *fundus* of the gall-bladder lay. The *viscera* of the *abdomen* presented a beautiful appearance when exposed; the liver occupied the hypochondriac and epigastric regions; below this appeared the stomach with its vessels injected, and along the convexity of this organ the spleen swept across the *abdomen* from the left to the right lumbar region; the convoluted intestines occupying the lower part.

“ The *œsophagus* has a course of about half an inch in the *abdomen*, and enters the stomach half an inch from the left extremity of that *viscus*. The stomach is of a full oval shape, without any contraction in the middle, and retaining the same circumference to very near the *pylorus*: its longitudinal diameter is 2 inches; its depth 1 inch 10 lines. There is a large *omentum*, broadly attached to the stomach and spleen, which was hidden among the convolutions of the small intestines. The *duodenum* makes a large curve at the right side of the *abdomen*, is a loose intestine throughout its whole course, having a *mesoduodenum* which becomes shorter as it approaches the spine at the lower part of its curve; it is continued into the *jejunum* before it crosses the spine. The small intestine then descends into the left iliac region, makes a sudden turn upwards, and after a few convolutions again at the lower part of the *abdomen*, terminates in the *cæcum* which is situated in the left lumbar region just above the left kidney. The circumference of the small intestines is nearly the same throughout their course, viz. 1 inch; their length 3 feet 2 inches.

“ The *cæcum* is nearly an inch in length, with a rounded extremity, and rather contracted at its commencement; but its position and direction are the reverse of the *cæcum* in the human subject, having the blind end pointing to the diaphragm, and lying, as in birds, by the side of the small intestine, and in the direction of the large intestine, which is continued almost straight down to the *anus*. There is not any natural division into *colon* or *rectum*, the large intestine being without longitudinal bands or *sacculi*, and measuring in length only six inches. The circumference is rather more than that of the small intestines.

“ The liver is tripartite, with a *lobulus Spigelii*; the right division is bilobed; the middle division has three lobes, with the gall bladder

lodged deep in the right fissure, and the coronary ligament in the left; the left division is entire. The gall-bladder is large; it had an irregularly contracted surface. The *ductus choledochus* enters the *duodenum* half an inch from the *pylorus*.

“ The *pancreas* has a singular form. A thick transverse portion extends from the spleen behind the stomach to the *pylorus*; it then divides and forms a circle, which lies in the concavity of the great curve of the *duodenum*; sending off one or two processes in the *mesoduodenum*.

“ The spleen is a flat elongated body, four inches in length, about an inch in breadth, with the margins irregularly notched; one of these is thicker than the other, so as to give it the appearance of a three-sided body. Two large veins go from it to the *vena portæ*; on inflating these, the whole substance rose and became turgid, appearing to be little else than a receptacle for venous blood.

“ The kidneys are small oval bodies, having the veins partly ramifying on their exterior, as in the *Civet*, the *Genette*, and the *Cats*.

“ The lungs have three lobes on the left side and four on the right, one of which lies in the mesial line behind and below the heart. This single lobe, which is very general in the *Mammalia*, has considerable analogy with the *lobulus Spigelii* of the liver.

“ The heart is oblong, with a round obtuse *apex*. The left brachial vein joins the superior *cava*; the arch of the *aorta* gives off the two carotid arteries and the right brachial by a common trunk, then the left brachial artery.

“ The rings of the *trachea* are regular and of uniform size, incomplete behind, in number thirty-six. The arytenoid cartilages have thin elevated *apices*. The sides of the *epiglottis* extend backwards as far as the cricoid cartilage, and it arches over the *rima glottidis* like a penthouse or shed. The thyroid gland consists of detached lobes lying below the *larynx*, in the interspace of the *æso-phagus* and *trachea*.

“ The tongue measures one inch and eight lines; it becomes gradually thinner to the tip, which is neatly rounded. The horny *papillæ* are principally collected in three groups, one near the *apex*, and one on either side near the middle of the tongue.

“ The *æso-phagus* has longitudinal *rugæ* internally.

“ The parts of generation showed, by their vascular condition, evident traces of recent excitement: this individual, indeed, had been observed to receive the advances of the male a short time previous to her death; but there was no visible proof of impregnation having taken place. The *vagina* had longitudinal *rugæ* on its inner aspect; the *urethra* opened close to the external aperture, within a small fold of membrane, but without any appearance of *clitoris*. From the *os tinçæ* to the commencement of the *cornua uteri* was half an inch; the *cornua* were an inch in length; the fold of *peritoneum*, or broad ligament, was continued from them as high as the upper part of the kidneys. The fallopian tubes made a turn round the ovaries, their extremities being closely attached to the capsules of these

glands. The ovaries themselves were small oval bodies, being about three lines in the long diameter, and were surrounded by a small capsule of *peritoneum*; I observed on one part a small dark coloured speck, which was probably a *corpus luteum*.

“Two small glandular follicles open on either side of the orifice of the *urethra*, and two larger spherical bags open at the verge of the *anus*; these were filled with a white unctuous secretion, which had a faint odour, like the ordinary secretions of *glandulæ odoriferæ*. The quantity of this secretion probably had reference to the condition of the sexual organs before alluded to.

“The principal morbid appearances were in the lungs. They were of a dark livid colour, and in a state almost approaching to hepatization. Hurried and impeded respiration was the principal symptom noticed before death. The stomach and small intestines betrayed traces of inordinate vascular action.

“In the structure of the alimentary canal, especially of the *cæcum*, and in the remarkable shortness of the large intestines, this animal has a close affinity with the *Civet* and *Genette*, as well as in the structure of the kidneys as before mentioned. The inferior surface of the *tarsus* is destitute of hair, as in many of the *Viverridæ*, in the true plantigrade *Mammalia*, and in the *Kangaroo*; like the latter animal, the *Suricate* is in the habit of assuming the upright position, resting on the *tarsus*. It is carnivorous, and while in confinement, manifested great agitation at the sight of small birds.”

In conclusion, Mr. Owen remarked, that the appearances which he had noticed, agreed with the description of the *viscera* of the animal, as recorded by Daubenton, so far as that distinguished comparative anatomist had observed them.

The Chairman exhibited a collection of Birds which had been made in the Island of Mauritius by Mr. Telfair, an active and well known Corresponding Member of the Society. They had been consigned to Mr. Barclay of Bury Hill in Surrey, who had presented them to the Society. Several species were of interest, as being confined to the Island and its immediate vicinity, and being uncommon in European collections: and others, although found in Europe, as affording some facts respecting the geographical range of species. Mr. Vigors proposed to lay a catalogue of the collection before the Committee at an early Meeting; and on the present occasion named and characterized the following apparently new species of *Spoonbill*.

PLATALEA TELFAIRII. *Plat. corpore unicolore albo, rosaceo leviter tincto; regione circa rostrum, mandibulâ superiori, pedibusque rubris; mandibulâ inferiori nigrescenti, basi flavâ.*

Longitudo corporis a mandibulæ basi ad apicem caudæ, 25½; rostri, 8; alæ a carpo ad apicem remigis 2dæ, 16; tarsi, 6; caudæ, 6.

The Chairman again resumed the exhibition of the Himalayan birds; and calling the attention of the Committee to the number of species now known to belong to the genus *Lanius* as restricted by



modern authors, and to the expediency of subdividing the group according to the modifications of form exhibited in the wings and tail, proposed the following characters as separating the two genera.

#### LANIUS.

*Rostrum* longitudine mediocre, robustum, compressum, ad basin rectum, ad apicem curvatum, mandibulæ superioris toniis fortiter emarginatis, dentem conspicuum exhibentibus; *naribus* basalibus, lateralibus, ferè rotundatis, membranâ partim tectis; *ricu* setis rigidis munito.

*Pedes* mediocres; *digitis* liberis; *acrotarsiis* latè scutellatis.

*Alæ* subacuminatæ, subbreves; *remige* primâ brevissimâ, tertiâ longissimâ, cæteris gradatim decrescentibus.

*Cauda* brevis, æqualis aut subrotundata.

*Typus genericus*, *Lanius Collurio*, Linn.

#### COLLURIO.

*Rostrum pedesque* ut in genere *Lanio*.

*Alæ* subrotundatæ, breves; *remige* primâ brevi, secundâ sequentibus paullo brevior, tertiâ quartâ et quintâ ferè æqualibus longissimis.

*Cauda* elongata, gradatâ.

*Typus genericus*, *Lanius Excubitor*, Linn.

To the latter group the following Himalayan species belong.

COLLURIO HARDWICKII. *Coll. capitis parte anteriore, strigâ per oculos ad collum extendente, alis, caudâque nigris; capitis vertice, corpore infra, maculâ medii alarum, caudæ tectricibus, reatricibus duabus lateralibus, cæterarumque, quatuor mediis exceptis, basi apiceque albis; occipite, nuchâ, dorsoque imo albescenti-griseis; dorso medio lateribusque abdominis ferrugineis.*

*Rostrum pedesque nigri. Caput supernè albo nigroque colore in duas ferè partes transversim divisum. Longitudo corporis, 8; alæ a carpo ad remigem 3tiam, 3½; rostri, ¾; tarsi, ⅞; caudæ, 3¾.*

Bay-backed Shrike, *Lath. ? Gen. Hist. vol. 11. p. 13. sp. 6.*

This bird appears to be the same as that referred to in Dr. Latham's work, the description of which is taken from one of the drawings of General Hardwicke, to whom the species is inscribed.

COLLURIO ERYTHRONOTUS. *Coll. strigâ frontali per oculos ad medium colli extendente, alis, reatricibusque quatuor mediis nigris; capite supra, nuchâ, dorso superiori, reatricibusque lateralibus pallidè cinereis; corpore infra, alarum maculâ mediâ, remigum interiorum apicibus, reatricum lateralium marginibus omniumque apicibus, albis; scapularibus, dorso imo, abdominisque lateribus ferrugineis.*

*Rostrum pedesque nigri, illius mandibulâ inferiori ad basin flavescenti. Striga per oculos nigra, supra graciliter albo marginata. Tectrices alarum inferiores albæ. Longitudo corporis, 10½; alæ a carpo ad apicem remigis 3tiæ, 3¾; rostri, ⅞; tarsi, 1½; caudæ, 4½.*

This bird was observed to bear a great resemblance to the de-



scription of the *grey-backed Shrike* of Dr. Latham, (*Gen. Hist.* vol. ii. p. 9. sp. 3.) but to differ from it in the colours of the lesser wing-coverts and tail; the former being all black in the Himalayan species, and blue grey, ending in pale rufous in Dr. Latham's, while the tail in the former species had four black middle feathers and the rest cinereous, but in the latter had the two middle ones only black, the rest being white. In a group exhibiting so much similarity in the disposition of the colours as the present, such differences are material as distinguishing species.

**COLLURIO TEPHRONOTUS.** *Coll. fasciâ frontali pergracili ad medium colli per oculos latiùs extendente nigrâ; capite, nuchâ, scapularibus, dorsoque saturatiùs cinereis; collo anteriori pectoreque albescentibus, hoc fusco graciliter fasciato; abdomine crissoque ferrugineis; alis caudâque brunneo-fuscis, apicibus pallidioribus; dorso imo tectricibusque caudæ superioribus subrufescentibus.*

*Tectrices* alarum inferiores ferrugineo fuscoque notatæ. Statura paullo minor quàm in specie præcedenti.

This bird also was observed to be closely allied to the last, and to differ from it probably only in sex or age. Until such points however could be ascertained, it was considered adviseable to regard it as specifically distinct.

Another interesting modification of form was exhibited among the *Shrikes*, in which the forked tail, acuminate wing, and short and feeble legs of the birds allied to *Dicrurus* appeared united to the head and bill of some of the *Stares*, particularly the genus *Pastor*. Mr. Vigors characterized the form under the generic name of

#### HYPSSIPETES.

*Rostrum* subelongatum, debile, parum curvatum, apice leviter emarginatum; *naribus* basalibus, lateralibus, longitudinalibus, membranâ partim clausis; *riçtûs* setis paucis, parum rigidis.

*Alæ* subelongatæ, subacuminatæ; remige primâ brevi, secundâ longiori septimæ æquali, tertiâ et sextâ æqualibus, quartâ et quintâ æqualibus longissimis.

*Pedes* brevissimi, debiliores; *acrotarsiis* scutellatis.

*Cauda* subelongata, forficata, rectricibus extrorsum spectantibus.

**HYPSSIPETES PSAROÏDES.** *Hyps. capite supra subcristato, remigum apicibus, rectricibusque nigris; corpore alisque cineraceo-griseis; abdomine imo crissoque pallidioribus.*

*Rostrum* pedesque flavi. *Tectricum* alarum remigumque pogonia interna fusca. *Tectrices* alarum inferiores cineraceo-griseæ. Longitudo corporis,  $11\frac{1}{2}$ ; *alæ* a carpo ad apicem remigis  $3\frac{1}{2}$ , 5; *rostri* 1; *tarsi*,  $\frac{3}{8}$ ; *caudæ*,  $4\frac{1}{4}$ .

The following species were also exhibited and described.

**MUSCIPETA BREVIROSTRIS.** *Mas. Musc. capite, collo, nuchâ, dorso superiori, alis, rectricibusque mediis splendenti-nigris; corpore infra, dorso imo, pleromatum apicibus, fasciâ remigum, rectricibusque lateralibus splendidè coccineis; rostro brevi, subdebili.*

Fœm.? *Fronte, corpore infra, dorso imo, fasciâ alarum, reetricibusque lateralibus flavis; capite, nuchâ, scapularibus, dorsoque superiori griseis; alis reetricibusque mediis nigris.*

Longitudo corporis,  $8\frac{1}{2}$ ; alæ,  $3\frac{1}{2}$ ; rostri,  $\frac{1}{2}$ ; tarsi,  $\frac{1}{2}$ ; caudæ, 4.

CARDUELIS SPINOÏDES. Mas. *Card. fronte, occipite, collo corporeque infra, ptilis, pteromatum apicibus, fasciâ remigum, reetricumque lateralium basibus flavis; capite supra dorsoque olivaceis; alis caudâque fuscescenti-nigris.*

Fœm.? *Coloribus minùs saturatis; abdomine dorsoque olivaceo-fusco striatis.*

Statura paulò major quàm *Card. Spini.*

PICUS AURICEPS. Mas. *Pic. capite supra aureo; occipite, ebdomine imo, crissoque coccineis; colli parte posteriori et strigâ utrinque laterali, corporeque supra nigris; colli parte frontali et lateribus, corporeque infra albis, hoc nigro striato; scapularibus, pteromatibus, remigibus, reetricibusque lateralibus albo-maculatis; dorso medio griseo, albo nigroque fasciato.*

Fœm. *Sine notâ coccineâ occipitali.*

Statura *Pic. mediü.*

PICUS PYGMÆUS. Mas. *Pic. capite supra dorsoque medio griseo-canis, hoc albo nigroque fasciato; strigâ utrinque per oculos ad nucham extendente, gulâ, maculisque pteromatum remigum et reetricum lateralium albis; pectore abdomineque albescentibus, fusco graciliter striatis; notâ longitudinali gracili utrinque post oculos coccineâ.*

Fœm. *Sine notâ coccineâ postoculari.*

Statura minor quam *Pic. minoris.*

The male exhibited of this species was observed to have the two middle tail feathers elongated beyond the rest, and the lateral feathers were shown to be altogether soft and flexible, like those of the genus *Picumnus*, Temm.

CINNYRIS GOULDIÆ. *Cinn. capite supra, gulâ colloque in fronte, regione auriculari, strigâ utrinque gracili ad latera colli usque ad humeros extendente, uropygio, caudæ tectricibus, reetricibusque duabus mediis elongatis purpureo et cœruleo metallicè splendentibus; capitis lateribus, occipite, nuchâ, scapularibus, dorso summo, ptilisque sanguineo-rubris; dorso imo, pectore, abdomineque sulphureis, his sanguineo sparsis; remigibus reetricibusque lateralibus fuscis.*

Longitudo circiter 5 uncias.

Mr. Vigors expressed the pleasure which he felt in dedicating this species to the accomplished artist, Mrs. Gould, who executed the plates of these Himalayan birds.

March 8, 1831.

Sir Thomas Phillipps, Bart. in the Chair.

The Report on the animals for the importation of which the Council should be recommended to take measures (prepared in pursuance of a Resolution of the Committee, Jan. 11.), was presented and read by Mr. Vigors. It was directed that it should be suspended in the Meeting Room for the consideration of the Members of the Committee until the next Meeting, to which it should be again submitted, and its adoption be recommended.

An extract was read from the 'Lecture faite à la 1ère Séance Annuelle de la Société d'Histoire Naturelle de l'Isle Maurice, 24 Aout, 1830, par M. Julien Desjardins, Secrétaire de la Société,' a manuscript copy of which had been transmitted by that Society.

The zoological labours of the Mauritius Natural History Society have, during the first year of its existence, embraced numerous departments of animated nature.

The *Mammalia* of the island have been treated of by M. J. Desjardins. They are twenty-six in number, of which twelve only exist in the wild state. These are enumerated as the *Simia Aygula*, L.; *Pteropus vulgaris*; *Pter. rubricollis*, Geoff.; *Nyctinomus acetabulosus*, Geoff.; *Taphozous Mauritianus*, Geoff.; *Erinaceus setosus*, L.; *Sorex Indicus*, Geoff.; *Mus Rattus*, L.; *Mus Musculus*, L.; *Lepus nigricollis*; *Sus scrofa*, L.; and *Cervus Elaphus*, L.

Various *Birds* of Mauritius have been brought before the Society, including the *Fulica Chloropus*, L.; the *Numenius Madagascariensis*, Briss.; and a *Snipe*, known in the island as the *Cul blanc*. To the latter M. L. Desjardins has given, with some doubts, the name of *Scolopax Mauritiana*.

Several birds from Madagascar have also occupied the attention of the Society, and M. J. Desjardins has identified them as follows: two species of *Falco*, Cuv.; *Strix flammea*, L.; *Loxia Madagascariensis*, L.; *Corvus Dauricus*, Lath.; a species of *Regulus*, Cuv.; *Cuculus canorus*, L.; *Tetrao Coturnix*, L.; *Scopus Umbretta*; *Rallus Madagascariensis*, n. s.; *Fulica Chloropus*, L.; *Fulica cristata*, Gmel.; *Scolopax Capensis*, L.; *Colymbus minor*, L.; and four species of the genus *Anas*, L.

There are very few *Reptiles* met with on the island. An instance has occurred of the discovery of a living *Snake*, the second within the memory of the inhabitants. It was the *Coluber rufus*, LaCép.; and had probably been brought from India in some ship. The earlier travellers speak of the existence of *Tortoises*, but none are now found. M. J. Desjardins has, however, discovered three deposits of the remains of these animals, all of which are evidently of modern date, their age not exceeding two or three centuries. There are two

*Saurian Reptiles*, which, although common, remained undescribed until M. L. Desjardins gave to them the names of *Scincus Telfairii* and *Scinc. Bojerii*: he has also described a third, smaller and much more uncommon than the others, the *Scinc. Boutonii*.

Three new species of *Fishes* have been described and figured by M. T. Delisse. They are a *Heniochus*, Cuv.; a *Holacanthus*, Cuv.; and an *Ophidium*, L.

In *invertebrated animals*, especially those which inhabit the sea, Mauritius is rich. Among the *Annelida*, M. Liénard, sen. has described an *Amphitrite*, which he believes to be new: he has also described the *Amph. voluticornis* and *Amph. splendida*, Lam., together with three new species, the *Amph. fuscata*, *albicans*, and *tricolor*. A lacustrine *Erpobdella* has been described by M. L. Desjardins, who has preserved to it the trivial name of *sex-lineata*, doubtfully given by MM. Quoy and Gaimard. Three new species of *Crustacea*, of the genera *Lupa*, *Plagusia*, and *Cancer*, have been described by M. Liénard, jun.: and M. De Lisse, sen., has proposed to regard as the type of a new genus the *Homard sans cornes* of the fishermen; to this group he gives the name of *Scyllibacus*, and places it between *Scyllarus*, Fab. and *Ibacus*, Pér. The species is named *Scyllibacus orientalis*. Many *Insects* have been exhibited at the meetings of the Society, and M. J. Desjardins has read a description and history of the metamorphoses of the *Coccinella sulphurea*, Oliv. Among the *Cirrhipeda* a new species of *Pentalasmis*, allied to *Pent. striata*, Leach, has been described by M. Desjardins under the name of *Anatifa Mauritianæ*.

The *Radiata* which have been described, are a species of *Fistularia*, Lam., and a new species of *Cephea*, the *Ceph. lamellosa*, so named by M. Liénard, jun. on account of the foliaceous *lamellæ* which cover the under surface of its arms.

Among the *Mollusca*, six species of *Doris* have been described by M. Liénard, sen., to one of which, regarded by him as new, he has given the name of *Dor. marginata*. The same gentleman has also described a *Pleurobranchus*. M. Liénard, jun. has described another species of *Doris*, and has given a description of a *Dolabella*, with an account of its anatomy.

Such is a brief outline of the zoological labours of the Mauritius Natural History Society, which within the short period of its existence has received no less than fifty memoirs, descriptions, and notices on different branches of natural science.

At the request of the Chairman, Mr. Martin read his notes of the dissection of a specimen of the *Testudo Indica*, L., which recently died at the Society's Gardens.

The animal was of large size, although considerably less than one formerly in the possession of the Society, the dissection of which, by Mr. Yarrell, has been published in the *Zoological Journal*. The *carapace* or dorsal shell measured 2 feet 11 inches in length, and the *plastron* or ventral shell 2 feet 4 inches. The breadth was 1 foot 9 inches.

The length of the stomach was 2 feet; the circumference in the



largest part 1 foot 3 inches; its shape a flattened oval, contracting gradually towards the *pylorus*. On opening it, the coats, and especially the middle or muscular, were found extremely thick and firm, and increasing in thickness towards the *pylorus*, which protruded in a singular manner, to the distance of nearly an inch into the *duodenum*, at which part a few longitudinal *rugæ* were observed, the rest of the lining membrane being perfectly smooth. It contained a little fluid only. The liver presented nothing remarkable; it consisted of two principal lobes, in the right of which the gall-bladder was buried, so as just to show itself; the length of the gall-bladder was 2 inches.

The small intestines were thick and firm, their length being 3 feet 6 inches. The gall-duct enters the *duodenum* 3 inches, and the pancreatic duct 10 inches, below the pyloric orifice. On laying open the small intestines, their lining membrane appeared corrugated with numerous longitudinal *rugæ*, and they were found perfectly empty.

The large intestines were smooth on their internal surface, and filled with an immense mass of condensed vegetable matter, which was green and fibrous, and appeared to have only partially undergone the process of digestion. In the *colon* near the entrance of the small intestines were two or three small black patches, seemingly gangrenous. There was no *cæcum*. The circumference of the *colon* measured 9 inches. The length of the large intestines was 6 feet 8 inches, exclusive of the *cloaca*, which was 1 foot.

At the lower part of the *abdomen*, (in a singular cavity, formed by a diaphragm-like expansion of *peritoneum*, from which, to the opposite or extreme side, passed numerous bands, bearing a resemblance to the *chordæ tendineæ*,) the urinary bladder, of enormous capacity, was lying loose, irregularly folded, but containing a considerable quantity of viscid fluid: its *parietes* were thin, but very fibrous in texture. When moderately distended with air, its shape was made manifest, as trilobed, or rather, as consisting of one large central bag, from each side of which, a conical process jutted out; the extent from point to point being 1 foot 10 inches. It opened by a neck of about 3 inches in length, and closely invested with lung, into the *cloaca*, about 6 inches from its termination; the *penis* was long and deeply furrowed, and the *glans* large at the base, with a pointed *apex*.

The lungs were very florid in colour, and extremely light, spongy, and cellular, the cells being large and distinct. They extended the whole length of the *carapace*.

The kidneys were situated at the back of the *abdomen*, in shape oval; flat on one side, convex on the other; about 5 inches long,  $2\frac{1}{2}$  inches broad, and consisting of numerous lobes, which gave to their surface a furrowed or brain-like appearance; the relative proportion of the venous ramification in them was found to exceed that of the arterial.

As regards the death of the animal, nothing positive could be determined; but it appeared to Mr. Martin, from the black patches about the *colon*, and the quantity of undigested matter in the large intestines, to have resulted principally from an unnatural accumulation of *fæcal* matter, and the attending evil consequences.



March 22, 1831.

Joshua Brookes, Esq. in the Chair.

The Report on the animals for the importation of which the Council should be recommended to take measures, was again brought under the consideration of the Committee, and was adopted.

A Report from Mr. Miller, the Superintendent of the Society's Gardens, was read, explanatory of the circumstances attending the birth of the *Armadillos*. On the morning of the 1st February it was discovered that the female had made a nest of straw, close up to the pipe that conveys the warm water round the building, and had brought forth two young, which were quite blind, and measured about four inches from the head to the tail. The male was immediately removed to another cage, but it was supposed that he had injured one of the young ones on the head before they were discovered, of which hurt it died on the following morning. At that time the other young one seemed to be perfectly well, and was sucking; but it also was found dead on the morning of the 3rd of February. It was bitten on several parts of the head by the mother. It is probable that the injuries were inflicted by her in consequence of her young ones having been moved about; and measures have been adopted to prevent the recurrence of such disturbance on any future occasion.

The following notes on the *Ctenodactylus Massonii*, Gray, were read by Mr. Yarrell:—

“ The death of two examples of an interesting little animal from Barbary, very similar to the *Lemmings* in external appearance, has enabled me to place before the Committee some particulars of structure and anatomy which possess considerable novelty. The subjects themselves were presented to the Society by Hanmer Warrington, Esq., British Consul at Tripoli, a Corresponding Member of this Society, and one of its most liberal donors.

“ From two preserved skins of the same species, in the collection at the British Museum, Mr. Gray, in his ‘*Spicilegia Zoologica*,’ has lately published an account of this animal, under the name of *Ctenodactylus Massonii*. These specimens were received from the Cape of Good Hope, and were considered new to science. There is reason however to believe, as suggested by Mr. Ogilby, that all the four specimens may be considered identical with the *Mus Gundi* of Rothman, on whose description is founded the *Arctomys Gundi* of Gmelin and other writers, and the *Gundi Marmot* of Pennant's *Zoology*, vol. ii. p. 137: Rothman's short description coincides with the animal in question, and he states that his species inhabits Barbary, towards Mount Atlas, near Massufin.

“ The resources of the Society furnish the following additional particulars:—

“ The length of the animal from the nose to the origin of the tail is eight inches ; of the tail itself, one inch. The general external resemblance to the well-known *Lemmings* has been noticed, but these examples have but four toes on each foot, with one small naked pad under each toe : the two middle toes are the longest and equal, the outer toe the shortest, the inner toe intermediate in length, and on the hind feet of remarkable structure.

“ Immediately above a short curved nail there is a transverse row of horny points forming a pectinated apparatus ; above this is a second parallel row of stiff white bristles ; and over this, a third row of bristles, which are much longer and more flexible : there are thus three distinct parallel rows of points of unequal firmness. The toe next the inner one has two small fleshy tubercles above the nail, covered by two rows of bristles, the under one short, the upper long ; it has no horny points. The two outer toes, without tubercles, have each only one tuft of long bristles.

“ With this described comb-like instrument on the inner toe only of each hind foot, the little animals were observed to be continually dressing their soft light brown fur ; and the facility with which they managed to reach every part of each lateral half with the toe of the foot on that side, as well as the rapidity of the motion, were very remarkable.

“ When walking, the whole length of the hinder foot, from toe to heel, was placed upon the ground ; of the anterior extremity the toes only rested on the ground.

“ When deprived of the skin, the head appears large compared to the bulk of the body ; it is wide and flattened in form : the *meatus auditorius externus* is elongated, forming a tube 2-10ths of an inch in length on the inferior surface, and lined with a dense black pigment. No cheek pouches exist. The teeth are of singular character, the molars of the upper and under jaws being decidedly different.

Incisors  $\frac{2}{\bar{2}}$  canine  $\frac{0}{\bar{0}}$ , molars  $\frac{3-3}{\bar{3}-3}$ . The incisors of the upper jaw are stout, square and truncated ; the molars are oblong, flat and plain on the inside, with one indentation on the outside. The incisors of the lower jaw are slender and pointed ; the molars somewhat diamond or lozenge-shaped, with one indentation between each of the four angles. This character more particularly applies to the two anterior molar teeth of each jaw, the last molar tooth, both above and below, being more elongated. From the superior incisors to the molars, the roof of the mouth presented four prominent tubercles anterior to the usual rough expanse of the palate. The *pharynx* and *oesophagus* were narrow. The lungs were made up of one large and two small lobes on each side ; the heart presented nothing remarkable. The liver paler than natural, soft, and granulated in appearance, was composed of two small and one large lobe on the right side, and two equal-sized lobes on the left : the gall-bladder large and spherical. The spleen measured 1 inch and 7-10ths in length, and 6-10ths in width. The stomach, a single cavity, without any apparent division, measured 1 inch and 2-10ths in depth, in the direction of the entrance

of the *œsophagus*, and 2 inches in breadth: the pyloric orifice contracted, the *duodenum* dilated to 1 inch and 2-10ths in circumference: length of the small intestines 2 feet and 9 inches. The *cæcum* 3 inches in length, curved upon itself, 2 inches and 4-10ths in circumference, and divided by numerous *septa*. The *colon* equally large at the commencement, but gradually diminishing: at the distance of 7 inches from the insertion of the *ileum* it was of small calibre, occasionally dilated, forming *sacculi*, in which the *fæcal* matter was collected and detained. The *rectum* narrow and uniform in size; the whole length of *colon* and *rectum* 3 feet 8 inches. The kidney of the right side was two-thirds of its length in advance of that on the left: each measured 7-10ths of an inch in its longest diameter, and 4-10ths in width.

“ Some peculiarities observed in these little animals are worthy of notice. The molar teeth, as before stated, presented the singular anomaly of those of the upper jaw being different in their structure and surfaces from those of the lower jaw. The former, in their crowns, are very similar to those figured by M. F. Cuvier, as peculiar to his genus *Helamys* (*Pedetes*, Illig.); while those of the lower jaw somewhat resemble the teeth of the various species of *Arvicola*. The stomach, in form and pyloric contraction, is like the same organ in the *Lemmings* (*Lemmus*), *Jerboas* (*Dipus*), and *Gerbilles* (*Gerbillus*). The *cæcum* resembles that of the *Guinea-Pig* (*Cobaya*), *Agouti* (*Dasyprocta*), and *Marmot* (*Arctomys*); while the sacculated form of the *colon* is found in the common *House-Rat* (*Mus decumanus*, L.)

“ Both the specimens possessed by the Society proved to be females. The skin of one has been preserved for the Museum: the bones of the other are in preparation for a skeleton, and when mounted may probably be the subject of further notice.”

Mr. Yarrell having concluded the reading of his notes, it was stated by Mr. Ogilby, that since the time when he had originally mentioned his belief of the identity of the *Ctenodactylus Massonii* with the *Gundi Marmot*, that opinion had been confirmed by a passage in Captain Lyon's Travels in Northern Africa, in which the *Gundi* is so well described, as to leave no doubt on his mind of its being the same animal as those presented to the Society by Mr. Warrington.

Mr. Gray remarked, that the individuals of the *Ctenodactylus Massonii* which he had described, having been sent from the Cape of Good Hope, he did not suspect their specific identity with an animal from Barbary, known to science by short and imperfect notes alone, and of which no specimen was recorded as existing in any collection. He added, that the size mentioned by Rohtman, that of a small rabbit, appeared to him to be greater than should be attributed to the animal in question; which, moreover, he could not regard as being of a testaceous red colour. In the other particulars mentioned in Rothman's brief description, his *Mus Gundi* agreed well with the *Ctenodactylus Massonii*.

A specimen was exhibited of the *Otis Kori*, Burch., which forms

part of the collection of Mr. Gould. This gigantic species of *Bustard*, the largest yet known of its genus, measures upwards of five feet in height. No figure of it has yet appeared, nor is it described in any of the general works on ornithology; but its characters will be found, together with some other particulars respecting it, in Mr. Burchell's *Travels in Southern Africa*, vol. i. p. 393.

The following notes on the anatomy of a male *Suricate* were read by Mr. Owen:—

“ Since I had the honour to lay before the Committee an account of the anatomy of the female *Suricate*, her male companion, the only surviving specimen which the Society possessed of this interesting species, has also died. This circumstance, otherwise to be regretted, has enabled me to add the following particulars to that account.

“ The *rugæ* of the *œsophagus* are longitudinal throughout the whole length of the tube;—in the *Lion*, and some others of the feline genus, the *rugæ* are transverse at the lower or terminal half of the *œsophagus*;—the cuticular lining is continued about two lines into the cavity of the stomach, where it terminates by a well-defined edge. This *viscus*, which was found moderately distended, presented no *rugæ* on the inner aspect, but was lined by a simply villous membrane, to which layers of coagulated *mucus* adhered very firmly. The muscular coat was thicker, as is usual, at the *pylorus*: this aperture was very small, not more than a line in diameter. An inch beyond this part the biliary and hepatic ducts entered by a common orifice. The interior of the small intestines presented a finely villous surface; and in the *ileum* were five patches of *glandulæ aggregatæ*, about half an inch in diameter, with intervals of four or five inches: the largest of these patches was situated at the termination of the *ileum*. The *apex* of the *cæcum* was occupied by a similar glandular structure. The terminal orifice of the *ileum* was of a circular form, about two lines in diameter, with a tumid margin, but unprovided with a valvular structure. In the lining membrane of the short tract of large intestines, *villi* were not perceptible to the naked eye. The verge of the *anus* was covered by the apertures of numerous follicular glands.

“ The disposition and admeasurements of the alimentary canal corresponded with those of the female previously given. The spleen was one-third smaller; the *pancreus* had the same peculiar form, resembling the neutral symbol of the entomologist ♀. The liver had the same minutely mottled aspect which was observed in the female; but on employing the test of injection, the vascularity of the small bodies, which might have been mistaken for tubercles, became immediately evident, proving them to be the *acini* of the liver, remarkably distinct in this animal. The inner surface of the gall-bladder and its duct was villous, but without *rugæ* or valvular structure. The tubular structure of the kidneys terminates in a single pointed *papilla*: the ureters communicate, and end by a common orifice at the middle of the posterior surface of the bladder.

“ The *testes* were about the size of horse-beans, and lay upon the *pubes*; the integument covering them had not any distinct appearance



of *scrotum*. The extremities of the *epididymis* or *globi* were proportionately large. The *vas deferens* had a blind process on each side. The urinary bladder was contracted, and its coats consequently were thick: the membranous portion of the *urethra* was one inch and a half long, and its canal wide. The prostatic glands, analogous in their situation to Cowper's, were two in number, and as large as the *testes*; each terminated by a single wide duct, a few lines from the extremity of the *glans*. An interesting provision exists to prevent the secretions of these glands being driven into the large extent of *urethra*, which lies between them and the bladder: the inner membrane of the canal is raised in a semilunar fold behind the entrance of the ducts, which must act as a very complete valve during the turgescient state of the *parietes* of the canal. The *penis* is about eight lines in length; the *glans* of a pointed form, unarmed, the external orifice a longitudinal groove directed backwards.

"Both animals died with the pupil expanded, and of a circular form."

A description of the *Chiru Antelope*, by B. H. Hodgson, Esq., dated Valley of Nepal, Oct. 18, 1830, was read.—This animal, the supposed Unicorn of the Bhotians, was first described imperfectly by Dr. Abel, from an injured skin, and the notes of Mr. Hodgson. Dr. Abel gave to it the name of *Antelope Hodgsonii*; and it has subsequently been mentioned by M. Lesson as the *Ant. Chiru*, and by Major Hamilton Smith as the *Ant. Kemas?* Opportunities which have occurred since his original notes were prepared have enabled Mr. Hodgson to make some additional observations on other individuals, the results of which are given in the present paper. The species may be characterized as follows:—

ANT. HODGSONII, Abel. *Ant. cornubus longissimis, compressis, gradatim attenuatis, suberectis, lyratis, annulis 15–20 anticè prominentibus, apicibus tantùm lævibus: vellere duplici; interno lanato cinerascenti-cæruleo; externo piloso supernè cervino, infernè albo: tumore molli utrinque supra nares.*

Fœm. *simillima?*

Longitudo circà 5 ped.; alt. ad humeros 2½—3 ped.

In form the *Chiru Antelope* approaches the *Dcer*. Its limbs are long and slender, but not weak: its neck is also rather elongated and slender: its head tapers forwards, but is somewhat deficient in elegance on account of the nasal tufts, and of a rather unusual quantity of hair and bristles about the mouth and nose. In its ordinary attitude the line of the back is nearly horizontal; the neck is bowed outwards and downwards, so that the head is carried not much above the level of the back; and there is a stoop in the hind legs on account of which, though they are rather longer than the fore legs, the hind quarters are not perceptibly raised.

The ears and tail are moderate, and devoid of any peculiarity; so likewise are the suborbital sinuses. The horns are exceedingly long, measuring in some individuals nearly two feet and a half. They are placed very forward on the head, and may be popularly



said to be erect and straight, although properly speaking they bend forwards and outwards, and become suddenly incurved towards their tips. These latter are rather acute, and the horns near them become round; below they are laterally compressed, and are marked by a series of from fifteen to twenty rings, extending from the base to within six inches of the tip. On the lateral and dorsal surfaces of the horn these rings are little elevated, and present a wavy rather than a ridged appearance; but on the frontal surface they exhibit a succession of heavy, large ridges, with furrows between.

Close to the outer margin of either nostril is a soft, fleshy, or rather skinny, tumour or tuft, about the size and shape of the half of a domestic fowl's egg. These tufts, the purpose of which Mr. Hodgson has been unable to discover, appear to be peculiar to the *Chiru*.

In its double covering the *Chiru* agrees with all the hairy animals of Tibet; where not merely the goats and sheep, but the dogs, horses, and kine, possess an under fleece of soft and fine wool. The hair forming the external coat is about two inches long, and so closely set as to present to the touch an impression of solidity; it is straight, nearly erect, rather harsh, and feeble, being for the most part hollow like a quill. Grey blue is the general colour of the hair throughout nine-tenths of its extent from root to tip, as well as exclusively so of the wool beneath the hair. This radical and prevalent colour is, however, but dimly seen through the external or superficial hues with which it is overlaid; hues which on the upper parts of the animal are fawn-red, and on its under surface and the inside of its limbs are white. The shoulders are faintly marked by a tracing of colour lighter than that of the surrounding parts. Down the front of all the legs runs a black line reaching to the hoofs on the fore legs, but to the knees only on the hind legs. The forehead is perfectly black, and a fringe of the same hue proceeding from the bottom of the frontal skin passes round the outsides of the nasal tufts. These tufts, as well as the rim surrounding them, are black; as are also the bristles of the mouth and lips; the few hairs, however, which depend from the lower lip are white.

Some of the dimensions of the fully grown young male from which the preceding description was taken are as follow: Entire length, 4 feet 11 inches; length, minus tail, 4 feet  $2\frac{1}{2}$  inches; length, minus head and tail, 3 feet  $6\frac{1}{2}$  inches; height at the shoulder, 2 feet 8 inches; height of the fore-leg, 1 foot 8 inches; of the hinder leg, 1 foot 9 inches; length of the horns, 2 feet  $\frac{1}{2}$  inch; basal depth of the horns, fore and aft,  $2\frac{1}{8}$  inches, from side to side,  $1\frac{1}{4}$  inch.

The *Chiru Antelope* is highly gregarious, being usually found in herds of several scores and even hundreds. It is extremely wild and unapproachable by man, to avoid whom it relies chiefly on its wariness and speed; but though shy it is not timid, for if overtaken it meets danger with a gallant bearing. The individual which was kept alive at the Residency, though captured very young, was perfectly fearless, and could only be approached with caution. It

is said by some to inhabit the plains of Tibet generally; while, according to others, it is confined to those plains which are within sight of mountains, especially of the Hemâchal mountains. It cannot bear even the moderate heats of the valley of Nêpâl; an individual belonging to the Lama of Digurchee, having died at the commencement of the hot season, when the maximum of temperature was only 80°, a temperature seldom reached for two hours a day or for two days of that month, March.

The *Chiru* is extremely addicted to the use of salt in the summer months, when vast herds are often seen at some of the rock-salt-beds which so much abound in Tibet. They are said to advance under the conduct of a leader, and to post sentinels around the beds before they attempt to feed.

To complete this abstract of Mr. Hodgson's account of the *Chiru*, it may be added, that at the following meeting of the Committee there was exhibited a drawing of its head and horns, which had been subsequently transmitted by that gentleman; together with a duplicate of his paper, to which he had added that he had recently seen a very old male, in which the dark parts had become grizzled and almost white.

Mr. Vigors recalled the attention of the Committee to the subject of the Himalayan Birds; confining his observations this evening to some species of the family of *Merulidæ* or *Thrushes*. Among these was a new species closely allied to the common European *Blackbird*, exhibiting the yellow bill and general black plumage of that bird, but differing from it in the varied markings of the wing. It was characterized as follows.

*TURDUS PÆCILOPTERUS*. Mas. *Turd. corpore nigro, abdomine imo subcinerascenti-fusco; remigum mediarum pogoniis externis pteromatibusque cineraceo-griseis, his apice albis; rostro pedibusque flavis.*

Fœm.? *Corpore supra brunnescenti-griseo, subtus pallidiori; pteromatibus remigumque mediarum pogoniis externis ut in mari notatis, sed colore subrufescenti tinctis.*

Statura ferè *Turdi Merulæ*, Linn.

A species of *Cinclus* was exhibited, differing from the European in the uniform colouring of the plumage. Mr. Vigors expressed his opinion that it was the same species as that discovered in the Crimea by Pallas, and described by M. Temminck in his 'Manuel' as having "tout le plumage, sans exception, d'une seule nuance brune, couleur de chocolat."

The following may be given as its specific character.

*CINCLUS PALLASII*, Temm. *Cincl. unicolor, intensè brunneus; rostro pedibusque fuscis.*

Statura *Cincli aquatici*, Bechst.

Mr. Vigors referring to the bird which had been described by the Prince of Musignano among the species from the Rocky Mountains, added to his Synopsis of North American Birds in the 'Annals of the Lyceum of New York,' [p. 439, sp. 94 bis], and which was

conjectured by that distinguished naturalist to be the same as the *Cinclus Pallasii*, stated that upon comparing the original specimen, so described by the Prince, with the present bird, he found them perfectly distinct. The American bird is of a deep ashen grey colour, the Himalayan of a chocolate brown;—the bill of the former is yellow with a dark apex, and the legs are yellow, the same members in the latter being fuscous. There are thus three species well known of this genus; the *Cincl. aquaticus*, *Pallasii*, and *unicolor*, which latter name had been originally given by the Prince of Musignano to the American bird, on the supposition of its being distinct. The *Cincl. Mexicanus*, Swains., [Phil. Mag. July 1827], if not the same as the Rocky Mountain bird, as stated in the 'Annals of the Lyceum,' will form a fourth species.

A series of Birds belonging to this family were then exhibited, which Mr. Vigors referred to a group characterized by Dr. Horsfield and himself in the 15th volume of the 'Linnean Transactions,' under the name of *Cinclosoma*, the type of which was an Australian species, the *Turdus punctatus* of Dr. Latham. Mr. Vigors pointed out the characters that seemed to distinguish the *true Thrush*, or the type of the restricted genus *Turdus*, Auct.; which consist in a subacuminated wing, in which the first quill feather is extremely short, almost spurious, the second somewhat shorter than the third, and the third, fourth and fifth almost equal, and the longest; in the tail being even, and of moderate length; and in the *acrotarsia* or front covering of the *tarsi* being generally entire, or undivided by any perceptible scales. To this typical division of the family belong the *Throstle*, *Blackbird*, *Ring-Ouzel*, *Red-Wing*, *Fieldfare*, and *Missel Thrush* of Europe, the *migratory Thrush* of North America, the *Himalayan Blackbird* just described of India, the *varied Thrush* of New Holland, &c. &c. On the contrary, the group of *Cinclosoma*, while it exhibits the general characters of the bill of the *true Thrushes*, although partially modified in some of the species, displays an entirely different conformation of the wing and tail; the former of these members is comparatively short, and rounded, the first quill feather being of moderate length, the second, third, fourth, and fifth, gradually increasing in length; the fifth, sixth, seventh and eighth, nearly equal; and the rest gradually decreasing; the tail at the same time being lengthened and graduated, as is usually the case in birds where the wings are short and rounded. The scales also of the *acrotarsia* in *Cinclosoma* are conspicuously distinct. In this group the feathers are generally decomposed, as has been observed to be the case in the genus *Timalia*, Horsf., to which it bears a close affinity, and from which perhaps it can only be separated by the more short and arched beak of the latter group. Mr. Vigors observed that there were several Indian species which might be referred to this group. The four following, which were apparently hitherto undescribed, were then characterized as belonging to it.

CINCLOSOMA OCELLATUM. *Cinclos. capitis fronte et lateribus, corporeque supra rufo-brunneis; vertice, colloque in fronte nigro-*

brunneis; pectore albescenti-rufo nigro fasciato; abdomine pallidè rufo, nuchá, dorso, alis, caudæque tectricibus ocellis anticè atris posticè albis, notatis; remigibus et reetricibus lateralibus griseo-fuscis, apicibus albis.

Rostrum pedesque flavescentes, illius culmine fusco. Remigum mediarum pogonia externa grisea, strigam griseam alarem exhibentes. Tectrices alarum inferiores rufo nigro albescentique variegatæ. Longitudo corporis, 14; alæ a carpo ad remigis 6tæ apicem, 5; rostri,  $1\frac{3}{10}$ ; tarsi,  $1\frac{7}{10}$ ; caudæ, 7.

CINCLOSOMA CAPISTRATUM. Cinclos. capite supra, genis, pteromatum maculá, reetricibusque ad basin intensè atris; remigum pogoniis externis, reetricum apicibus, tectricibusque alarum fusco-griseis, his fasciá albá notatis; dorso medio pallidè brunnescenti-griseo; collo in fronte, nuchá, pectore, abdomineque summo pallidè, dorso abdomineque imis saturatiùs, rufis.

Rostrum nigrum, pedes flavescentes. Remiges interiores, reetricumque mediarum bases rufi. Longitudo corporis, 10; alæ a carpo ad apicem remigis 6tæ, 4; rostri,  $\frac{9}{10}$ ; tarsi,  $1\frac{3}{10}$ ; caudæ,  $4\frac{1}{2}$ .

CINCLOSOMA VARIEGATUM. Cinclos. strigá a rictu per oculos extendente, mento colloque in fronte, maculá pteromatum et mediá alarum, reetricumque mediarum basibus atris; fronte, strigá genarum infrà, pectoreque pallidè albescenti-rufis; notá pteromatum, abdomine crissoque rufis; capite suprà, nuchá, dorsoque brunnescenti-griseis; alarum pogoniis externis, reetricumque mediarum quatuor apicibus cineraceo-griseis; reetricibus quatuor utrinque lateralibus externè flavo-olivaceis, apicibus albis.

Rostrum nigrum, pedes rubri. Longitudo corporis, 11; alæ a carpo ad apicem remigis 6tæ, 4; rostri,  $\frac{9}{10}$ ; tarsi,  $1\frac{3}{10}$ ; caudæ,  $4\frac{1}{2}$ .

CINCLOSOMA LINEATUM. Cinclos. capite suprà, nuchá, dorso imo, reetricibusque duabus mediis brunnescenti-griseis; regione post-oculari, dorso summo, corpore infrà, reetricibusque lateralibus pallescenti-rufis; his fasciá nigrá pone apicem album notatis; capitis nuchæque plumis in medio lineis fuscis, pectoris dorsique summi lineis pallidis, per totam rhachium longitudinem graciliter strigatis.

Rostrum pedesque flavescentes. Longitudo corporis,  $9\frac{1}{2}$ ; alæ a carpo ad apicem remigis 6tæ,  $3\frac{1}{2}$ ; rostri,  $\frac{7}{10}$ ; tarsi, 1; caudæ,  $3\frac{3}{4}$ .



April 12, 1831.

N. A. Vigors, Esq., in the Chair.

Mr. Coleman, adverting to the statement made at the last meeting of the Committee that the female *Armadillo* had destroyed her young, remarked that the cause of this apparent aberration of instinct in a mother was generally to be found in the deficiency of her supply of milk. In the many cases which had fallen under his notice, in which female pigs, rabbits, and other domesticated animals had destroyed their progeny, he had always observed that the secretion of milk in the mammary glands of the dam was greatly, if not entirely, deficient.

A letter was read from M. F. Cuvier, acknowledging the receipt of the Society's circular, and embracing the offer contained in it of establishing a scientific correspondence. M. F. Cuvier states that the zoological subjects which possess at the present moment the greatest interest in Paris are those which have been transmitted from Chili, by M. D'Orbigny, who is now engaged in travelling on account of the Jardin des Plantes. M. F. Cuvier has not yet examined them with care; but he has observed among them a large *Rodent* animal, which is probably the *Patagonian Cavy* of Pennant, a species unknown to later zoologists: it forms the type of a new genus allied to *Ancema* and *Kerodon*, its teeth having nearly the form of those of the last-mentioned group, and being without distinct roots. He has also remarked a very small species of *Ratel*, distinguished from the type of the genus, as it exists in the old continent, by having two false molar teeth less in each jaw: it is also much smaller, its size not exceeding that of the *Pole-cat*. (*Mustela putorius*, L.) It is remarkable, he adds, that in Chili, the southern extremity of America, a second species should at length be found of a genus hitherto met with only in Africa and in India. "If Buffon had been acquainted with this fact, he would have had a fine example to adduce in favour of his hypothesis of the diminutive size of the animals of the New World, as compared with those of the Old." The Jardin des Plantes has recently obtained living individuals of the small *Deer* of America, named by M. F. Cuvier *Cervus campestris*; this will shortly be figured in his 'Histoire Naturelle des Mammifères.' Two other *Deer* have been presented to the collection by M. Dussumier, by whom they were brought from Timor: these appear to belong to two new species. From Madagascar, M. Goudot has brought a small carnivorous animal, which he states to be the true *Vansire*. The *cranium* of a very young specimen agrees closely with that of a very young individual of the *Gulo orientalis*, Horsf.; and as these *crania* in their general structure and their system of dentition differ from those of the genus



*Gulo*, and approach the *crania* of the *Viverridæ*, it is probable, M. F. Cuvier remarks, that the *Gulo orientalis*, and M. Goudot's animal, should both be referred to the family of *Civets*.

At the request of the Chairman, the following Notes of the dissection of the *Ruffed Lemur* (*Lemur Macaco*, L.) were read by Mr. Martin.

"The *Ruffed Lemur* which died lately in the Museum was a male, and one of a fine pair recently brought to this country. It exhibited marked symptoms of illness a few days only before its death, but had probably been long diseased.

"On the *abdomen* being opened, the *viscera* presented themselves as follows. In the epigastric and hypochondriac regions, stretching from side to side, appeared the liver, and below this the stomach, and the *omentum* loaded with fat, extending to the *pubes*, and covering the whole of the intestines. On turning aside the *omentum* and intestines the spleen was observed; it was large, dark coloured, bound by adhesions to the surface of the kidneys, and studded with numerous small *vomicæ*, from which, on cutting, a thick *pus* oozed out abundantly.

"The liver was trilobed, deeply divided, of a pale colour, singularly mottled with red, and indurated: on cutting into it, the same paleness was found to obtain, joined to a sort of granulated appearance and fracture. The gall-bladder was small, and contained no bile, to the secretion of which the liver was probably of late inadequate. The *ductus choledochus communis* entered four inches from the *pylorus*.

"The intestines were pale and flaccid with extensive adhesions both of these and the mesentery, affording proofs of inflammatory action. The length of the *colon* and *rectum* was two feet; that of the *cæcum* thirteen inches; the shape of the latter was not unlike that of a horn, its base being broad, from whence it gradually tapered to a point, with spiral gyrations on the mesentery. The small intestines measured 5 feet  $4\frac{1}{2}$  inches.

"The cavity of the chest was relatively small, that of the *abdomen* advancing high. The lungs were divided into three lobes on the left, and three large and one small lobe on the right side. Their surface afforded strong indications of inflammation, and their substance when squeezed between the fingers communicated a very distinct *crepitus*. The heart was large, and tolerably firm; on the surface of the right ventricle there were two hydatids in a line one above the other.

"The kidneys were rather large, and their structure soft and pulpy. The *testes* were small, elongated, lying in front of the *pubes* and distant from the abdominal ring about one inch. The bladder was small and long; and the ureters entered about a line from the neck. The *vesiculæ seminales* were small and handle-shaped, with a single turn.

"The tongue was long, thin, rounded at the tip, of a black colour except at the root, soft in texture, and covered with downy

*papillæ*, which increased in size and length, but diminished in number, towards the root. The *epiglottis* was large and broad; the *rima glottidis* long; and from the arytenoid cartilages two processes extended backwards, having a triangular flattened surface ending in a point."

The body of one of the Society's specimens of the *Razor-billed Curassow*, (*Ourax Mitu*, Cuv.,) was laid on the table, and Mr. Yarrell pointed out the peculiarities of its very elongated *trachea*, which is produced between the skin and the muscles beyond the *sternum*, and reaches almost to the vent. It has been figured by Dr. Latham, M. Temminck, and others. Mr. Yarrell displayed the sterno-tracheal muscles extending along the whole of the tube, and remarked that this disposition prevails, with one or two exceptions, in all birds in which the fold of the *trachea* is not included in bone. In those birds, on the contrary, in which the prolongation of the *trachea* enters a cavity in the *sternum*, (as for instance in the *Hoopers Cygnus ferus* and *Cygn. Bewickii*,) the sterno-tracheal muscles pass from the entering portion of the tube to that which has just left the bone, and are not continued along the fold of *trachea* included within the bone.

A portion of a large collection of Fishes from the Mauritius, presented to the Society by Mr. Telfair, was exhibited; and Mr. Bennett called the attention of the Committee to the species of *Mullet* contained in it. These were eight in number, and belonged to the extra-European form to which the name of *Upeneus* has been given by M. Cuvier, and which is distinguished from the European *Mullets* by the presence of teeth in the upper jaw. Four of these fishes appear to have been previously undescribed, and may be thus characterized:

**UPENEUS BITÆNIATUS.** *Up. dentibus velutinis apud maxillas, vomerem, et ossa palatina: capite pone oculos subdepresso: pinnis dorsalibus caudalique nigro obliquè fasciatis; corpore toto rubicundo, dorso argenteo-vittato, vittis duabus aureis infra lineam lateralem.*

D. 7,  $\frac{1}{2}$ . A.  $\frac{1}{2}$ . C. 15. P. 16. V.  $\frac{1}{2}$ .

Affinis *Up. vittato*, Cuv. & Val.: sed differt vittis duabus aureis; differt etiam vertice depresso rostroque subtumido, capite haud æqualiter rotundato.

**UPENEUS MAURITIANUS.** *Up. dentibus velutinis maxillaribus: rostro brevi, orbitæ subæquali: pinnis dorsali secundâ analique declivibus.*

D. 7,  $\frac{1}{2}$ . A.  $\frac{1}{2}$ . C. 15. P. 16. V.  $\frac{1}{2}$ .

Affinis *Up. flavo-lineato*, Cuv. & Val.: brevior est, rostrumque multo brevius, in illo nempe orbitæ sesquidiametrum æquat.

**UPENEUS PLEUROSTIGMA.** *Up. dentibus conicis maxillaribus: corpore pinnisque (præter dorsali 2dâ analique) cinnabarinis; maculâ magnâ rotundatâ laterali mediâ nigrâ; punctis plurimis infra et post oculos aureis.*

D. 8,  $\frac{1}{2}$ . A.  $\frac{1}{2}$ . C. 15. P. 16. V.  $\frac{1}{2}$ .

Affinis *Up. lateristrigæ*, Cuv. & Val. Caput rotundatum sicut in *Mullo Surmuleto*, L.

UPENEUS IMMACULATUS. *Up. dentibus conicis maxillaribus distantibus: corpore, basi anteriore pinnæ dorsalis prioris, apiceque lobi inferioris, caudalis, cinnabarinis: cirris albis, ultra operculum productis.*

D. 8,  $\frac{1}{2}$ . A.  $\frac{1}{2}$ . C. 15. P. 16. V.  $\frac{1}{2}$ .

Affinis *Up. chrysehydro*, Cuv. & Val.: sed corpus duplò latius, rostrumque magis declive.

The species characterized embrace instances of three of the distinct types of dentition indicated in this genus by MM. Cuvier and Valenciennes.

The original drawings by Mr. Abbott of the Lepidopterous Insects of Georgia, (engravings from which were published by the late Sir J. E. Smith,) were exhibited. The Committee was indebted to Mr. Henry Brogden, F.L.S. for this exhibition.

Mr. Vigors referred to a pair of *Owls* which had been lately added to the Society's collection. These were closely allied to the European *Strix flammea*, a species which is found with some slight modifications of character all over the globe; but from which the present species differs essentially, exclusively of other characters, by the markings of the disk of the face. They were from Australia; and not having appeared to have been noticed by any ornithological writer were characterized as follows.

STRIX PERSONATA. *Strix pallidè badia; capite suprâ, dorso, alisque fusco brunneo variegatis, albisque guttulis parcè sparsis; corpore infrâ pallidiori, brunneo parcè maculato; caudâ badio brunneoque undulatim fasciatâ; disco purpurascenti-badio, circulo marginali intensè brunneo notato; digitis unguibusque fortissimis.*

Longitudo corporis, 13 $\frac{1}{2}$ ; alæ a carpo ad apicem remigis 2dæ, 9; tarsi, 2; caudæ, 7 $\frac{1}{2}$ .

A series of birds, belonging to several Families, which were apparently undescribed species, was exhibited by Mr. Leadbeater who mentioned his intention of continuing a similar exhibition during some future meetings of the Committee, and then giving a general description of the whole.

April 26, 1831.

Joshua Brookes, Esq. in the Chair.

Mr. Vigors exhibited, from the collection of Mr. Leadbeater, an undescribed species of *Cockatoo* from New Holland, and pointed out its distinctive characters, which may be expressed as follows:

PLYCTOLOPHUS LEADBEATERI. *Plyct. albus*; *genis, collo in fronte, pectore, tetricibus alarum inferioribus, abdomineque medio roseo-tinctis; cristæ elongatæ occipitalis plumis basi roseis, apice albis, maculâ flavâ in medio notatis; pogoniis remigum reetricumque internis roseis, illorum saturatioribus.*

Statura *Plyct. sulphurei*, Vieill.

Eleven species of *Chatodons*, forming part of the collection of *Fishes* from the Mauritius presented by Mr. Telfair, were laid on the table. Seven of these were referable to the genus *Chatodon* as restricted by M. Cuvier; and among them Mr. Bennett pointed out more particularly the *Chæt. strigangulus*, Sol.; the *Chæt. vittatus*, Schn.; the *Chæt. Lunula*, Cuv. & Val.; and two species which he believed to be new to science, and which may be thus characterized:

CHÆT. FLAVESCENS. *Chæt. flavus*; *ore, fasciâ oculari, lineâ pinnas dorsalem analemque posticè ambiente, apiceque pinnarum ventralium nigris; lateribus argenteo vittatim guttulatis; pinnâ caudali rectâ, apice latè hyalino.*

D.  $\frac{1}{2}$ . A.  $\frac{3}{8}$ , &c.

Affinis, ut videtur, *Chæt. virescenti*, Cuv. & Val. Differt colore flavo; pinnis verticalibus posticè nigro tenuiter cinctis; lateribus obscurè argenteo-guttulatis.

CHÆT. ZOSTER. *Chæt. brunneo-niger*; *zonâ latâ mediâ ventreque argenteis; pinnâ caudali rectâ albâ: fasciâ oculari nullâ.*

D.  $\frac{1}{2}$ . A.  $\frac{3}{8}$ . P. 17. C. 15. V.  $\frac{1}{2}$ .

The remaining species exhibited types of the genera *Heniochus*, Cuv.; *Zanclus*, Cuv. & Val.; *Holacanthus*, Lacép.; and *Platax*, Cuv.: the *Heniochus* being the species recently described by MM. Cuvier and Valenciennes as the *Hen. monoceros*. In this individual the spine in front of each orbit is strong, almost equalling the single spine which projects from the middle of the slope of the head; and the whole contour of the anterior part of the fish approaches very nearly to that of *Taurichthys*, Cuv. & Val.

Mr. Gray exhibited several living specimens of the *Rana Rubeta*, L., the *Natter-jack* of Pennant, a reptile intermediate in form and habits among the British *Amphibia* between the *Toad* and the *Frog*. He stated that this animal, the indigenous existence of which has frequently been doubted, is found abundantly on Blackheath, and on other commons in the neighbourhood of London.

[No. VI.] ZOOLOGICAL SOCIETY. PROCEEDINGS OF THE COMM. OF SCIENCE.



Mr. Gray also exhibited several specimens of the genus *Rhynchæa*, Cuv., and pointed out from among them two distinct species, which may be thus characterized:

*RHYNCHÆA CAPENSIS*, Sav. *Rhynch. remigibus angustis, fasciis latis flavis sex notatis, infra griseis, nigro-vermiculatis, flavoque fasciatis; secundariarum maculâ pogonii externi, fasciâque pogonii interni, flavis.*

Long. corporis  $9\frac{3}{4}$  unc.: tarsi,  $21\frac{1}{2}$  lin.: digiti unguisque medii,  $20\frac{1}{2}$  lin.

*RHYNCHÆA PICTA*. *Rhynch. remigibus sublatis, externis flavo latè 7-fasciatis, infra griseo nigroque vermiculatis, interno obsolete flavo-fasciato: secundariarum apicibus, maculâ ultimâ fasciæ-formi pogonii externi, fasciâque pogonii interni, albis.*

Long. corporis  $10\frac{1}{2}$  unc.: tarsi,  $19\frac{1}{2}$  lin.: digiti medii, 19 lin.

The wing-coverts of both species are spotted with yellow in the young state; and in the adult state are metallic olive with black bands.

Mr. Gray added that the three figures of birds of this genus which were published by Buffon, and which had of late years been regarded by M. Temminck and by M. Cuvier as representing various states of but one species, were none of them sufficiently correct in the details to enable him to refer either of the present species to the representations given in the 'Planches Enluménées;' but that the figure of the *Rhynchæa Capensis* given by Savigny in the 'Oiseaux d'Égypte' [tab. 14. fig. 2.], furnished a faithful representation of the first species exhibited by him. He had not, however, obtained this bird from the Cape of Good Hope, his specimens being from India and China. The second species, *Rhynchæa picta*, he had received from Africa as well as from India and China.

Mr. Vigors called the attention of the Committee to the *Frigate-bird* (*Tachypetes Aquilus*, Vieill.), and dwelt upon those peculiarities of its organization which point out its station in the series of natural affinities that connect the orders of birds. Although it possesses the webbed feet which constitute the technical character of the *Natatorial Order*, the weakness of its legs and their complete covering of feathers preclude it from employing these members in the same manner as the typical groups of the *Swimming Birds*; while on the other hand its great powers of wing and tail adapt it for powerful and long-continued flight, and evidently connect it with the *Raptorial Order*, which it also resembles in its manner of taking its food. It is in fact rather an inhabitant of the air than of the water; and it has been believed that it derives support during its unlimited flights not merely from the strength and expansion of its wings and the singular mechanism of its tail, but also from the buoyant nature of the inflated sac beneath its throat. A proof of the correctness of the opinion that this pouch is really an air-sac, and that it is filled with air, which passing through the bones becomes rarified and capable of imparting a high degree of buoyancy, has recently been obtained from the anatomical notes made by Mr. Collie, late Sur-



geon of H.M.S. Blossom, who accompanied Captain Beechey in his voyage to Behring's Straits; notes which will shortly be published in illustration of the natural history of that expedition. "The pouch beneath the throat of this bird," says Mr. Collie, "is of a yellowish red colour, and when distended, the feathers on its upper and posterior surface are separated to some distance from each other, and exhibit very distinctly the quincuncial order in which they are implanted. On first looking at this pouch, I was a little surprised at finding that it did not communicate with the mouth or *fauces* in any way that I could perceive. I succeeded in inflating it only by long and forcibly blowing into the *trachea*. I desired the man who had the skinning of the specimens brought on board to inflate the pouch before commencing the skinning, and to let me know when he had advanced to the shoulders. He however dislocated the shoulder-joint first, when the distended pouch immediately collapsed. The *trachea* had been tied. As soon as I was informed of this, I had little doubt that the pouch had been inflated from the lungs; and on observing two wide openings, one anterior to the humeral articulating face of the *scapula*, the other the usual opening of the joint, I hesitated not to infer that it was through the first of these the air had passed in, and that the dislocating of the joint, by which its capsular ligament was torn, had allowed the air to escape at the opening which corresponds to that on the head of the *humerus*, and which immediately leads, as well as the other just mentioned, into the centre of the *scapula*. I now opened the *trachea* immediately before the *sternum*, and again attempted inflation from that part, but in vain. I tried it also, but with no better success, from the *larynx*. I next examined with the blowpipe near the opening of the *scapula*, in the cellular substance under the skin, and soon detected a small opening that conducted the air to the pouch, which was readily inflated by blowing through the opening, and so long as it was shut the pouch continued distended. That this opening was not artificial,—the effect of the rupture of the fine membrane lining the air-bladder,—was evident from its not opening directly into it, but only after a passage of some length, gradually enlarging. That this was the sole opening into the pouch appears proved from the fact that after detaching the sac from all the parts beneath, *i. e.* from all the parts excepting the skin, it did not permit the gas to escape except by this opening, and that it continued to be capable of inflation from it. I was satisfied in discovering it on one side; and of course inferred that it was similar on the other, the opening of the *scapula* being similar."

At the request of the Chairman, Mr. Martin read the following notes of the dissection of a female *Testudo Græca*, L., which died in the possession of Oct. Morgan, Esq. The animal was of the usual size, its dimensions being as follows: the *carapace* in length 13 inches; the *plastron*  $9\frac{1}{2}$  inches in length; and the circumference of the shell, 18 inches.

“ The *plastron* being removed, the *viscus* which first attracted notice was the liver, of large dimensions, stretching across from side to side, and quite covering the stomach. Its structure was very firm, and its colour a dull ochre. It consisted of two lobes, both deeply fissured. In the cleft of the right lobe was situated the gall-bladder, of the size of a large nut, and containing green bile. The cystic and hepatic ducts united, and entered the *duodenum*  $1\frac{1}{2}$  inch below the *pylorus*.

“ On the liver being turned aside, the stomach presented itself; its coats were firm and thick, especially in the pyloric portion, which was produced long and narrow to the extent of  $3\frac{1}{2}$  inches; the total length of the stomach was  $6\frac{1}{2}$  inches.

“ The small intestines, remarkable also for their firmness, measured 2 feet 8 inches in length, and terminated in large intestines very little exceeding them in circumference. In the *Testudo Indica* lately dissected, there was no *cæcum*; but in the present species the *cæcum* existed; its form was globular. On the left side the large intestine assumed a sigmoid flexure with a bold sweeping fold, and then took on a straight and short course to the *cloaca*; the length of the large intestines was 1 foot 8 inches. They contained *fæculent* matter in small quantity, consisting of fibrous vegetable substance. There were no longitudinal bands.

“ The *cloaca*, into which opened the bladder and oviducts, was in length 2 or 3 inches. The bladder in the present instance did not exhibit that immense volume which was so remarkable in the *Test. Indica*: it was of a moderate size; both in this respect and in figure resembling a pear. It was united to the sides of the upper shell by a broad peritoneal ligament, and was connected also to the *pelvis* by several fibrous bands. Its coats were extremely thin and fibrous; and it contained a small quantity of thick fluid.

“ The oviducts were before their opening into the *cloaca* united for a considerable distance, and were there thick and firm, becoming gradually thinner as they proceeded upwards, their course being in an indefinite convoluted manner. Throughout the greatest part of their length there ran a number of longitudinal folds, which became fainter, and were at length obliterated as the oviducts proceeded.

“ The ovaries contained a multitude of eggs of various sizes, and of a round figure; fifty of them at least were nearly as large as a pigeon's egg: they were not covered with a shell, and were filled with a thick yellow yelk.

“ The kidneys laid upon the lungs (which extended over the *carapace*), to which they adhered; their figure was somewhat 3-sided, from a broad flat base, with a rounded *apex*: their length was  $2\frac{1}{2}$  inches. Their surface was convoluted in a very singular manner, the folds being divisible, producing an appearance not unlike that of the *cerebellum*, which they also resembled in colour.

“ On the *mesocolon* and near the intestine was situated an oval glandular body of a dark colour, and of the size of a sparrow's egg, containing white gritty specks. From this, which I suspected to be the spleen, a large vein proceeded along the mesentery, and uni-

ting with several others, entered the liver; all the veins proceeding from the *viscera* along the mesentery were very large and full of dark blood.

“ The tongue was thick and fleshy, about an inch in length and two-thirds in breadth, white in colour, and covered thickly with elongated *papillæ*; the tip was rounded, the base heart-shaped. Between the *glottis* and base of the tongue so slight a distance intervened, that the *larynx* might be said to open directly into the mouth, the *glottis* rising to a point corresponding with and adjusted to the heart-shaped indentation at the base of the tongue. This elevated *apex* is divided downwards and a little way longitudinally by the *rima*. The *larynx* is supported posteriorly by the *os hyoides*, which is broad, flat, and pointed with double barbs, resembling some double-barbed arrow-heads: it is however composed of three bones, viz. a body, and two long curved bones united by cartilages to it, the body itself ending in two long cartilaginous processes; where the osseous processes arise there is also on each side a small cartilaginous projection. An inch below the *rima* the *trachea* divides into two branches, or *bronchiæ*, which run down for a little way on each side of the neck, but shortly, in consequence of the bend of the neck, almost at the back of it, and describing in their course a large sigmoid inflexion, they then subdivide and immediately enter the lungs. About half an inch below the great division a strong muscle of two or three lines in breadth passes across, arising from the *vertebræ* of the neck on one side and united to the same on the opposite, thus acting as a *constrictor* on the two tubes, and being doubtless of use in the deglutition of air. The length of the *trachea* and the great branches to the lungs was  $7\frac{1}{2}$  inches; the rings were perfect. The subdivisions of the *bronchiæ* before entering the lungs are surrounded closely by numerous yellow glands.”

May 10, 1831.

W. Yarrell, Esq. in the Chair.

A letter, addressed by Richard Thursfield, Esq. to Dr. Roots, was read, in illustration of the history of a hybrid between the *Hare* and the *Rabbit*, which was lately living at the Society's Farm. A gentleman who was rearing a pair of tame rabbits, placed with them, when they were about two months old, a young buck hare apparently about the same age, which became in a short time as domesticated as its companions. When the doe rabbit was old enough, she had, by the buck rabbit and the hare, a litter, consisting of three young ones, which resembled in all respects the mother and buck rabbit, and of three mules. Two of these mules shortly died: the third, a female, was reared with rabbits of her own age, and when six months old produced one young one: she was afterwards bred from eight times, by tame rabbits and by a wild one, but no opportunity occurred of placing a buck hare in confinement with her. Her progeny by a white tame rabbit, with which she bred twice, consisted of two young ones, which were perfectly gray, and of two which were spotted: the latter are still alive, and breed regularly, producing from five to eight at a time. The average weight of the progeny of the mule female was about five pounds; one, however, weighed six pounds and a half. She died shortly after coming into the Society's possession.

Mr. Owen, having examined the body of this hybrid animal after its death, reported that its size and colour were those of the *Hare*, but that its hinder legs were shorter than in that species, and agreed rather with those of the *Rabbit*. The length of its small intestines corresponded with that of the hare; its *cæcum* was seven inches shorter; while its large intestines measured one foot more than those of the hare.

Mr. Bennett called the attention of the Committee to the specimen of the *Sociable Vulture* (*Vultur auricularis*, Daud.), which has been an inhabitant of the Society's Gardens for nearly two years. His object in advertising to this bird was to correct an erroneous impression which might be produced on the minds of those who had never seen an individual of the species, by the statement made by M. Ruppel, in a late Monograph of the genus to which it belongs, that considerable doubts as to the existence of such a species might reasonably be entertained. M. Ruppel's doubts appear to have been excited by the fact which he reports, that the stuffed skin in the collection of the Duc de Rivoli at Paris, which has been regarded as that of the *Vult. auricularis*, is evidently factitious; the folds of the skin on the head and neck having been produced in that specimen by artificial means. These doubts must, however, be at once



dissipated by the existence of a living specimen brought from the Cape of Good Hope, according in every particular with Le Vailant's description of the *Oricou*, and having the remarkable folds of skin which pass up the sides of the neck and round the ears developed even to a greater extent than is represented in his figure. A specimen of the *Pondichery Vulture* (*Vultur Ponticerianus*, Daud.), the only other species in which the naked neck has on each side a longitudinal fold of skin, was laid on the table: and it was pointed out that in this bird the fold of skin terminates an inch below the opening of the ear, while in the *Sociable Vulture* it passes upwards and surrounds the upper part of the ear; and that the breast-feathers of the *Pondichery Vulture* are short and rounded, while those of the *Sociable Vulture* are very long and somewhat sabre-shaped.

Mr. Gray stated, that since M. Ruppel's Monograph was written, he had apprised that scientific traveller, in answer to his previous inquiries on the subject, that a specimen of another vulture rejected by him as a doubtful species (the *Vultur Angolensis*, Lath.) exists in the British Museum, to which it was presented on the return of the unfortunate expedition up the river Congo.

Mr. Owen resumed the reading of his Memoir on the Anatomy of the *Orang Utan* (*Simia Satyrus*, L.), portions of which had been communicated by him to the Committee at several of its previous Meetings. On this occasion he limited himself to the myology of the lower extremities.

He commenced by remarking, that no anatomist can contemplate the lower extremity of a Quadrumanous animal, or experience the degree of mobility of which the several parts of it are susceptible in the living or undissected body, without being prepared to find corresponding modifications of the muscular system and consequent deviations from the structure of these parts as they exist in man. It is accordingly in this part of the body that the most remarkable differences in the forms, proportions, and attachments of the muscles are found to obtain between the ape and the human subject; and it will not therefore be matter of surprise to find, that in the *Orang Utan*, whose inferior extremities, from their shortness and flexibility, are so well adapted to the various agile movements of a climber, there exists a high degree of this deviation from the human structure, and an approximation, in some measure symmetrical, to the arrangement of the moving powers in the upper extremity. Variations of more or less consequence occur, indeed, so frequently as to render it necessary to consider the whole of the muscles *seriatim*; and each of them was accordingly described separately as regarded its attachments, form, and relative position. These details are necessarily abridged in the present abstract, except as regards the muscles of the hinder hands, which require a developed notice to render their structure intelligible.

The *glutæus magnus* is a thin narrow muscle, inserted lower down the thigh bone, and having a more posterior origin than in man: its extent of action is consequently increased, though its strength

is diminished. The *glutæus medius* is also relatively longer than in man, and is four times as thick as the preceding muscle. The *glutæus minor* is narrow, long, and thin. The *pyriformis* is narrower than in man. The tendon of the *obturator internus* passes as usual between the *gemini*, of which the inferior is much the largest. The *obturator externus* is considerably larger than the *internal*. The *quadratus femoris* has very little of the square in its shape, being much longer than it is broad, and becoming narrow and rounded at its insertion.

The *biceps cruris* consists of two portions, each maintaining a distinct course and having a distinct insertion: one of these may be termed *ischio-fibularis*, and is inserted into the head of the *fibula*; the other may be termed *femoro-fibularis*; its insertion is into the outer edge of the *fibula* from the head to the middle of the bone, and into the *fascia* in front of the leg. The *semitendinosus* and *semimembranosus* have the same origins as in the human subject, and the latter muscle a similar insertion; but the *semitendinosus* separates from it at the lower part of the thigh, and continues fleshy for some distance below the knee-joint; after which the tendon expands into a broad strong *aponurosis*, which is attached along the anterior and inner aspect of the *tibia* to within a short distance of its lower extremity. In its insertion, the *semitendinosus* of the *Chimpanzee* approaches more nearly to the human type, being implanted by a narrower tendon in front of the *tibia* immediately beneath the insertion of the *gracilis*; but both these muscles are inserted lower down than in man.

Mr. Owen remarked, that the names of these last-mentioned muscles by no means agree with the proportion of tendon found in them either in the *Orang* or the *Chimpanzee*, the fleshy portion being in these animals of much greater extent;—a fact which is in accordance with a law that receives many illustrations from the myology of the *Orang Utan*, viz. that the extent of the fleshy part of a muscle is in proportion to the quantity of motion it has to produce: and this is generally indicated by the degree of motion allowed by the structure of the joint which is the centre of the motion in question. Thus in the human subject it is very rare that an individual can, by the contraction of the flexors of the leg, bring the heel in contact with the back of the thigh; but in the *Orang Utan* this action is readily performed, and without the slightest opposition at the knee-joint.

The *tensor vaginæ femoris* exists distinctly in the *Chimpanzee*, but no trace of it was found in the *Orang*. A more powerful *rotator* of the thigh inwards exists in both animals in a peculiar muscle, which may be termed *invertor femoris*. It was first discovered by Dr. Traill in the *Chimpanzee*; and its origin, form, and insertion in that animal agree with those which are met with in the *Orang Utan*. Mr. Owen considers that from its insertion into the under and outer part of the *trochanter major*, and consequently very near to the centre of motion, it can have little effect in drawing the thigh up towards the body as compared with the power of the proper flexors

of the thigh. It appears rather to have reference to that structure of the hip-joint which, in the *Orang* especially, from the absence of the *ligamentum teres*, and in the *Chimpanzee*, from the yielding texture of that ligament, permits a greater extent of inward rotation than can be accomplished in man.

The *sartorius* is inserted lower down than in man. The *rectus cruris* corresponds with the same muscle in the human subject; but the *vasti* and *cruræus* are much weaker and thinner, and are evidently little adapted to support the thigh and trunk upon the *tibia*.

The *psaos magnus* and *iliacus internus* are, on account of the form of the *pelvis*, proportionally longer muscles than in man. Beneath them exists a small distinct muscle passing from the fore part of the *ilium*, over and attached to the capsule of the hip-joint, to be inserted into the root of the *trochanter minor*. This muscle is not found in the *Chimpanzee*. The *pectineus* is a narrower muscle than in man, and gives off, in the *Chimpanzee*, a small slip, which is continued under the femoral vessels and outwards to the origin of the *sartorius*. The *gracilis* is a very powerful muscle in the *Orang*, but is comparatively of less bulk in the *Chimpanzee*, in which it is inserted beneath the *sartorius*. On this muscle being removed, a number of others appear passing from the *pelvis* to the inner part of the thigh, among which it is difficult to select those which are precisely analogous to the muscles in the corresponding region of the human subject. Mr. Owen, however, distinguished the *adductor longus*; an accessory *adductor* arising from the upper part of the *symphysis pubis*; the *adductor brevis*; and the *adductor magnus*.

The *gastrocnemius* preserves nearly a uniform thickness and breadth throughout its course, and is continued fleshy down to the *os calcis*: it has no sesamoid bone, as possessed by some monkeys (e. g. *Macacus cynomolgus*, Lacép.), at either of its origins. The *soleus* has only one origin, and is continued fleshy to the *os calcis*. The tendon of the *popliteus* contains, behind the knee-joint, a fibro-cartilaginous sesamoid body, which was noticed by Camper, who states that it exists also in baboons, dogs, cats, &c.: this body, however, is not found in the *Chimpanzee*.

In the *Orang Utan* there are some important differences in the disposition of the flexors of the toes, as compared with the *Chimpanzee* and inferior *Simiæ*; thus the muscle analogous to the *flexor longus pollicis pedis* sends no tendon whatever to the thumb of the foot, and its origin is extended above the knee-joint in a manner analogous to the *flexor sublimis* in the upper extremity. It has two origins, one from the outer condyle in common with the *gastrocnemius internus*, the other from the head of the *fibula*, and is continued down the posterior part of that bone and the interosseous ligament to within an inch of the *tarsus*; under which it passes through a broad synovial sheath, deeper seated than, and external to, the *flexor longus digitorum*; becoming tendinous centrad, but continuing fleshy on the dermal aspect till it has reached the sole. There it divides into two stout perforating tendons, which are inserted into the distal *phalanges* of the third and fourth toes. Im-



mediately after the division each tendon gives origin to a *lumbricalis* muscle, which terminates in a thin *aponeurosis* attached along the tibial side of the proximal *phalanges* of the third and fourth toes.

The *flexor longus digitorum pedis* arises as in the human subject, but continues fleshy till it has passed under the *abductor pollicis*; it then gives origin to a *lumbricalis* muscle, and divides into three tendons. The *lumbricalis* terminates in the middle tendon of the three. The innermost or first tendon goes to the distal phalanx of the second toe; it also gives rise to a *lumbricalis*, which is inserted into the tibial side of the proximal *phalanx* of the same toe. The second tendon, after receiving the insertion of the *lumbricalis* before mentioned, goes to form the perforated tendon of the fourth toe. The third or outer tendon is inserted into the distal *phalanx* of the fifth toe, and also gives origin to a *lumbricalis*, which terminates in the tibial side of the proximal *phalanx* of the same toe.

The *flexor brevis digitorum pedis* arises from the posterior part of the *os calcis*, its fibres passing transversely over the insertion of the *tendo Achillis*. At about two inches from its origin it gives off a small tendon, which is inserted into the second *phalanx* of the second toe. It then continues fleshy for an inch further, and terminates in the perforated tendon of the third toe.

Thus all the toes from the second outwards, have a *flexor* tendon inserted into the distal phalanx: they have also a *lumbricalis* tendon attached to the proximal *phalanx*, and the second, third, and fourth have tendons inserted into the middle *phalanx*. As each perforating tendon gives origin to the *lumbricalis* muscle of its respective finger, these not only assist in the flexion, but act as guys on the tendons, from which they originate, preventing them from starting from the long concavity of the sole over which they travel: they also afford a variety of independent motions to the fingers. The *tibialis posticus* has the usual origin; its tendon passes along a distinct sheath close by the internal *malleolus*; it is inserted into the *os cuneiforme internum*. The tendon has no sesamoid bone where it passes over the *astragalus*. In the *Chimpanzee* it is inserted into the *os naviculare*.

The muscles in front of the leg are covered with a strong *fascia*, into which the tendons of the *semitendinosus* and *biceps* are inserted; it affords origins for the muscles situated beneath it, and becomes very strong at the ankle, binding down and forming sheaths for the several tendons. The *tibialis anticus* arises from the anterior inner and posterior aspects of the *tibia*, embracing it, as it were, and giving the appearance of a rickety convexity to the leg; it passes over the *malleolus internus* posterior to the centre of motion, and is consequently an *extensor* of the foot; it also turns the sole inwards. In close connection with this arises another muscle, not found in man; it becomes tendinous about three-fourths down the leg, and is inserted into the base of the metatarsal bone of the thumb, which it extends: this muscle is found in the *Chimpanzee*, and also, according to M. Cuvier, in the inferior *Simiæ*. The *extensor longus pollicis* makes its appearance as usual between the *tibialis anticus* and



*extensor longus digitorum*; it is inserted into the base of the *phalanx*: (the female specimen that was dissected had only one *phalanx* to the hinder thumb). The *digitorum tensor longus* has the usual origin, continues fleshy to the ankle-joint, there divides into three tendons, which diverge at the middle of the foot, and are attached to the third, fourth and fifth toes; each tendon expanding into a sheath over the back part of the *phalanges*.

The *extensor brevis digitorum pedis* arises from the *os calcis*, and divides into three portions; the strongest of which gives two tendons to the second toe, one being inserted at the base of the proximal *phalanx*, the other expanding over the second and distal *phalanges* like the tendons of the *extensor longus*. The remaining portions go to the fibular aspect of the third and fourth toes.

The *peroneus longus* and *brevis* arise together from the outer, fore, and back part of the *fibula*; on the latter aspect they are in connection with the *flexor longus pollicis*. The tendon of the *peroneus brevis* is inserted into the base of the metatarsal bone of the little toe. The tendon of the *peroneus longus* passes under the cuboid bone, without the interposition of a sesamoid bone, crosses the foot, and is implanted into the metatarsal bone of the thumb of the hinder hand, of which, as far as the structure of the articulation will permit, it is a *flexor*. There is no *peroneus tertius*.

The thumb is very short, consisting, in the female at least, of only two bones, set on at right angles to the foot, and at a great distance from the toes. In this part, however, the power of a considerable muscular apparatus is concentrated. Receiving no tendon from the *flexor longus pollicis*, it is rendered more independent in its actions; not being necessarily flexed, except in the action which turns down that side of the foot to which it is attached, and by which it is brought closer to the object to be seized. On the sole of the foot we find an *abductor* and an *adductor pollicis*, both powerful muscles inserted at very open angles into the *phalanx*; which, when they cooperate in their contraction, they must draw down in the diagonal with great force. Between these are situated two more direct *flexors*, constituting what is usually termed the *flexor brevis pollicis*.

The space between these muscles, which in man and the *Chimpanzee* is filled by the tendon of the *flexor longus pollicis*, in the *Orang Utan* is occupied by a small peculiar muscle which arises from the metatarsal bone, and is inserted into the *phalanx*. In a young male *Orang* that had two *phalanges* the *flexor brevis* was inserted partly into the second *phalanx*. The *extensor brevis pollicis* arises from the *os naviculare* and *os calcis*, and is inserted into the base of the proximal *phalanx*, when there are two.

On the *dorsum* of the foot may also be observed *interossei externi* of a penniform shape; they are attached to the fibular aspect of the proximal *phalanges* of the toes. There was also an *adductor minimi digiti*, and *interossei interni*, but not any trace of *transversalis pedis*.

Mr. Owen concluded his observations with some remarks on the

structure of the principal joints of the lower extremity, and on the degrees of mobility of which they are susceptible.

In the hip-joint the most remarkable circumstance is the freedom of motion in the rotation inwards; this is, however, more limited than in the opposite direction. The motions of flexion and extension, abduction and adduction, are also very free. On examining the cause of the limitation of the inward rotation, he found it to be a strong band of ligamentous fibres arising from the posterior margin of the cotyloid cavity, and passing along the back part of the capsule to the root of the great *trochanter*; when this was divided the rotation inwards was as free and extensive as happens in other cases after a division of the *ligamentum teres*. The synovial membrane is reflected over a greater part of the anterior and upper than of the back and under part of the *cervix femoris*. The marginal ligament of the articular cavity is four lines in depth, a remarkable thickness for the size of the cavity. The blood-vessels enter the joint by the usual notch, and supply abundantly the process of synovial and adipose substance called the gland of Havers.

The motion at the knee-joint is sufficiently free to allow the heel to be brought to the buttock, and even beyond, as in natural flexion it is carried external to the thigh. The only circumstances remarkable in the structure of the joint are, that the internal lateral ligament is longer, and the *ligamentum mucosum* stronger and of a more ligamentous nature, than in the human subject.

The motion at the ankle-joint is so free, that the *dorsum* of the foot can be brought into apposition with the fore-part of the leg; and it is worthy of remark, that when this motion is produced, the effect on the tendons passing behind the ankle-joint is such, as to cause a flexion of the toes similar to that which is produced in perching birds by bending the *tarsus* upon the leg. In the opposite direction the foot may be brought so far back as to form a right angle with the leg. Lateral motion is also very free, especially the turning of the sole inwards, to which aspect it naturally inclines. A certain degree of motion is allowed between the first and second set of tarsal bones. The ligaments of the ankle-joint are disposed as in the human subject, one at the inner and three at the outer side.

The ligaments that connect the metatarsal bone of the thumb to the internal cuneiform bone, are two in number, one at the upper and the other at the lower or plantar aspect; these limit the motions of flexion and extension, but allow very freely abduction and adduction. From this circumstance when the *peroneus longus* acts on the foot in turning the sole outwards, its tendency to bend the metatarsal bone upon the foot is resisted, and this bone is rendered a fixed point without the necessity of the counteraction of a muscular antagonist.

May 31, 1831.

N. A. Vigors, Esq. in the Chair.

At the request of the Chairman, Mr. Gould exhibited a specimen of the male of the *Urogallus medius*; the *Tetrao hybridus* of Gmelin and Dr. Latham, and the *Tetrao medius* of M. Temminck.

Mr. Yarrell observed that this individual, with one other example of the same rare species, also a male, was found among a considerable number of the *Tetrao Urogallus* of both sexes, brought from Norway by a boat partly laden with lobsters for the London market. Some of the older writers considered this bird to be a hybrid produced between the *Wood Grouse* and the *Black Grouse*, and had named it accordingly: modern authors have, however, established its distinction as a species; and the female and its egg are now known. Notwithstanding the general resemblance between these two large *Wood Grouse* they are decidedly and very obviously different. In the *Tetrao medius* the beak is black; the shining feathers on the front of the neck and breast are of a rich Orleans-plum-colour; and of the 18 feathers of the tail the outer ones are the longest. In the *Cock of the Wood* the beak is white; the feathers on the front of the breast are of a dark glossy green; and the centre feathers of the tail are the longest.

The organ of voice in the *Tetr. medius* is peculiar. The *trachea* of this bird and that of the *Tetr. Urogallus* were exhibited; and Mr. Yarrell pointed out that the *trachea* of the *Tetr. medius*, eleven inches in length, has no loose fold, like that of the *Tetr. Urogallus*, but descends in a straight line to the lungs. From the thyroid cartilage two pairs of muscles follow the course of the *trachea*, one pair firmly attached to the *trachea* itself, the second pair suspended loosely in the cellular tissue. Both these pairs of muscles, after an extent of eight inches, are lost in a membranous expansion, forming a sheath, which invests the inferior fourth portion of the *trachea*, and from which sheath one muscle only on each side is sent off, immediately above the bifurcation of the *bronchiæ*, to be attached to the inner surface of the *sternum*.

The stomach is a true gizzard of great muscular power, and the intestines and *cæca*, as in all the *Grouse* tribe, are very long: the *cæca* in the present instance measured each three feet in length.

There is reason to believe that this bird inhabits the Apennines as well as the more northern localities assigned to it. Mr. Fox in his 'Synopsis of the Newcastle Museum' quotes a note of the late Mr. Tunstall which states that "he knew some old Scotch gentlemen who said they remembered, that when young, there were in Scotland both the *Cock of the Wood*, and the *Tetr. hybridus*."

Mr. Yarrell availed himself of the opportunity to state that the hybrid *Grouse* of White's 'Natural History of Selborne' is believed

to be a young *black Cock*, having nearly completed his first moult. He added that he was indebted to Mr. Sabine for the information that the *Tetr. rupestris* of Pennant's 'Arctic Zoology' has been killed in Perthshire, and that the specimen is preserved in the collection of Lord Stanley, the President of the Society.

At the request of the Chairman, Mr. Martin referred to the notes of the dissection of a specimen of *Testudo Græca* which he had laid before the Committee on the 26th of April, and stated that the correctness of these notes had been subsequently confirmed by the examination of another individual of that species, in which he had observed the same lengthened form of stomach; similar intestines; and a *cæcum* agreeing with that previously described. The urinary bladder also corresponded in form and size. The *trachea* bifurcated in the same manner; and the *bronchiæ* had the same remarkable sigmoid flexure, and were furnished with the compressing muscle which he had before noticed.

Mr. Owen remarked that he had ascertained the existence of a *cæcum* in another species of *Tortoise*, (*Emys concentrica*, Leconte,) which he had recently dissected.

The preparation of the *cæcum* of the *Testudo Græca* having been laid upon the table, it was pointed out that the part so termed in this instance consisted of a pouch formed by the oblique insertion of the small into the large intestine, the upper end of the latter being dilated as in the human subject into a *cæcum caput coli*: but that it by no means corresponded with the *cæca* of birds, and might almost be regarded as wanting when contrasted with the development of the same part in some of the *Ophidian Reptiles*, as in the genera *Python*, *Boa*, &c.

A living individual, apparently referable to the *Gulo barbarus*, L., was exhibited. It was presented to the Society by Edmonstone Hodgkinson, Esq. of Trinidad, who describes it as being "playful and gentle, although easily excited, and very voracious. It is exceedingly strong, as is indicated by its shape; and it has the same antipathy to the water as a cat." Mr. Hodgkinson suspects that it is a native of Peru. He obtained it in Venezuela, where it was presented to him by the President, General Pæz. The name he received with it was "the *Guache*;" but this appellation, it was observed by Mr. Bennett, was probably erroneously applied to the present animal, belonging rather to the *Coati*, the orthography of which is variously given as *Coati*, *Couati*, *Quasje*, *Quachi*, and *Guachi*. The latter form occurs in the 'Personal Narrative' of the Baron Von Humboldt, where it evidently refers to a nocturnal species of *Nasua*.

The form and general appearance of the animal were remarked to be altogether those of a *Mustela*, to which genus it is probable that it should be referred, together with the typical *Gulo barbarus*. A specimen of the latter was placed upon the table, from which the living animal was shown to differ by the absence of the large yellow spot beneath the neck: a remarkable distinction in this group, but on the occurrence of which, unless confirmed by several specimens,



it was considered improper to propose regarding it as a distinct species.

A stuffed specimen and a skeleton of the *Acouchy* (*Dasyprocta Acuschy*, Illig.) having been laid on the table, the following notes on the anatomy of that animal were read by Mr. Owen.

“The subjects examined were the male and female *Acouchies* which were exhibited to the Committee on the 23d of November last by Mr. T. Bell, in whose possession they remained alive till May, when they both died in one of the remarkably cold nights of that month.

“The following circumstances were common to both animals.

“On laying open the cavity of the *abdomen* the intestines were found to be generally adherent to each other and to the *parietes* of the cavity, arising from recently effused lymph: they were also of an unusually dark colour, owing to their contents.

“The stomach consisted of a simple cavity, of a full oval shape, without any contraction between the cardiac and pyloric portions. The *oesophagus* had a course of nearly an inch within the *abdomen* before its termination. This is a circumstance worthy of notice, and which occurs in a marked degree in most of the *Rodentia*. The inner cuticular membrane of this part terminated abruptly at the *cardia*. The villous coat of the stomach was without *rugæ*, and of a gray colour, whilst that of the intestines immediately beyond the *pylorus* was stained of a very dark colour; showing that the *pylorus* had acted as a very effectual valve.

“The *cæcum* was of a capacious size, and had the same sacculated appearance as in the *Guinea-pig*; it occupied the whole of the iliac, lumbar, and part of the hypochondriac regions of the right side, and was disposed in a sigmoid form; the *colon* at its commencement followed the curvatures of the *cæcum*, and was attached to it by a continuation of the peritoneal membrane; about six inches from the *cæcum* the *fæces* became divided into pellets. The *cæcum* itself was filled by a black tough pultaceous mass, of a slightly acid odour; and the same coloured matter, but in a more fluid state, was contained in a greater or less quantity throughout the small intestines.

“The liver consisted of four principal divisions and a *lobulus Spigelii*; the gall-bladder was imbedded in a cleft in the right division, and contained a small quantity of dark-coloured watry fluid. The *pancreas* consisted of two separate lobes. The spleen was of a very dark colour, pointed at the lower extremity, and about one inch and eight lines in length.

“The kidneys were prominently situated in the hypochondriac regions, the right being nearer to the diaphragm by one half its length than the left. Each was about one inch in length and conglobate. The supra-renal glands were of an oval shape, six lines by two in their dimensions, situated anterior to the upper extremities of the kidneys, but unattached to them; the right closely adhering to the *vena cava inferior*, the left to the *vena emulgens* of its own side.

“The *viscera* of the chest, like those of the *abdomen*, presented traces of general inflammatory action.

"The lungs were divided into three lobes on the left side and four on the right, the fourth being the *lobulus medius seu impar*, occupying the space between the *pericardium* and diaphragm. The heart terminated obtusely, with a slight indication of a double *apex*. The *aorta* gave off the carotids and the subclavian arteries by a common trunk.

"The rings of the *trachea* were incomplete, their extremities being separated behind by a small space.

"The cricoid and arytenoid cartilages were of large size as compared with the thyroid; the *apices* of the latter were continued into each other; the *chordæ vocales* were very short but distinctly marked, and with a small *sacculus* on each side. There were no cuneiform cartilages; the *epiglottis* was triangular with the *apex* prolonged into a small *mucro*. Viewed from above, the aperture of the *larynx* was circular, and was directed from behind forwards. The tongue was subacuminate, minutely papillate above, with a middle longitudinal line extending half an inch from the tip: it had no elevated posterior part as in the *Guinea-pig*, *Beaver*, *Hare*, &c. but at the root of the tongue there were numerous elongated cuticular processes, and on each side of the *fauces* a fold of membrane, whose action is evidently to obviate too rapid transmission of the food through the *fauces*.

"In the male the *testes* were found within the *abdomen*, with the extremity of the *epididymis* projecting through the abdominal ring; but as the whole gland could be pushed with ease through the aperture, the *Acouchy* cannot be considered one of the true *testiconda*. The *levatoros penis* were very distinct, arising from the upper part of the *pubes* and terminating in tendons which ran along the convexity of the *dorsum penis* to the *glans*.

"In the female the ovaries were found of very small size and apparently in a scirrhus state.

"In both there were small clavicular bones, about the thickness of a small pin, and eight lines in length, which were connected by a ligament of the same length to the *sternum*. Their office appeared to be to afford a fixed point of attachment to a muscle arising from the transverse processes of the cervical *vertebræ* analogous to the *levator claviculæ* in *Apes*, and to give origin to part of the deltoid, by which it is better adapted to draw forwards the *humerus*."

The following notes on the anatomy of the *Thibet Bear* (*Ursus Thibetanus*, F. Cuv.) were also read by Mr. Owen. The subject examined was a young individual which had lived about two years in the Society's Garden.

"An extensive abscess was found under the *scapula*, which appeared to have communicated with the cavity of the chest; but the lungs, heart, and liver having been removed before the animal came under my hands, I had no opportunity of ascertaining the connection it had with diseases of those parts.

"The length of the animal from the nose to the root of the tail was 3 feet 4 inches: that of the intestinal canal 33 feet. Every

part in the *abdomen* was loaded with fat. The stomach resembled the human in shape, and had a well marked contraction between the cardiac and pyloric portions; the muscular *parietes* of the latter were half an inch thick; and, as in the *Bears* generally, had a tendinous appearance externally on each side. The intestines were simply villous internally. The biliary and pancreatic secretions entered at a distance of four inches from the *pylorus*. There were four or five longitudinal *rugæ* in the terminal six feet of the intestinal canal; and the diameter was smallest at this part. There was no *cæcum*, nor any valvular apparatus in any part of the intestinal canal.

“The anal follicles were two in number of the size of hazel-nuts. One of them was filled tensely with a yellowish-brown cheesy substance, which had a strong acetous odour; the contents of the other were of more fluid consistence, but had the same odour; the excretory orifice was just capable of admitting a common probe; the lining membrane was thin, of a white colour, but not so distinctly cuticular as is commonly found; it resembled more the lining membrane of the urinary bladder. Each follicle was surrounded by the fibres of a muscle which was inserted into the *crus penis*.

“The spleen was of a trihedral shape, 7 inches in length,  $1\frac{1}{2}$  in breadth, of a light mottled pink colour and granular texture; the splenic vein contributed to form the *vena portæ* in the usual manner. The *pancreas* was of about the same size as the spleen; but the pyloric portion bent at right angles with that which passed behind the stomach.

“The kidneys consisted each of about thirty lobules. The ureters terminated separately but close together at the neck of the bladder. The urinary bladder was a narrow oblong bag, and about half an inch of the *urachus* still remained permeable from the *fundus vesicæ*.

“The tongue was long, broad, and thin at the extremity, with the edges turned down. On the upper part was a longitudinal mesial groove extending four inches from the tip. The surface was universally papillose, and with the simple *papillæ* were intermixed numerous small white petiolate *papillæ*. At a distance of five inches from the tip there were eleven large fossulate *papillæ*, forming two sides of a triangle whose *apex* is towards the *epiglottis*. Nearer to the *epiglottis* were numerous cuticular pointed processes directed backwards. The *lytta*, or worm of the tongue, was 5 inches in length, about the thickness of a crow quill, and bent upon itself near its middle part: it had fibres of the *linguales* muscles inserted into its anterior extremity, but laid loosely for the rest of its extent among the cellular texture in the interval of the *linguales* and *genio-glossi*. The *velum palati* was terminated at its lower margin by a short bifid *uvula*, the *azygos uvulæ* consisting here of two quite distinct muscles.”

A pair of the middle tail-feathers of the *Phasianus Reevesii*, Hardw. and Gray, (*Phas. veneratus*, Temm.) were exhibited; for one of which the Society is indebted to the liberality of John Reeves,

Esq., of Canton. These feathers measured each about five feet six inches in length. The bird from which they were obtained is the first individual of this rare and magnificent species ever brought alive to Europe. It was presented to the Society by Mr. Reeves, and is now living at the Garden in the Regent's Park. A second individual died on the passage to England.

The Report on the animals for the importation of which the Council should be recommended to take measures, which was adopted at the Meeting of the Committee of the 22d of March, having been submitted to the Council and approved of, was ordered to be printed. It is as follows:—



*Report of the Committee of Science and Correspondence to the Council.*  
March 22nd, 1831.

THE Committee of Science and Correspondence, having taken into consideration the request of the Council, that they should prepare a Report upon the Animals most desirable to be introduced into this country for the purposes of utility or exhibition, beg leave to submit a List of such Animals arranged under the heads of the respective countries of which they are natives. The selection of these countries has been made upon the principle of particularizing those in which the political, commercial and scientific interests of England have established such correspondents as are likely to exert themselves in forwarding the views of the Council.

The Animals most desirable for the purposes of utility may be severally considered as they are likely to supply the objects of food, clothing, medicine, or draft.

The Committee recommend to the primary consideration of the Council the first class of these animals, or those which are serviceable for food, as being by nature most capable of domestication, most prolific, and best able to bear the vicissitudes of climate. As their food also is for the most part vegetable, they can be readily supplied with it in their transmission to this country, and in confinement afterwards. The Animals referred to under this character include the greater part of the *Ruminant* or *Hoofed* order among the *Mammalia*, and the *Gallinaceous* order among *Birds*; the former comprehending the various species of *Deer*, *Antelopes*, *Oxen*, *Sheep*, *Goats*, &c.; and the latter the numerous species of *Pigeons*, *Turkeys*, *Guinea Fowls*, *Jungle Fowls*, *Pheasants*, *Grouse*, *Partridges*, *Quails*, the *Struthious Birds*, *Curassows*, *Penelopes*, &c. And to these may be added a few species from the *Rodent* order of the *Mammalia*, such as *Hares*, *Rabbits*, *Agoutis*, &c.; and a few from the *Natatorial* order of *Birds*, as *Ducks*, *Geese*, *Swans*, &c.

In thus particularly directing the attention of the Council to the above-mentioned groups, the Committee are not equally sanguine of success in the attempt to naturalize all. Climate in many instances has an evident influence in advancing or retarding this object. Many species of *Deer* for example, the inhabitants for the most part of northern latitudes or of high elevations in southern, breed freely in this country, while the *Antelopes* and *Musk Deer* of Africa and India, although closely allied to the *Deer*, have been found, with scarcely an exception, incapable of enduring our colder temperature. On the other hand the influence of climate appears in many cases either not to have been felt or to have been counteracted; the *Pheasant* and *Jungle Fowls* of India, for instance, and the *Guinea Fowls* of Africa, having been naturalized among us with equal success as the

*Turkey* of the temperate parts of America. The habits of migration, also, which are peculiar to many of the above-named groups, oppose an obstacle to their bearing confinement as the period of migration approaches : while, from causes hitherto unexplained, various others, even among our indigenous species, although hardy and prolific in a state of freedom, will not breed nor indeed live for any length of time in a state of captivity. The Committee nevertheless are unwilling to make any exceptions in their previous recommendation to introduce the whole of these Animals. The endeavour to counteract the natural causes that may in the outset operate against success will afford many points of interesting inquiry ; and the very failure of the attempt will supply the philosophic investigator of nature with as important facts for his speculations as actual success.

The Committee do not augur many favourable results from the attempts to introduce such Animals as are useful for clothing. A colder climate than ours seems requisite for the full development of the fur in such Animals as the *Sable*, *Chinchilla*, *Lynx*, *Bear*, &c., and of the down in the *Swans*, *Eider Ducks*, &c. It is doubtful also on the other hand whether a warmer climate may not be equally necessary for the production of feathers among the *Struthious* and nearly allied *Birds*, in such quantity and of such quality as may be useful. Still the same observation may be applied to all these species as to the preceding. The trial will tend to establish a fact which, although likely to be a negative one, will furnish authentic ground, hitherto wanting, for the inferences of the physiologist. Our temperate climate however seems congenial to the growth of wool and hair. And with reference to this tendency the Committee recommend the introduction of all such species of *Sheep* and *Goats*, as are not natives of the British Islands, or of such varieties of the indigenous species as may tend to improve or vary the quality of their covering.

The Animals hitherto known as useful for medicinal purposes are few in number, appearing limited to the *Beaver*, which supplies the antispasmodic medicine, called castor ; to the *Civet*, and the *Musk Deer*. The introduction of all these Animals is recommended by the Committee, not so much in the expectation of their affording any supply of their peculiar produce, as with the object of ascertaining the physiological fact whether confinement will alter the nature or quantity of that produce.

In referring to the Animals useful for the purposes of draft, the Committee are aware that little improvement can be effected in this object, beyond what has already been attained in this country. Every climate has its native beast of burthen most suited to its own character, and no animal, however superior in general organization, could supersede to advantage the use of the *Rein Deer* in Lapland ; the *Camel* in the deserts of Africa ; the *Llama* in the mountains of Peru ; or the *Horse* and *Ox* in more temperate latitudes. On a limited scale, however, the Committee recommend the introduction and training of Animals suited to this purpose. Some of the larger species of *Deer*, such as the American *Moose* and *Wapiti*, and the Swedish *Elk*, the various foreign species of *Bos*, all the species of *Llamas*, and

of the *Solipede Animals*, such as the *Zebbras*, *Quaggas*, *Dzettais*, &c. would afford interesting subjects for the trial. The attempt would probably disappoint the hopes of the utilitarian, but it would afford abundant scope for the speculations of the naturalist.

The Committee feel some hesitation in proceeding to the recommendation of Animals for exhibition. It is difficult to make a selection where all are objects of general attraction, as exhibiting their structure in perfection, as well as their native habits and economy, and where equally all are desirable as objects of science to the physiologist and comparative anatomist. In this point of view it would perhaps fall more within the province of the Committee to point out such Animals as from their previous introduction into this country are no longer wanted, than to particularize what are. They venture, however, to make a partial selection, and to annex to the respective localities, where the correspondents of the Society are established, a list of what appear to them to be the less known and more attractive of the native species of each: observing, that they generally place those species first in order, which they would first recommend to the attention of the correspondent. They wish to add as a general recommendation, that those Animals should be selected for transportation to this country, which have been previously domesticated, or at least accustomed to confinement in their own; and they suggest to those correspondents who may have leisure and inclination to attend to the rearing of Animals, to bring up those which are intended for the Society, as much as possible from the earliest stages. As many animals suffer much from solitary confinement, it is desirable that they should be brought over in moderate numbers, and whenever attainable that they should be of different sexes.

In reference to the mode of treatment of Animals during their passage to England, the instructions of the Committee must necessarily be very general; much depending on the particular character of the Animal, and the extent of the accommodation capable of being afforded. It may generally however be suggested that correspondents should engage some individual of the ship's company to take especial charge of the Animals on board, and guarantee to him a handsome recompense on his bringing them safely to their destination. Great attention must necessarily be paid to their being kept constantly warm, dry, and in a clean condition; and a more watchful care should be bestowed upon the Animals of southern latitudes as they approach the colder climates; many valuable specimens being constantly lost by the abrupt change of temperature. Their food must be an object of primary consideration, a sufficient stock of such as is appropriate to the several species being laid in previously to their embarkation. A constant supply of fresh water is indispensably necessary, and gravel should be at all times within the reach of the *Gallinaceous* and the *hard-bill'd Birds*. In case of the failure of the more general food of these latter Animals, and of the graminivorous *Mammalia*, the common biscuit of the ship's store will afford an adequate substitute. It is in general more difficult to bring home the *soft-bill'd Birds*, or those which partially require a supply of animal food, such as *Thrushes*,

*Warblers*, &c. but even these with due attention may be safely conveyed to this country. Fresh meat finely scraped, hard eggs cut into small pieces, bread, biscuit, or barley meal, mixed with milk, or with water in which fresh meat has been boiled, will afford a nutritious, and at most times an available food: when pounded and mixed more or less together, until they assume the consistence of paste or honey, these ingredients will suffice even for the most delicate of the *Warblers*. *Ants'* eggs, which are abundant in all tropical climates, may be preserved in a jar well tied down, and with the addition of the *Blattæ* or *Cock-roaches*, so generally attainable on board ship in all their stages of growth, and of the *Meal-worms*, which are equally abundant in the bread-room, they will occasionally afford an acceptable treat to these birds on their voyage. It is even to be hoped that, with due attention to their wants, the *Humming Birds* of America may be brought to this country and be exhibited in our conservatories. It has been ascertained that they can be supported for some time at least in confinement on honey or sugar and water; and a further trial may with some prospect of success be attempted to introduce them, as well as all the corresponding groups of *Meliphagous Birds* of Australia and the old world.

The Committee do not wish to include in the present Report any reference to the subject of the importation and breeding of *Fish*. The subject is one which requires much inquiry at home, and still further correspondence abroad. And as the plans of the Society are not yet sufficiently ripe for entering upon any practical experiments, the Committee think it advisable to reserve their observations on this subject, which in the present state of their information would necessarily be imperfect, for a future and a separate report.

There are various other Animals, not included among the foregoing groups, which would be highly acceptable to the Society, but which the Committee do not include in the list submitted to the Council, lest they should appear to overload it with too many and too particular recommendations. They will therefore refer to them generally. Many of the *Reptiles* would be valuable; more particularly the different species of *Tortoises* and *Lizards*. Some of the *Molluscous Animals* also might be introduced with advantage and interest, such as the larger *land Snails*, and the *freshwater Bivalves*. Various *Insects* also, the foreign species of *Bees* for example, with their nests, and the larger silk bearing *Moths*\* of India and North America, if imported in a living state, would be so many accessions to science. All these and similar animals might be easily kept alive in our conservatories, and in addition to their scientific value would be objects of extreme attraction. *Eggs* of birds also, carefully packed in some soft substance with either end upwards, may be sent to this country, with some prospect of an advantageous result. But the Committee must content themselves with this general reference and recommendation, and leave the following-up of the suggestions to the kindness and discretion of the friends and correspondents of the Society.

\* *Moths* should be sent over in the pupa state.



Before they close these introductory observations of their Report, the Committee beg earnestly to press upon the Council the recommendation that instructions be given to all persons in charge of Animals, to preserve entire in spirit the body of every species which may chance to die on the passage. If spirit is not easily procured, strong brine will in most cases answer as a substitute; and in case of its being difficult to preserve the soft parts, the bones would be highly valuable. An attention to these suggestions would occasion little expense, and the labour would be trifling; but the value of the additions thus likely to be made to the materials of Science is incalculable.

### AMERICA.

#### YORK FACTORY AND QUEBEC.

Rocky Mountain Sheep.	Grouse of all species.
Rocky Mountain Goat.	Californian and other Quails.
Prong-horned Antelope.	Swans (excepting the Hooper).
Musk Ox.	King Ducks.
Grisly Bear.	Eider Ducks.
Beavers.	Jays.
Deer of all kinds (Wapiti excepted).	
Wolverenc.	
Lynx.	
Hares.	
Foxes.	
Marmots.	
Flying and other Squirrels.	
Weasels.	
Star-nosed Moles.	
Canada Porcupine.	
Ondatra, or Musk Rat.	
Carcajou, or Badger.	
Jumping Mouse.	

#### UNITED STATES.

Virginian and other Deer.	Wild Turkey.
Foxes.	Virginian Quails.
Black and other Wolves, including Prairie Dog.	Jays.
Squirrels of all kinds.	Mocking Thrush.
	Stares and Troupiales.
	Hard-billed birds of all sorts.
	Turkey Buzzard.
	Canvas-backed Ducks.

And generally such of the Quadrupeds and Birds, mentioned under the preceding head, as can be procured.

## WEST INDIES, DEMERARA, CUBA, &amp;c.

Capromys, or Hutias, of all species.	Gallinules.
Armadillos, ditto.	Whistling Ducks.
Agoutis, ditto.	Doves of all sorts.
Acouchis.	

## MEXICO, HONDURAS, VERA CRUZ, &amp;c.

Deer of all kinds.	Ocellated Turkey
Small or burrowing Dog called Chi-wawa.	Quails.
Cayopollin and other Opossums.	Jays.
Tiger-cats of all kinds.	

## SOUTH AMERICA.—PERNAMBUCO, RIO JANEIRO, &amp;c.

Mountain Tapir (from the Andes).	Trumpeters.
Grison.	Curassows.
Monkeys, (particularly Howlers and Lion Monkeys).	Tinamous.
Sloths.	Penelopes.
Agoutis.	Rhea or Nhandu Ostrich.
Armadillos of all kinds.	Screamer.
Deer, ditto.	Dicholophus, or Cariama.
Kinkajou.	Roseate Spoonbill.
Foxes.	Scarlet Ibis.
Ocelots.	Jabiru.
Margay and other small Cats.	Flamingo.
Opossums of all kinds.	King Vulture.
Hares.	Quails of all kinds.
Coypu.	Humming Birds.
Capybara.	
Ant-eaters.	
Tree Porcupines.	

## BUENOS AYRES, FALKLAND ISLES AND STRAITS OF MAGELLAN.

Hares.	Swans.
Foxes.	Geese.
Cavies.	Ducks.
	Quails.
	Humming Birds.

## WESTERN COAST, SOUTH AMERICA.—SANTIAGO, LIMA, &amp;c.

Vicugna.	Birds before mentioned from Straits of Magellan and Juan Fernandez.
Chinchilla.	Condor Vulture.
Viscaccia.	
Deer of all kinds.	
Foxes ditto.	
Chlamyphorus, or Pichichiago.	
Coypu.	

## WESTERN COAST, NORTH AMERICA.

Sheep.	Californian Vulture.
Deer.	Californian Quails.
Wolves.	Douglas' Quails, and others.
Foxes.	Jays of all kinds.
Squirrels.	
Sea Otter.	
Weasels.	

## EUROPE.

## PETERSBURGH.

Sables.  
Alpine Hares.

## NORWAY AND SWEDEN.

Elk.	Capercaillie.
Reindeer.	Grouse of all kinds.
Lynx.	Jerfalcon.
Swedish Hare.	
Lemmings.	

## SWITZERLAND.

Chamois.	Bearded Vulture.
Ibex.	Black Vulture.
Marmots.	

## GIBRALTAR, MALTA, &amp;c.

Monkeys.	Bustards.
	Francolins.
	Red-legged Partridges.
	Quails.
	Purple Gallinules.

## AFRICA.

## ALEXANDRIA, TRIPOLI, &amp;c.

Giraffe.	Sacred Ibis, or Abou-hannez.
Fennec.	Pernopterus, or Pharaoh's
Hyrax.	Chickens.
Ichneumon.	Bustards of all kinds.
Barbary Mouse.	Demoiselles.
Gazelles.	Marabou Cranes.
Jerboas.	Francolins.
Hippopotamus of Upper Egypt.	Sand Grouse.
Genettes.	Red-legged (Greek) Partridge.
Booted Lynx, and smaller Feline	
Animals.	
Wolves and Foxes.	

## MOGADORE, SIERRA LEONE, FERNANDO PO, &amp;c.

Fasciculated Porcupine.	Touracos of all species.
Chimpanzee and other Monkeys.	Plaintain-eater.
Antelopes.	Francolins.
Galagos, or Gum Animals.	Sand Grouse.
Potto.	Marabou Cranes.
Genettes.	
Pangolin or Manis.	

## CAPE OF GOOD HOPE.

Two-horned Rhinoceros.	Secretary Bird.
African Elephant.	Bustards of all kinds.
Hippopotamus.	Flamingo.
Antelopes of all kinds (Gnu excepted).	Crested Guinea Fowls.
Ethiopian Hog.	Mitred ditto.
Variable Mole.	Touracos.
Ratel.	Vultures of all kinds.
Suricate.	Eagles.
Painted Hyena.	Francolins or Partridges of all kinds.
Cape Ant-cater.	
Caffrarian Ox.	
Quagga.	
Aard Wolf (Proteles).	
Genettes.	
Serval, or Bosch-kat.	
Pedetes, or Spring-Haas.	
Hyrax.	
Mole Rats.	

## MADAGASCAR, MAURITIUS, &amp;c.

Macaucos of all kinds.	Spoonbills with red bill and legs.
Tenrecs of different sorts.	
Cheiomys, or Aye-aye.	
Fossane.	
Sus larvatus (Native Hog).	
Indri.	
Vansire.	

## ASIA.

## BOMBAY.

Monkeys of all kinds.	Flamingo from Cambay.
Deer, ditto.	All Pheasants and Gallinaceous Birds.
	Floricans and other Bustards.



## CEYLON.

Asiatic Elephant.	Jungle Fowls.
Monkeys.	Gallinaceous Birds of all kinds.
Slow Lemur.	
Slender Lemur.	
Meminna Musk Deer.	

## MADRAS AND CALCUTTA.

Asiatic Lion and Lioness.	Cassowary.
Arctonyx (or Sand Hog).	Adjutant.
Small Feline Animals.	Cyrus Crane.
Pangolin, or Manis.	Stanley or Paradise Crane.
One-horned Rhinoceros.	Jungle Fowl.
Panda or Chitwa.	Florican and other Bustards.
Deer of all kinds (except Axis and Samboo).	Pheasants from Nepâl of all kinds.
Chiru Antelope.	Pondicherry and other Vultures.
Isabella Bear of Nepâl.	Ducks and Teal.
Bandycoot Rat.	
Malabar and other Squirrels.	
Flying ditto.	
Musk Deer of Thibet.	
Thibet Bear.	

## SUMATRA AND JAVA.

Malay and Bornean Bears.	Crowned Pigeon.
Indian Tapir.	Nicobar ditto.
Long-armed Apes and other Monkeys.	Pigeons (various).
Civets and Genettes.	Fire-backed Pheasant.
Orang Utan.	Argus ditto.
Sumatran Rhinoceros.	Two-spurred Peacock.
Flying Squirrels.	Javanese Peacock.
Panda.	Rouloul.
Benturong.	Jungle Fowl.
Mydaus or Telagon.	
Tupaia.	
Gymnura.	
Prionodon, or Delundung.	
Small Feline Animals.	
Rimau Dayan Tiger.	
Pangolin or Manis.	
Tarsier.	
Musk Deer of all kinds.	
Flying Macaocos (Galeopithecus).	

## CHINA.

Monkeys, Deer, and all wild Quadrupeds.	Pheasants of all kinds, except Gold and Silver.
	Mandarin and other Teal.
	Fishing Pelicans.

## AUSTRALIA.

## SYDNEY, VAN DIEMEN'S LAND, SWAN RIVER, &amp;c.

Ornithorhynchus.	Memura superba, or 'Tree Pheasant.
Echidna.	Black Cockatoos.
Wallabee and Kangaroos of all sorts (common excepted).	Parrots of all kinds.
Kangaroo Rats.	Quails.
Opossums of all kinds.	Bronzed-winged, Magnificent, and other Pigeons.
Flying ditto or Phalangers.	Large Alectura, called New Holland Vulture by Dr. Latham.
Wombat.	Dollar Birds.
Coala.	
Dasyurus ursinus.	
Thylacinus Harrisii.	

## POLYNESIAN ISLES.

Papuan Hog.	Megapodius.
Deer of Marianne Islands.	Birds of Paradise.
Babyroussa.	
Phalangers.	

From each of the above localities the smaller Quadrupeds, such as *Rats, Mice, Shrews, Moles, &c.* ; and the smaller Birds, especially the hard-billed species ; would be desirable, as likely to include subjects of considerable scientific interest.

June 14, 1831.

Joshua Brookes, Esq. in the Chair.

A letter addressed to the Secretary of the Society by Charles Telfair, Esq., Corr. Memb. Z. S., dated Port Louis, December 15th, 1830, was read. It referred to previous unsuccessful attempts on the part of the Society's valuable correspondent to transport from the Mauritius to England living *Gouramies* and *Tanrecs*, and promised a repetition of the experiment. Mr. Telfair states that he has now a pair of living *Tanrecs* fully grown ready to send to England when he can place them under proper care. "They live on boiled rice, but will probably not exist long upon that alone, as their natural food is chiefly composed of worms, insects, lizards, and the eggs of snails, of which it would be difficult to carry a sufficient supply in a living state on board ship. Fresh supplies might, however, be obtained at Madagascar or the Cape of Good Hope, at St. Helena, Ascension, and the Cape de Verd Islands; and the animals might thus arrive in good health in England, where they would probably survive for some time burrowing under a dungheap, or living in straw in a hot-house or greenhouse. An opportunity would thus be furnished of observing their habits. In the Mauritius they sleep through the greater part of the winter, from April to November, and are only to be found when summer heat is felt, which being generally ushered in by an electric state of the atmosphere, the negroes (with whom they are a favourite food) say they are awakened by the peals of thunder which precede the summer storms or 'pluies d'orage.' Even in summer they are not often seen beyond the holes in which they burrow, except at night. Their favourite haunts are among the old roots of clumps of bamboos. They have a very overpowering smell of musk at all times, which is increased to an extraordinary degree when they are disturbed or frightened: yet their flesh is considered so savoury by the negroes that they are unwilling to sell those which they catch, and would not exchange it for any other food, except perhaps for the 'ourite,' which is the Catfish hung up in the sun until it acquires a most fœtid smell tainting the atmosphere to a great distance; in this state it is a chief ingredient in their favourite ragout. This mode of living may be one of the causes of the peculiar odour of the skin of the woolly-headed race, which no ablutions can remove, and which is not less distinctive of their race than the colour of the skin itself."

Mr. Telfair then alluded to the collection of *Fishes* last presented by him to the Society, portions of which have been exhibited at the Meetings of the Committee on the 12th and 26th of April. He is continuing his ichthyological collections, and states the proceed-

ing which he adopts in the preservation of the specimens to be as follows. "The moment the fish is caught it is thrown into a tub of rum; and the numbers are gradually augmented until there is no further room and the spirit begins to acquire a slight smell of the fish. They are then taken out; washed in fresh rum; and again put into clean spirit. They are then ticketed and numbered with lead and wire, and are ready to be put up in the preparation bottles as opportunities for their embarkation offer: this is done with fresh spirit also." The success of this method was shown to be in many instances almost complete, the fishes exhibiting great beauty and brilliancy of colour. In some cases, however, it is less successful, and even the same species varies considerably in its state of preservation. Thus of the *Julis decussatus*, (*Sparus decussatus*, J.W. Benn.) two specimens almost equal the brilliancy depicted in the 'Fishes of Ceylon' [Plate xiv.], while a third has parted with nearly the whole of its colouring, and retains merely the markings. The iron wire employed in affixing the leaden numbers has generally rusted so as to stain the fishes where it has been in contact with them, and has in some instances been so weakened by corrosion as no longer to retain the lead.

Mr. Telfair concludes by referring to the neighbouring island of Madagascar, and to the interest attaching to its natural productions so far as they have been already investigated. He remarks how imperfect this investigation yet is, and gives a historical sketch of the various attempts made by European naturalists during the last twenty years, but few of which have been attended with even moderate success. In several instances they have been fatal to the zealous individuals who have devoted themselves to the pursuit, the climate, especially that of the coast, being generally ill suited to Europeans. A new attempt is about to be made under the auspices of Mr. Telfair and the Mauritius Natural History Society, from which he anticipates considerable additions to science, the individual selected being well adapted for the purpose by long practice in collecting and preserving specimens, and by being thoroughly acclimated to Madagascar, in which he has on several occasions resided for a considerable time.

Mr. Owen, having had occasion to examine recently with Mr. Yarrell the body of a *Gannet*, (*Sula Bassana*), which died at the Society's Garden, read his notes of the examination. They referred chiefly to the situation and connections of the air-cells, and differed in some particulars from the observations recorded by Montagu, who states in the 'Supplement to the Ornithological Dictionary' [article *Gannet*], that "by reason of some valvular contrivance the skin could not be artificially inflated through the lungs;" and adds, "it is also clear that there is no direct communication between the sides."

"In the examination our attention was chiefly directed to the air-cells, which in this bird, as in the *Pelican*, have a most extensive distribution. We commenced by gentle but continued inflation



through the *trachea*, a pipe having been introduced into the upper *larynx*: in a short time the integuments of the whole of the lateral and inferior parts of the body rose, and the air-cells seemed completely filled, especially that which is situated in front of the *os furciforme*. Being thus satisfied that they all had a free communication with the chest, we next proceeded to see at what points these communications took place, and in what degree the air-cells communicated with each other. For that purpose the air-cells on the left side of the body were laid open, and shortly after those of the opposite side collapsed, indicating the existence of apertures of communication, although the *septum* which ran along the middle line of the body appeared at first sight imperforate. There was a free communication between the lateral air-cells of the same side of the body from the *os furciforme* to the side of the *pelvis*; but the air-cell in front of the *os furciforme* remained still tensely inflated. The lateral air-cells had a free communication with the cavity of the chest at the *axilla*, at which part the air had entered these cells during the inflation. The pectoral muscles and those of the thigh presented a singular appearance, being as it were, cleanly dissected, having the air-cells extended above and below them; the axillary vessels and nerves also passing bare and unsupported by any surrounding substance through these cavities. We traced the air-cells down the side of the *humerus*, *ulna*, and metacarpal bone, into all of which the air entered, and even into the bone corresponding to the first *phalanx*, which agrees with what Mr. Hunter has described in the *Pelican*. (Animal Econ. p. 92.)

“As none of these proceedings had any effect on the air-cell in front of the *os furciforme*, which still continued distended, it was evident that inflation by the *humerus* could not have filled it except through the medium of the lungs themselves. We next proceeded to detach the integument from this air-cell to see its shape and extent; this required to be done with great care, as it adhered pretty closely to the skin and roots of the feathers: it was of a globular form, about four inches in diameter, and communicated with the *thorax* at its anterior aperture below the *trachea*.

“Numerous strips of muscular fibres passed from various parts of the surface of the body, and were firmly attached to the skin; a beautiful fan-shaped muscle was also spread over the external surface of the air-cell anterior to the *os furciforme*. The use of these muscles appeared to be, to produce instantaneous expulsion of the air from these external cells, and by thus increasing the specific gravity of the bird to enable it to descend with the rapidity necessary to the capture of a living prey while swimming near the surface of the water.

“With respect to the general anatomy of this bird, it may be observed that we found the two small glands at the termination of the *trachea*, which are noticed by Montagu, and which exist in addition to the ordinary pair lying above the *bronchiæ*. The stomach corresponded exactly with the figure given by Sir Everard Home (Comp. Anat. pl. xlvi.), the pyloric orifice being provided with the

bilobed valve which is there represented, though not described in the text ; it evidently opposes a too ready egress of the contents of the stomach."

Mr. Vigors exhibited a collection of African Birds which had been presented to the Society by Henry Ellis, Esq., of Portland Place. They consisted of about one hundred and thirty species, many of them of extreme rarity and value, and a great portion unknown to the cabinets of England. They came immediately from Algoa Bay ; but were supposed to have been collected far in the interior of the country. Mr. Vigors expressed his intention of laying before the Committee at an early Meeting, a descriptive catalogue of the whole collection, as well as whatever particulars he could collect respecting the locality from which it was brought. He named and characterized in the mean time the following apparent novelties from the *Insessorial Birds*.

**TURDUS GUTTATUS.** *Turd. supernè olivascenti-brunneus, subtùs subrufescenti-albidus ; strigis tribus genarum, guttis rotundis pectoris abdominisque, tectricumque alarum notis brunnescenti-atris ; tectricibus alarum, reatricibusque tribus utrinque lateralibus ad apicem albo notatis.*

Statura paulo minor quàm *Turdi iliaci*, Linn.

**PYRRHULA ALBIFRONS.** *Pyrr. nigra, capite nuchâque ferrugineo nitore subtinctis ; fronte maculâque remigum albis.*

Longitudo corporis,  $7\frac{3}{4}$  ; alæ, 4 ; caudæ, 3 ; tarsi,  $\frac{3}{4}$  ; rostri,  $\frac{3}{4}$ , altitudo  $\frac{3}{4}$ .

**PLOCEUS GUTTURALIS.** *Ploc. suprâ pallidè olivaceo-brunneus ; capite colloque in fronte aurantiacis, corpore subtus aurantiaco-flavo ; gulâ juguloque nigris, rostro attenuatiore.*

Longitudo corporis,  $6\frac{1}{2}$ .

**PLOCEUS SPILONOTUS.** *Ploc. capite suprâ corporeque subtùs aurantiaco-flavis ; gulâ, jugulo, dorsoque summo nigris, hoc flavo maculato ; uropygio fusco-lutescente ; alis caudâque fuscis.*

Statura præcedentis ; rostro fortiore.

**PLOCEUS CHRYSOGASTER.** *Ploc. capite genis corporeque toto suprâ saturatè castaneo-brunneis ; gulâ flavo et brunneo variegatâ ; corpore subtùs aureo-flavo.*

Statura præcedentium ; at rostrum multò validius.

**LAMPROMORPHA \* CHALCOPEPLA.** *Mas. Lamp. suprâ splendidè viridis, cupreo nitens ; subtùs alba, lateribus viridi-cupreo fasciatis ; strigâ in capitis medio, secundâ superciliari, alterâque maxillari, maculis tectricum alarum, remigum, reatricumque, duabus mediis exceptis, albis.*

Fœm. aut mas jun. ? *Lamp. corpore suprâ metallicè viridi ; capite,*

\* A group including the shining Cuckoos of Africa, India, and New Holland, indicated in the *Transactions of the Linnean Society*, vol. xv. p. 300. Mr. Vigors expressed his belief of having lately seen a name attached to this group by some modern author ; but he could not call to his recollection the work in which it occurred.

nuchá, regioneque interscapulari cupreo splendidibus; collo in fronte pectoreque rufescenti; abdomine albo, lateribus viridi-æneo fasciatis; caudá ferrugineá, viridi-æneo fasciatá; tectricum trium utrinque lateralium pogoniis, omniumque apicibus albo notatis.

**Statura Cuculi aurati, Gmel.**

**CORYTHAIX PORPHYREOLOPHA.** Cor. collo, abdomine medio, pectore, regioneque scapulari gramineo-viridibus, his subrufescentibus; fronte strigáque per oculos splendidè viridibus; capite cristato, alis, caudáque splendenti-purpureis; remigum fasciá latá subpurpurascenti-coccineis; dorso abdomineque imis, tectricibusque femorum fusco atris; rostro pedibusque atris.

**Statura Cor: Persæ, Ill.**

**BUCCO NANUS.** Bucco suprâ niger, sulphureo striatus; strigá superciliari gracili, alteráque per totam longitudinem alarum extendente latá, aurantiis; gulá crissoque sulphureis, abdomine fuscescenti; fronte coccineo.

Longitudo corporis,  $4\frac{1}{4}$ ; rostri ad frontem,  $\frac{7}{16}$ , ad rictum  $\frac{9}{16}$ .

**YUNX PECTORALIS.** Y. suprâ pallidè brunnescenti-griseus, fusco graciliter undulatus; nuchá scapularibusque nigro notatis, caudá nigro fasciatá; subtùs albidus, collo in fronte confertim, femorum tectricibus minùs confertim, nigro fasciatis, abdomine nigro lineato; maculá grandi pectorali ad gulam extendente rufá; remigibus fuscis, pogoniis externis ferrugineo fasciatis.

**Statura Y. Torquillæ, Linn.**

June 28, 1831.

Rev. W. Kirby in the Chair.

A letter from Sir Robert Ker Porter, Corr. Memb. Z. S., dated City of Caracas, Venezuela, March 25, 1831, was read. It announced his having recently obtained possession of a specimen of the *American Tapir*, (*Tapir Americanus*, Gmel.), which it was his intention to transmit to the Society at the earliest opportunity. It embraced a full description of the animal; and entered at considerable length into an account of its habits. The letter was accompanied by two drawings of the *Tapir*, and by sketches of its proboscis-like upper lip.

Mr. Gray exhibited the skins and skulls of two *Mammalia* brought from China by Mr. Reeves, together with the skull of a third, of which a skin was also in his possession. On these he proposed to found three new genera, the characters of which may be given as follows:

## HELECTIS.

*Dentes primores*  $\frac{2}{3}$ : *laniarii*  $\frac{1}{1}$ : *molares*  $\frac{2}{3}$   $\frac{2}{3}$ ; *e quibus*  $\frac{3}{3}$   $\frac{3}{3}$  *anteriores falsi conici compressi*; *carnivori*  $\frac{1}{1}$ , *in maxillâ superiori 3-lobati, cum processu interno subcentrali lato 2-acuminato*; *tuberculares*  $\frac{1}{1}$ , *superiores mediocres transversi, inferiores exigui. Caput elongatum. Pedes breves; plantæ ad calcaneum ferè nudæ; digiti 5—5; ungues validæ, anteriores longæ compressæ. Cauda cylindrica mediocris.*

This genus, which inhabits eastern Asia, has the general appearance and colouring of *Mydaüs*, combined with a dentition resembling that of *Gulo* or *Mustela*, but differing from both the latter genera in the large internal central lobe of the upper carnivorous tooth. The species exhibited may be characterized in the following terms.

HELECTIS MOSCHATA. *Hel. suprâ argentata, pilis singulis basi cinereis apice argenteo-albis, colore argenteo ad latera corporis et versus apicem caudæ dominante, capite pedibusque anticis in fusco-cinerascentem vergentibus; strigâ inter, aliisque duabus pone, oculos, maculâ interauriculari nuchalique, labio superiore, mento, gulâ, gastræo medio, femoribusque internis, albis.*

The entire length of the animal is  $23\frac{1}{2}$  inches, of which the tail measures 8. It inhabits China, and smells strongly of musk.

Mr. Gray added that the *Gulo orientalis* of Dr. Horsfield's 'Zoological Researches in Java' appeared to him to form a second species of the genus, closely resembling the Chinese in its general characters, and in the disposition of its colouring, but differing in its browner colour and in the larger proportion of white upon the head and



back. The internal lobe of the upper carnivorous tooth in the Javanese animal is also described as being anterior and very minute.

#### PAGUMA.

*Dentes primores*  $\frac{6}{6}$  *æquales* : *laniarii*  $\frac{1}{1}$   $\frac{1}{1}$  : *molares*  $\frac{6}{6}$   $\frac{6}{6}$  ; *quorum utrinque in maxillâ superiori* 3 *falsi parvi compressi*, 1 *carnivorus brevis obtusè 3-lobus cum processu interno centrali*, 2 *tuberculares subquadrati internè subangustati anticè non producti* ; *in maxillâ inferiore* 4 *falsi*, 1 *carnivorus*, 1 *tubercularis*. *Pedes postici plantigradi, ad calcaneum usque nudi callosi*. *Cauda longa attenuata*.

In the number and disposition of its teeth this genus agrees with *Viverra*, from which, however, it differs in their conformation. It is much like *Ictides* in colouring, but has about the face the pale marking of *Paradoxurus* : the skin has the odour of civet. From the genus *Viverra* it is distinguished by the shape of its skull, the cerebral cavity being in it much larger, the space between the eyes broader, and the nose much broader and shorter. The species was characterized in the following terms :

PAGUMA LARVATA. *Pag. grisea* ; *fasciâ albâ frontali transversâ, alterâque longitudinali per frontem ad nasum ductâ* ; *caudâ apice nigrescenti*.

*Gulo larvatus*. *Ham. Smith in Griff. Transl. Cuv. Règn. An. ii.* p. 281, c. fig. 1827

*Viverra larvata*. *Gray, Spic. Zool. p. 9.*

The third genus described was founded on a *glirine* quadruped, nearly allied to the Bamboo-Rat (*Mus Sumatrensis*, *Raffl.?*), with which Mr. Gray associated it under the following characters.

#### RHIZOMYS.

*Dentes primores*  $\frac{7}{7}$  *maximi, elongati, triangulares, acutati* : *molares*  $\frac{3}{3}$   $\frac{3}{3}$  *radicati, subcylindrici, coronis transversim subparallelim porcatis* ; *superiores internè lobati*. *Caput magnum. Oculi parvi aperti. Auriculæ nudæ conspicuæ. Corpus crassum subcylindricum. Pedes breves validi, digitis 5—5. Cauda mediocris, crassa, nuda*.

In teeth and general appearance this genus is most nearly allied to *Spalax*, from which it differs in its tail of moderate length, its exposed eyes and ears, and the more complex character of its molar teeth. The species of *Rhizomys* live moreover upon, and not under, the ground, being found about Bamboo-hedges, on the roots of which they principally subsist. The following were stated to be the distinctive characters of the two species known.

RHIZOMYS SINENSIS. *Rhiz. pallidè cinerascens unicolor*.

*Hab. in Chinâ. D. Reevès.*

RHIZOMYS SUMATRENSIS. *Pallidè fuscus, pilis raris albidis interspersis* ; *corporis lateribus pedibusque saturatioribus* ; *genis pallidioribus, occipite nigrescenti lineâ longitudinali albâ, pectore albidò*.

*Mus Sumatrensis*, *Raffles*, *Linn. Trans.* xiii. 258? *Temminck*,  
*Mus. Leyd.*

*Spalax Javanus*, *Cuv. Règne Anim.*, ed. 2., i. 211.

Hab. in Sumatrâ, *Raffles*? *Temminck*; Javâ, *Cuvier*.

The latter species seems to have been first observed by Colonel Farquhar, in whose collection of drawings, preserved in the Museum of the Asiatic Society, a representation of it is found. Of the former we owe the discovery to Mr. Reeves.

Mr. Vigors exhibited, on the part of Captain Cook, specimens of several *Birds* recently presented by that gentleman to the Society, and also of some other *Birds* shot by him in the South of Europe, some of which were interesting on account of their rarity, and others with reference to the localities in which they were obtained. Among them was a specimen of the *Pica cyanea*, (*Corvus cyaneus*, Pall.), a species not included by M. Temminck in the 'Oiseaux d'Europe', which had been killed by Captain Cook in Spain. There were also specimens of the *Falco tinnunculoides*; of the *Sturnus unicolor*, Marm., killed in Spain; of the *Lanius meridionalis*, Temm., a species referable to the genus *Collurio* as recently distinguished by Mr. Vigors: of the *Sylvia conspicillata*, Marm., killed in Spain: of the *Saxicolæ cachinnans* and *stapazina*, Temm., also killed in Spain: and of the *Fringilla domestica*, Linn., which is met with in great numbers in Spain, and consequently extends far beyond the southern limits assigned to the species by M. Temminck.

A collection of *Birds* presented to the Society by H. H. Lindsay, Esq. of Canton, were laid upon the table. They were accompanied by a letter from that gentleman to the Secretary, of the date of Jan. 25, 1831, stating that the collection had been formed during the summer of the previous year in the neighbourhood of Manilla, and adding some notes respecting the various species, as well as the names in the Tagallo or native language of the country. The collection consisted of about fifty-six species, fifty of which at least had not previously been in the Society's Museum, or in any other public collection in England.—Mr. Vigors pointed out the different species; and announced that a catalogue of them was in preparation, which would shortly be submitted to the Committee. In the mean time he characterized the following species.

**HIERAX ERYTHROGENYS.** *Hier. capite et corpore suprâ, caudâ femoribusque intensè atris; gulâ, collo in fronte, corporeque subtùs albis; strigâ a rictu ad aures extendente rufâ; rostro albo, pedibus nigris.*

**Statūra** *Hier. cærulescentis.*

**BUTEO HOLOSPILUS.** *But. supernè brunneus, subtùs brunnescenti-rufus; capite, fasciisque duabus remigum reetricumque fusco-atris; nuchâ et dorso, collo in fronte, pectore abdomineque toto, tectricibusque alarum maculis albis ocellatis, harum maculis diminitioribus.*

**Statūrâ** tertiâ parte minor quàm *Buteo Bacha*; ei speciei similima, differt tamen capite lævi, corporeque toto maculato.

**CAPRIMULGUS MACROTIS.** *Cap. intensè brunneus, rufo undulatus, corpore subtùs caudàque rufo fasciatis; capite aurito scapularibusque rufo-brunneis, fusco undulatim punctulatis nigroque notatis; torque jugulari albo ad nucham extendente rufo.*

Longitudo corporis, 15; rostri ad frontem  $\frac{3}{8}$ , ad rictum,  $1\frac{1}{4}$ ; alæ a carpo ad apicem remigis  $2dæ$ ,  $10\frac{1}{4}$ ; caudæ, 7; tarsi,  $\frac{1}{2}$ .

**DACELO LINDSAYI.** *Dac. corpore suprâ brunneo, olivaceo et viridi nitente, guttis rufo-albidis notato, pectore abdomine crissoque albis, illorum plumis, medii abdominis exceptis, olivascenti-viridi marginatis; capitis pileo saturatè olivascenti-viridi, vittâ superciliari lazulinâ circumdato, deinde vittâ per oculos nigrâ, alterâque suboculari ferrugineâ marginato; gula juguloque ferrugineis; strigâ utrinque maxillari lazulinâ; remigibus fuscis; rectricibus omnibus ad apicem, duabus utrinque externis ad latera, ferrugineo notatis; rostro subbrevis.*

Longitudo corporis,  $10\frac{1}{2}$ ; rostri,  $1\frac{3}{8}$ ; alæ a carpo ad apicem remigis  $3tia$ ,  $4\frac{1}{8}$ ; caudæ,  $4\frac{1}{2}$ ; tarsi,  $\frac{1}{2}$ .

**DACELO LESSONII.** *Dac. corpore suprâ brunneo, olivaceo et viridi nitente, albido guttato; capitis pileo saturatè olivaceo-viridi, vittâ superciliari cæruleo-viridi circumdato, deinde vittâ alterâ nigrâ marginato; collo in fronte corporeque subtùs albo, pectoris abdominisque plumis viridi-brunneo marginatis; strigâ utrinque maxillari viridi; remigibus fuscis; rectricibus omnibus ad apicem, tribus utrinque externis ad latera, ferrugineo notatis; rostro sublongo.*

Longitudo corporis,  $11\frac{3}{4}$ ; rostri  $1\frac{7}{8}$ ; alæ a carpo ad apicem remigis  $3tia$ ,  $4\frac{1}{4}$ ; caudæ,  $4\frac{3}{4}$ ; tarsi,  $\frac{5}{8}$ .

**MUSCICAPA OCCIPITALIS.** *Musc. corpore suprâ pallidè lazulino, capite colloque splendidioribus; abdomine lazulino-albido; maculâ occipitali grandi, torqueque gracili jugulari, sericeo-atris.*

Longitudo corporis,  $6\frac{1}{2}$ .

**RHIPIDURA NIGRITORQUIS.** *Rhip. cinereo-grisea; corpore subtùs, rectricumque, duabus mediis exceptis, apicibus albis; fronte, torqueque jugulari nigris; remigibus rectricibusque fuscis.*

Longitudo corporis, 7.

**IRENA CYANOASTRA.** *Ir. nigrescenti-cyanea; capite suprâ, fasciâ tectricum alarum, uropygio, crissoque splendenti-cyaneis; collo in fronte, genis remigibusque atris.*

Staturâ Irenæ Puellæ, et simillima; differt abdomine caudâque cyaneis, haud nigris, dorso cyaneo haud lazulino, et rostri culmine plus elevato.

**ORIOLOUS ACORRHYNCHUS.** *Or. aureo-flavus; vittâ a rictu per oculos extendente sinciputque obtegente latâ, remigibus totis, rectricumque basibus nigris; rostro flavo, culmine elevato.*

Longitudo corporis, 12; alæ a carpo ad apicem remigis  $4ta$ , 6; caudæ,  $4\frac{1}{2}$ ; tarsi, 1; rostri,  $1\frac{3}{4}$ .

**PSITTACULA RUBIFRONS.** *Psitt. viridis, subtùs pallidior; fronte, dorso imo, rectricumque tectricibus coccineis; remigibus caudâque viridi-fuscis, rostro subelongato rufo.*

Statura paullò major quàm Psitt. Galguli.

**PICUS SPILOLOPHUS.** *Pic. dorso alisque sanguineo-coccineis; subtus sordidè albus, fusciscenti undulatus; capite colloque nigris, guttis albis maculatis; hujus maculis grandioribus; remigibus caudâque fuscis, harum pogoniis internis albo maculatis.*

Longitudo corporis,  $11\frac{3}{4}$ .

**PICUS MODESTUS.** *Pic. suprâ ater, alis ad latera apicesque subrufescentibus; capite in fronte genisque obscurè coccineis, occipite, gulâ, jugulo, colloque grisescenti-atris, plumis maculâ minutissimâ albâ ad apicem terminatis; rectricibus duabus mediis elongatis.*

Longitudo corporis, 15; alæ a carpo ad apicem remigis 4tæ, 6; caudæ, 6; tarsi, 1; rostri,  $1\frac{1}{2}$ .

**LAMPROMORPHA AMETHYSTINA.** *Lamp. suprâ splendidè amethystina; abdomine albo, fasciis viridi-amethystinis ornato; rectricibus lateralibus albo notatis.*

Longitudo  $7\frac{1}{4}$ .

This description is taken from a bird in the state of change, the amethystine feathers on the back, tail and breast, appearing partially through a ferruginous ground, but sufficiently numerous and defined to indicate the adult plumage. A younger bird in the collection has nearly the whole of the upper body ferruginous with an amethystine feather here and there breaking out. In a note appended to the description of the species, Mr. Lindsay states that the natives considered them of extremely rare occurrence.

**NYCTICORAX MANILLENSIS.** *Nyct. suprâ castaneo-rufa; collo in fronte, abdominis lateribus, femorum tectricibus, alarumque tectricibus inferioribus pallidiori-rufis; capite colloque suprâ nigris, cristæ pennis longis pendentibus albis, apice nigro; pectore abdomine crissoque albis.*

Staturâ paulo major quàm *Nyct. Caledonica*, cui simillima; differt tamen colore cristæ, colli in fronte, tectricumque inferiorum alarum.



July 12, 1831.

W. Yarrell, Esq. in the Chair.

Skins of numerous species of *Mammalia* obtained in Dukhun, (Deccan), East Indies, were exhibited by Major W. H. Sykes, Corr. Memb. Z. S. They were accompanied by a Catalogue of the *Mammalia* noticed by Major Sykes in Dukhun, which included also observations on the habits of each species, with occasional remarks on their rarity or abundance, on their geographical range, and on other interesting points connected with their history.

The following species were enumerated:—

*Semnopithecus Entellus*, F. Cuv. *Makur* of the Mahrattas.—Is found in large troops in the woods of the Western Ghauts; and is not venerated by the Mahratta people, nor do they object to its being killed.

*Macacus radiatus*, Geoff. *Waanur* of the Mahrattas.—Inhabits the woods of the Western Ghauts in small troops.

*Pteropus medius*, Temm. *Wurbagool* of the Mahrattas.—Is very numerous in Western India, and such variations are found in the colouring of different individuals in the same troop, that two or three species might be supposed to be included in it. Some individuals have a greater length of body ( $14\frac{1}{2}$  inches) than is given to the *Pter. Javanicus* of Dr. Horsfield.

*Nyctinomus plicatus*, Geoff. (*Vespertilio plicatus*, Hamilton?)—This *Bat* bears a very close resemblance to Dr. Horsfield's *Nyct. tenuis*.

**RHINOLOPHUS DUKHUNENSIS**, Sykes.—*Rhin. supra murinus, infra albido-brunneus: auribus capite longioribus: antibrachio corpus longitudine æquante.*

This *Bat* belongs to the same section as Dr. Horsfield's *Rhin. insignis*, but differs from that species in being much smaller; in having the ears larger and more rounded; the nose-leaf with the upper lobe concave, ridged beneath and revolute above; and the front lobe oblong and notched in the centre. It differs from the *Rhin. crumeniferus*, Pér. and Le Sueur, (which is the *Rhin. marsupialis* of M. Geoffroy's lectures, and the *Rhin. Speoris* of M. Desmarest,) in being much smaller, this species having the fore arm nearly half as long again as the Dukhun bat. The upper nose-leaf also is much more produced, and finally the colour of the fur in this species is reddish. The fore arm of the *Rhin. Speoris* as figured is 2 inches 2 lines long, and the body and head 2 inches 2 lines. In the Dukhun species the fore arm is only the length of the body. Expansion of its wings 10 inches.

*Sorex Indicus*, Geoff. *Cheechondur* of the Mahrattas.—These troublesome and disagreeable animals are very numerous in Dukhun,

but much more so in Bombay. The sebaceous glands in an old male were observed to be very large, and the odour of musk from them almost insupportable; while in an adult female the glands were scarcely discoverable, and the scent of musk very faint. The *Sorex Indicus* and *Sor. giganteus* are regarded by Major Sykes as specifically identical, he having killed them in the same room, and seen them frequently together.

*Ursus labiatus*, Blainv. *Aswail* of the Mahrattas.—In the skulls of many individuals of this species which he has examined, Major Sykes has never seen more than four incisor teeth in the upper and six in the lower jaw; the two centre teeth standing a little in front of the line of the rest. One individual, now in his possession, is so young that he does not conceive that the deficient incisors can have fallen out; nor is there any appearance of dentition having existed in the places which they should have occupied. He remarks that it might be deemed advisable therefore to remove this animal from the genus *Ursus*.

*Lutra Nair*, F. Cuv. *Juhl Marjur* or *Water Cat* of the Mahrattas.—The *Otter* of Dukhun differs only from the *Nair* in wanting the white spots over the eyes, in having a white upper lip, and in being somewhat larger.

*CANIS DUKHUNENSIS*, Sykes.—*Kolsun* of the Mahrattas.

*Can. rufus, subtilis pallidior: caudâ comosâ pendente: pupillâ rotundatâ.*

This is the *wild Dog* of Dukhun. Its head is compressed and elongated; its nose, not very sharp. The eyes are oblique: the pupils round, *irides* light brown. The expression of the countenance that of a coarse ill-natured *Persian Greyhound*, without any resemblance to the *Jackal*, the *Fox*, or the *Wolf*, and in consequence essentially distinct from the *Canis Quao* or *Sumatrensis* of General Hardwicke. Ears long, erect, somewhat rounded at the top, without any replication of the *tragus*. Limbs remarkably large and strong in relation to the bulk of the animal; its size being intermediate between the *Wolf* and *Jackal*. Neck long. Body elongated. Between the eyes and nose, red brown: end of the tail blackish.

From the tip of the nose to the insertion of the tail 33 inches in length: tail  $8\frac{1}{2}$  inches. Height of the shoulders  $16\frac{1}{2}$  inches.

None of the *domesticated Dogs* of Dukhun are common to Europe.

The first in strength and size is the *Brinjaree Dog*, somewhat resembling the *Persian Greyhound* in possession of the Society, but much more powerful.

The *Pariah Dog* is referable to M. Cuvier's second section. They are very numerous, are not individual property, and breed in the towns and villages unmolested.

Amongst the *Pariahs* is frequently found the *Turnspit Dog*, long backed, with short crooked legs.

There is also a petted minute variety of the *Pariah Dog*, usually of a white colour and with long silky hair, corresponding to a common *Lap-Dog* of Europe; this is taught to carry flambeaux and lanterns.

The last variety noticed is the *Dog* with hair so short as to appear naked like the *Canis Ægyptius*. It is known to Europeans by the name of the *Polygar Dog*.

CANIS PALLIPES, Sykes.—*Landgah* of the Mahrattas.

*Can. sordidè rufescenti-albidus; dorso nigrescenti ferrugineoque vario; pedibus totis pallidè ferrugineis: caudá sublongá pendente.*

This is the *Wolf* of Dukhun. Its head is elongated, and its muzzle acuminate: a groove exists between the nostrils. Eyes oblique: *irides* yellowish bright brown. Ears narrow, ovate, erect; small for the length of the head. Tail pendent, thin but bushy, extending below the *os calcis*. General colour of the fur a dirty reddish white or whited brown. Along the back and tail very many of the hairs are tipped black, mixed with others tipped ferruginous. The tail ends in a black tip. The inner surface of the limbs, the throat, breast and belly, dirty white. Legs pale. From the ears to the eyes reddish grey, with a great number of short black hairs intermixed; from the eyes to the nostrils, light ferruginous. The fur from the *occiput* to the insertion of the tail is two or three inches long, gradually shortening as it approaches the sides; hence all over the body very short and lying close.

The description is taken from two three-parts grown animals.

Length from tip of nose to insertion of tail 35 to 37 inches; of the tail 11 to 12 inches; the hair extending two inches beyond the measurement.

These animals are numerous in the open stony plains of Dukhun; but are not met with in the woods of the Ghauts.

*Canis aureus*, Linn. *Kholah* of the Mahrattas.—*Jackals* are numerous in Dukhun. Major Sykes had in his possession at the same time a very large wild male and a domesticated female. The odour of the wild animal was almost unbearable. That of the domesticated *Jackal* was scarcely perceptible.

CANIS KOKREE, Sykes.—*Kokree* of the Mahrattas.

*Can. suprâ rufescenti-griseus, infrâ sordidè albus; caudæ comosæ apice nigro; pedibus rufescitibus: pupillâ elongatâ.*

The *Fox* of Dukhun appears to be new to science, although it much resembles the descriptions of the *Corsac*. It is a very pretty animal, but much smaller than the *European Fox*. Head short; muzzle very sharp. Eyes oblique: *irides* nut brown. Legs very slender. Tail trailing on the ground; very bushy. Along the back and on the forehead fawn colour with hair having a white ring near to its tip. Back, neck, between the eyes, along the sides and half way down the tail reddish grey, each hair being banded black and reddish white. All the legs reddish outside, reddish white inside. Chin and throat dirty white. Along the belly reddish white. Ears externally dark brown, and with the fur so short as to be scarcely discoverable. Edges of eyelids black. Muzzle red brown.

Length 22 and 22½ inches: of the tail 11½ to 12 inches.

*Viverra Indica*, Geoff., (*Viv. Rasse*, Horsf.) *Juwadce Manjur*,

or *Civet Cat* of the Mahrattas.—There are two varieties of this species of *Viverra* in Dukhun; one inhabiting the woods along the Ghauts; the other the country eastward of the Ghauts. The former has the ground colour much grayer, and the lines more distinctly broken into spots. The other variety has a ferruginous tint, and the four black longitudinal lines or stripes on the sides of the neck are more marked: it attains the length of  $28\frac{1}{2}$  inches.

*Herpestes griseus*, Desm. *Moongus* of the Mahrattas.—Some specimens of this animal measure from  $19\frac{3}{4}$  to  $20\frac{1}{2}$  inches from the tip of the nose to the insertion of the tail, and the tail 15 to  $16\frac{1}{2}$  inches.

*Paradoxurus Typus*, F. Cuv. *Ood* of the Mahrattas.—This animal is by no means rare in Dukhun. Its carnivorous propensities are very strong, but it may be fed entirely on rice and clarified butter. In the stomachs of some individuals examined at Poona, were found fruit, vegetables, and *Blattæ*.

*Hyæna vulgaris*, Cuv. *Turrus* of the Mahrattas.—*Hyænas* are numerous in Dukhun, and are susceptible of the same domestication as a dog.

*Felis Tigris*, 'L. *Puttite Wagh* or *striped Tiger* of the Mahrattas.—Royal tigers are so numerous in the province of Khandesh, that 1032 were killed from the years 1825 to 1829 inclusive, according to the official returns. They are much less numerous in the collectorates of Poonah, Ahmednuggar, and Dharwar.

*Fel. Leopardus*. *Cheeta* of the Mahrattas.—This is regarded by Major Sykes as the *Leopard* of M. Temminck's monograph of the genus *Felis*. It is a taller, longer, and slighter built animal than the succeeding, which he considers as the *Panther*. It differs also in more of the ground colour being seen, in the rose spots being much less curved, and in other particulars. The natives of Dukhun consider the *Cheeta* and succeeding Cat as distinct animals. The *Cheeta* is extremely rare. On the contrary, the

*Fel. Pardus*, *Beebeea Baugh* of the Mahrattas, is so abundant that 472 were killed from 1825 to 1829 inclusive, in the four collectorates of Dukhun. It exactly resembles the animal figured as the *Panther of the ancients* in Mr. Griffiths's Translation of the 'Règne Animal.' It differs from the preceding in its smaller size, stouter make, darker ground colour, and in its crowded rose rings.

*Fel. jubata*, L., and *Fel. venatica*, H. Smith. *Cheeta* of the Mahrattas.—These animals appear to be identical, the specific differences deduced from the hair originating in domestication. A skin of the wild animal has a rough coat, in which the mane is marked, while domesticated animals from the same part of the country are destitute of mane and have a smooth coat.

*Fel. Chaus*, Guld. *Mota Rahn Manjur* or *larger wild Cat* of the Mahrattas.

*Fel. torquatus*, F. Cuv. *Lhan Rahn Manjur* or *lesser wild Cat* of the Mahrattas.—The specimens from Dukhun differ only from the *Fel. torquatus* figured in the third volume of the 'Histoire Naturelle des Mammifères' in the ears externally being tipped dark brown,



and in having two narrow stripes behind the eyes instead of one. The sexes resemble each other in colour, marks and size.

• *Mus giganteus*, Hardw. *Ghoos* of the Mahrattas. — In fully grown individuals of the well-known *Bandikoot Rat*, none of the teeth are tuberculous. Its body attains a length of  $16\frac{7}{10}$  inches; the tail  $11\frac{5}{10}$  inches.

*Mus decumanus*, Pall. *Chooa* of the Mahrattas. — The *Norway* or *brown Rat* abounds in Dukhun.

*Mus Musculus*, L. — The *Mouse* is comparatively rare in Dukhun.

Another *Mouse* was observed by Major Sykes, which he believes to be new. It is bright light chestnut above, reddish white below. Tail much longer than the body: size of the common mouse. Found only in fields and gardens.

SCIURUS ELPHINSTONII, Sykes. — *Shekroo* of the Mahrattas.

*Sc. supra nitidè castaneus, infra rufescenti-albidus; caudæ dimidio apicali pallidè rufescente.*

This very beautiful animal is found only in the lofty and dense woods of the Western Ghauts. It is of the size of the *Sc. maximus*, and the general arrangement of its colours is the same; but its colours are invariable, and do not present those differences which exist in the *Sc. maximus*.

Ears and whole upper surface of the body, half way down the tail, outside of the hind legs and half way down the fore legs outside, of a uniform, rich reddish chestnut. The whole under surface of the body, from the chin to the vent, inside of limbs and lower part of fore legs, crown of the head, cheeks and lower half of tail, of a fine reddish white, the two colours being separated by a defined line and not merging into each other. Feet of a light red. Forehead and down to the nose reddish brown, with white hairs intermixed. *Irides* nut brown. Ears tufted. Length from the tip of the nose to the insertion of the tail 20 inches; of the tail  $15\frac{1}{4}$  inches.

Dedicated to a very distinguished person and a zealous promoter of scientific research, the Hon. Mountstuart Elphinstone.

*Sc. Palmarum*, Briss. *Khurree* of the Mahrattas. — The *Palm Squirrel* is very abundant in gardens in Dukhun.

HYSTRIX LEUCURUS, Sykes. — *Sayal* of the Mahrattas.

*Hyst. caudâ albâ.*

This animal appears to be distinct from the European species, which it closely resembles in form and covering. It is nearly a third larger. All the spines and open tubes of the tail are entirely white, which is not the case in the *Hyst. cristata*. The spines of the crest also are so long as to reach to the insertion of the tail. The ears are much less rounded, and the nails are shorter, infinitely deeper and more compressed, and with deep channels below. The white gular band is more marked; and, finally, the Asiatic species is totally destitute of hair, spines where wanting being replaced by strong bristles even down to the nails.

*Lepus nigricollis*, F. Cuv. *Sussuh* of the Mahrattas. — This species of *Hare* is very common in the stony and bushy hills of Dukhun.

*Manis pentadactylus*, L. *Kuwlee Manjur* or *tiled Cat* of the Mahrattas.—Very common in Dukhun, living on white ants.

*Sus Scrofa*, L. *Dookur* of the Mahrattas.—*Wild Hogs* are numerous in Dukhun, and the males attain to a very great size. Every village also abounds with *Hogs*, but any property in them is equally abjured by individuals and the community. These *village Hogs* are of the same colour as the wild animal, mostly a rusty black, and the only variations are slate black or slate intense brown; but it is not above two-thirds of the size of the latter. Tail never curled or spirally twisted.

*Equus Caballus*, L. *Ghora* of the Mahrattas.—A fine breed of *Horses* exists on the banks of the Beema and Mahn rivers in Dukhun, supposed to have been improved by the Arabian blood. The variety called *Pony* by us, and *Tuttoo* by the Mahrattas, is sedulously propagated.

*Equus Asinus*, L. *Gudha* of the Mahrattas.—The *Ass* of Dukhun is very little larger than a good mastiff or Newfoundland dog. It is said to be found wild in Katteewar.

*Camelus Dromedarius*, L. *Oout* of the Mahrattas.—The *Dromedary* is rarely bred in Dukhun, but is in very general use. The two-humped *Camel* is not known.

*Moschus Meminna*, Erxl. *Pcesoreh* of the Mahrattas.—This beautiful little animal is found in considerable numbers in the dense woods of the Western Ghauts, but never on the plains.

*Cervus equinus*, Cuv. *Sambur* of the Mahrattas.—Abounds in the Ghauts of Dukhun and in Khandesh, and is no doubt the same as the Malayan *Rusa* figured in Mr. Griffiths's Translation of the 'Règne Animal'. It wants the size of the *Cerv. Aristotelis* of Bengal, also called *Sambur* (not *Samboo*), and is not so dark in colour.

*Cerv. Muntjak*, Zimm. *Baiker* of the Mahrattas.—This beautiful species of *Deer* is a native of the Western Ghauts of Dukhun, and is never seen on the plains. It has large suborbital sinuses, which it uses in the manner of the *Ant. Cervicapra*.

*Antelope Cervicapra*, Pall. *Bahmunnee Hurn* of the Mahrattas.—This animal abounds on the plains of Dukhun, in flocks of scores, but is not met with in the Ghauts. The suborbital sinuses are capable of great dilatation, and the animal applies them to objects as if for the purpose of smelling.

ANT. BENNETTII, Sykes. *Ant. cornubus nigris, lyratis, apicibus lævibus leviter introrsum antrorsumque versis, ad basin ultra medium annulatis (annulis 8-9); rufescenti-brunneus, infra albus, fasciâ laterali haud conspicuâ; fasciâ mediâ strigâque ab angulo oculi ad oris angulum extensâ nigris; caudâ nigrâ.*

*Kalseepee* or *Black Tail* of the Mahrattas. *Goat Antelope* of Europeans.

This *Antelope* is found on the rocky hills of Dukhun, rarely exceeding three or four in a group, and very frequently solitary. It belongs to the same section as the *Ant. Dorcas*. Horns erect, slightly diverging from each other, bending slightly back-

wards at first, subsequently with their points bending forward: ringed for  $\frac{2}{3}$  of their length. The whole upper surface and outside of the limbs rufous or red brown. Under surface and inside of the limbs white. Tail black. A black patch on the nose. A black narrow streak from the anterior corner of each eye towards the angle of the mouth. Suborbital sinuses very small; in dried skins not observable; nor does the animal dilate them unless very much alarmed. Limbs long and slender; black tufts at the knees. Body light. The female has horns, but they are slender, cylindrical, and without rings. The buttocks present a heart-shaped patch of white. Unlike the *Ant. Cervicapra* it carries its tail erect when in rapid motion. It stands as high as the *Bahmunnee Hurn*, but has less bulk.

There is another *Antelope* found in Dukhun, which Major Sykes has not yet identified, on account of the immature age of his specimen. It is brown above, whited brown below. Horns cylindrical, pointed, without rings. Its general appearance is that of the *Ant. rufescens* and *Ant. silvicultrix*.

*Capra Hircus*, Linn. *Bukee* of the Mahrattas.—The goats in Dukhun are gaunt, stand high on their legs, have the sides much compressed, and are covered with long shaggy hair, which in most is black. Ears nearly pendent. *Irides* ochrey yellow or reddish yellow. Tail always carried erect in movement.

*Ovis Aries*, Linn.—The variety of *Sheep* most extensively bred in Dukhun, has short legs, short thickish body, and arched chaffron. The wool is short, crisp and coarse, and is almost universally black. In most individuals there is a white streak or line from the anterior angle of each eye towards the mouth, and a white patch on the crown of the head.

*Ant. picta*, Pall. *Damalis risea*, H. Smith. *Rooee* of the Mahrattas. *Nylghaū* of the Persians.—This animal is an inhabitant of the Western Ghauts of Dukhun.

*Bos Taurus*, var. *Indicus*. (*Bos Indicus*, Linn.) *Pohl* and *Byl* of the Mahrattas.—This animal, remarkable for its hump, is when early trained to labour or to carriage nearly destitute of it. Dwarf cattle are not met with in Dukhun.

*Bos Bubalus*, Br. Male called *Tondgah*; Female, *Muhces* of the Mahrattas.—The *Buffaloe* of Dukhun is the long-horned variety, and is mostly bred in the Mawals or hilly tracts along the Ghauts.

Major Sykes subsequently called the attention of the Committee to a *Monkey* presented by him to the Society, and now living at the Gardens. It was obtained at Bombay, where it was believed to have been taken from Madagascar; and as it has some characters in common with the *Cercopitheci* (especially with the group of which the *Cerc. Sabæus* forms a part) and the *Semnopitheci* of India, it was remarked that it may ultimately prove to be a connecting link between the African and Asiatic monkeys. It wants the long limbs of the *Semnopitheci*; and although its tail is very long, it is not particularly thin. Major Sykes referred it provisionally to the *Semno-*

*pitheci*, until by an examination of its posterior molars its real station in the system should be determined.

It is thus characterized :

SEMN.? ALBOGULARIS, Sykes. *Semn.? suprâ flavo nigroque, infrâ albo nigroque irroratus; gula albâ; artubus nigris: mystacibus latis aures penè obvelantibus; superciliorum pilis rigidis exstantibus.*

*Hab. in Madagascar?*

Its canines are remarkably long (nearly  $\frac{3}{4}$  of an inch), slender, sharp; the incisors very short and even. Head rounded and short. Ears very small, nearly rounded, and for the most part concealed in the long hair about the head. Eyes deeply seated, and shaded by a continuous arch of long hairs directed forwards. *Irides* broad; of a brown ochre colour. Hair forming a bunch on each cheek and resembling whiskers: no beard. Cheek pouches rudimentary only, not observable externally, even when filled, being concealed by the bushy hair of the cheeks. Thumbs of anterior hands short and distant; those of the posterior long. Whole of the upper surface of the animal of a mingled black and yellowish ochre colour, each hair being banded black and ochre; the black prevailing on the shoulders, the ochre on the back and flanks. Under surface grizzled white and black. Anterior limbs uniform black; posterior black with a little of the dorsal colour. Chin and throat pure white. Tail black, half as long again as the body.

The manners of this monkey are grave and sedate. Its disposition is gentle but not affectionate: free from that capricious petulance and mischievous irascibility characteristic of so many of the African species, but yet resenting irritating treatment, and evincing its resentment by very smart blows with its anterior hands. It never bit any person on board ship, but so seriously lacerated three monkeys, its fellow passengers, that two of them died from the wounds. It readily ate meat, and would choose to pick a bone, even when plentifully supplied with vegetables and dried fruits.

Mr. Gray exhibited a specimen of a *Tortoise* which he regarded as the type of a new genus in the family *Emydidae*. It is characterized as follows :

#### PLATYSTERNON.

*Sternum latum, anticè truncatum, posticè emarginatum. Scutella sterni 12: quorum duo anteriora breviora, lata, per totam sterni latitudinem extensa. Symphysis scutellorum pectoralium abdominaliumque extremitatibus tecta: scutellis axillari inguinalique magnis; inter quæ scutellum tertium accessorium iis simile; scutella hæc tria in suturam symphysis inserta.*

*Caput maximum, cute cornèa continuâ tectum. Cauda longissima, teres, attenuata; supernè serie unicâ, infernè duplici, squamarum tecta; haud cristata.*

This genus is intermediate between *Emys* and *Chelydra*. It has



the broad *sternum* and simple tail of the former genus; and possesses, in common with the latter, a large head, and the peculiar plates which are situated between the outer extremities of the pectoral and abdominal, and the marginal dorsal plates. It differs from *Chelydra*, however, in the peculiar plate which covers the *symphysis* of the *sternum* being here comparatively very small, not exceeding in size the axillary and inguinal plates, and in its being inserted in the same line with them.

The only species known was characterized as the

PLATYSTERNON MEGACEPHALUM. *Plat. capite brunneo, obscure nigro radiato: testâ supernè saturatè brunneâ, infrâ pallidè flavâ: marginibus scutellorum sulcis aliquot obscuris striisque radiantibus confertis.*

Long. testæ,  $3\frac{1}{2}$  unc.; sterni,  $2\frac{3}{4}$ : latitudo testæ,  $2\frac{5}{8}$ ; sterni anticè,  $2\frac{1}{2}$ : long. capitis  $2\frac{5}{8}$ ; caudæ, 3.

*Hab.* in Chinâ.

In illustration of the conterminous genus *Emys*, Mr. Gray exhibited a specimen of the *Em. Caspica*, Schw., recently obtained from the Mediterranean.

Mr. Gray also exhibited a specimen of the animal (*Ocythoë*) found in the shells of the genus *Argonauta*, in illustration of some observations on the disputed question of its parasitic or non-parasitic nature. He stated that he had lately examined ten specimens, four of them referable to *Ocythoë Cranchii*, and the remainder to *Ocythoë antiquorum*; there being, however, little to distinguish them except the size. All these specimens, as well as all those which have been figured, were females, and had eggs inclosed in the hinder part of the shell, in the cavity which is uniformly found behind the body of the animal. In all, the posterior *siphon* was placed more or less exactly in the keel of the shell, but the body did not always occupy a symmetrical position with regard to it, the eye of one side being sometimes nearer to the spire than that of the opposite side. Only one or two of these individuals had their bodies marked with the ridges of the shells, the impressions of which were, however, mostly observable upon the arms. The animals all appeared to be retained in the shells by the inflection of the anterior pair of arms. Mr. Gray added that he had also lately seen several specimens preserved without shells, and having their bodies shaped exactly like that of the common *Octopus*, without the slightest appearance of their having been inclosed in shells: the history of these specimens he was unable to trace, and he could not therefore affirm that they were found in the state in which he observed them.

From these facts Mr. Gray stated that he was inclined to regard it as probable that the *Ocythoë* is only parasitic in the shell of *Argonauta*; that the shells are only resorted to by females during the breeding season for the protection of their eggs; and that the chief purpose of the dilated portion of the anterior arms is to retain the

animal in the shell. He remarked, that no author, so far as he was aware, had distinctly stated of his own observation that these parts are expanded in the form of sails before the wind, a service which they seem to be incapable of performing, except in poetic fiction.

July 26, 1831.

Dr. Marshall Hall in the Chair.

Specimens were exhibited of two *Mammalia*, presented to the Society by J. Boyle, Esq., Colonial Surgeon, Sierra Leone. They were the remains of animals which died on their passage homewards, and had unfortunately been put after death into brine too weak for their perfect preservation. Since their arrival in the Museum they had been transferred to strong spirit, with the view of preserving as completely as their then state would permit, specimens of so much interest. One of them was stated by Mr. Bennett to be a fully grown *Aulacodus Swinderianus*, Temm.; the other a *Lemuridous* species, which is probably the animal noticed and imperfectly represented by Bosman under the name of *Potto*. The latter was shown to be the type of a new genus, which Mr. Bennett characterized as follows:

PERODICTICUS.

*Facies subproducta. Artus subæquales. Cauda mediocris. Index brevissimus, phalange ungueali solum exserto. Dentes primores superne 4, subæquales; inferne 6, graciles, declives: canini,  $\frac{1}{2}$   $\frac{1}{2}$ , conici, compressi, marginibus antico posticoque acutis: molarium in maxilla superiore primus minimus; secundus major; ambo conici; tertius acutè tuberculatus, tuberculis duobus externis alteroque interno; quartus præcedenti similis tuberculo interno majore; sequentes (in specimine juniore desunt); in maxilla inferiore, duo conici æquales; tertius acutè externè 2-, internè 1-tuberculatus, sequentes (desunt).*

PERODICTICUS GEOFFROYI. *Per. castaneus, infra pallidior, pilis raris cinereis interjectis: vellere lanato.*

Potto, Bosman, *Guin.* ii. 35. No. 4?

Lemur Potto, Gmel., *Linn. Syst. Nat.* 42?

Nycticebus Potto, Geoff., *Ann. Mus.* xix. 165?

Galago Guineensis, Desm. *Mamm.* 104, No. 127?

*Hab.* in Sierra Leone.

The head is rounded, with a projecting muzzle: the nostrils are lateral, small, sinuous, with an intermediate groove extending to the upper lip: the tongue is rough with minute *papillæ*, rather large, thin and rounded at the tip, and furnished beneath with a tongue-like appendage, which is shorter than the tongue itself and terminates in about six rather long lanceolate processes, forming a pectinated tip; the eyes are small, round, somewhat lateral, and oblique: the ears moderate, open, slightly hairy, both within and without. The body is rather slender. The limbs are nearly equal, long, and slender: the fingers moderately long. On the fore-hands the *index* is excessively short, the first *phalanx* being concealed, and the ungueal *pha-*

*lanx* (the only *phalanx* free) being barely large enough to support a rounded nail, which does not exist on the specimen, but of which there is an apparent *cicatrix*; the nails of all the other fingers are flat and rounded. Those of the hinder hands are similar, except that of the fore-finger, which, as in the *Lemurs* generally, is long, subulate, and curved. The tail is of moderate length, and covered with hairs resembling those of the body. The hairs generally are long, soft, and woolly; each of them being mouse-coloured at the base; rufous in the middle, and paler at the tip; some few are tipped with white. Hence results on the upper surface and on the outsides of the limb a chestnut colour with a slight mixture of grey: the under surface is much paler. The muzzle and chin are almost naked, having only a few scattered whitish hairs.

The measurements of the specimen are: length of the head, 2 inches 2 tenths; of the body, 6 inches; of the tail, 1 inch 6 tenths, or including the hair, 2 inches 3 tenths. The breadth of the head in front of the ears is 1 inch 4 tenths: the distance between the eyes, 4 tenths; from the anterior angle of the eye to the end of the nose, 7 tenths; from the eye to the ear,  $7\frac{1}{2}$  tenths: length of ears behind, 5, of their aperture 8, breadth 5 tenths of an inch.

<i>Anterior Limbs.</i>		<i>Posterior Limbs.</i>	
	in.		in.
<i>humerus</i> . . . . .	1·7	<i>femur</i> . . . . .	1·8
<i>ulna</i> . . . . .	2·1	<i>tibia</i> . . . . .	1·9
<i>carpus</i> to end of 4th (longest) finger . . . . .	1·8	from <i>os calcis</i> to end of 4th (longest) finger . . . . .	2·3
thumb with metacarpal bone	1·0	thumb with metatarsal bone	1·1
fore-finger . . . . .	·4	fore-finger (including nail 2·5)	·8
— last joint (all that is free)	·1	3rd finger . . . . .	·9
3rd finger . . . . .	·9	4th finger . . . . .	1·2
4th finger . . . . .	1·1	5th finger . . . . .	·9
5th finger . . . . .	·9	span . . . . .	2·7
span . . . . .	2·4		

By the comparative length of the tail the genus *Perodicticus* is readily distinguishable from the other *Lemuridæ*. In this, in the moderate elongation of the face, in the moderate size of the ears, in the equality of the limbs, and especially in the extreme shortness of the *index* of the anterior hands, reside its essential characters. The latter character is especially important, and may be regarded as indicating its typical station in a family, all of which are distinguished from the neighbouring groups by a variation in the form of the *index* or of its appendages. In the *Lemuridæ* generally the nail of the *index* of the hinder hands is elongated and claw-shaped, and unlike those of the other fingers, which are flat as in the *Monkeys*. This is frequently accompanied by an abbreviation of the *index* of the fore-hands, which becomes in *Loris*, Geoff., very considerable, and is in *Perodicticus* carried to its *maximum*, that organ being here almost obsolete.

The habits of the animal are described by Mr. Boyle as "slothful



and retiring. It seldom makes its appearance but in the night time, when it feeds upon vegetables, chiefly," he believes, "the *Cassada*. It is known to the colonists as the *Bush-Dog*."

The specimen of *Aulacodus*, being fully adult, was shown to add much to the knowledge previously possessed of an animal, only one individual of which had hitherto been seen by naturalists, and that individual so young as not to have attained its perfect characters. Mr. Bennett pointed out the deviations, in the specimen exhibited, from the description published by M. Temminck in his 'Monographies de Mammalogie', and proposed the following amended generic character:

AULACODUS, Van Swind.

*Dentes incisores*  $\frac{2}{2}$ , *anticè plani, sculpro cuneato, superiores profundè bisulcati*: *molares*  $\frac{3}{3}$ , *lamellares*: *sacculi buccales* 0: *pedes antici digitis* 4, *cum rudimento pollicis*; *postici digitis* 4: *ungues, præter pollicis subplanum, falculares, fortes, supernè rotundati, infrà dilatati sulcati*: *cauda pitosa, mediocris, attenuata*.

The deep *sulci* on the anterior surface of the incisor teeth of the upper jaw are situated nearer to the inner than to the outer edge of the tooth, and divide its face into three ridges, the inner of which is half the breadth of the middle, and the middle less than half the breadth of the outer. The molar teeth of the upper jaw have two re-entering folds of enamel on the outer, and one on the inner side; the outer passing beyond the middle of the crown, the inner central and less deeply entering: all the teeth are nearly equal in size: the anterior three are nearly square; the posterior somewhat rounded: there is no notching on the outer edge, but a distinct notch exists where the enamel folds in on the inner side, especially of the three posterior teeth. In the lower jaw the first molar has three folds of enamel on the inner side passing beyond the middle of the crown, and one small fold slightly notched on the outer: the second and third have two inner folds and one outer, all notched at the edge: the posterior is nearly similar, but more rounded behind. This system of dentition bears a greater resemblance to that of *Erethizon*, F. Cuv., than to that of any other genus of the *Rodentia*.

The covering of the *Aulacodus Swinderianus* is peculiar, consisting entirely, except on the tail, of flattened somewhat spine-like bristles, from 1 to  $1\frac{1}{2}$  inch in length, the tips only of which are flexible and hair-like: the dark space which occupies the greater portion of each of the bristles exhibits a changeable metallic lustre, varying in different positions from deep steel blue to bright copper red.

The length of the body and head is 17 inches, or measured along the convexity of the back, 20: of the tail, 9: of the head,  $4\frac{1}{2}$ : of the fore-leg,  $3\frac{1}{2}$ ; *tarsus* and toes,  $1\frac{1}{2}$ : of the *femur*,  $4\frac{1}{2}$ ; *tibia*,  $4\frac{1}{2}$ ; *tarsus* and toes,  $3\frac{1}{2}$ : the ear, nearly concealed by the bristly covering, is  $\frac{1}{2}$  long, and 1 inch broad.

Mr. Boyle states that this animal "is called by some the *Ground-Pig*, by others, the *Ground-Rat*. It feeds upon ground nuts, *Cassada*, and other roots. On the passage homewards it ate potatoes, and was becoming very docile."

It is very probably the "wild Rat, bigger than a Cat" mentioned by Bosman.

A small collection of *Fishes*, formed during the voyage of H. M. S. Chanticleer, and presented to the Society by the Lords Commissioners of the Admiralty, together with numerous other Zoological specimens obtained during the same voyage, was laid upon the table. It contained among others a young individual of the *Scyllium cirratum*, in the state in which it is described by Schneider as the *Squalus punctatus*: a specimen of the *Blennius pilicornis*, Cuv., described originally by Marcgrave, and remarkable for the long acicular tooth at the back of the lower jaw on each side, a peculiarity which may hereafter cause it to be regarded as the type of a distinct genus: a specimen of the *Antennarius scaber*, *Chironectes scaber*, Cuv., also described by Marcgrave: and two species which appeared to be new to science, and which were thus characterized by Mr. Bennett:

**CHROMIS TÆNIA.** *Chrom. brunneo-nigrescens*: pinnis nigrescentibus; caudali subrotundatâ nigro fasciatim punctatissimâ: maculâ rotundâ infraoculari, alterâ ad basin pinnæ caudalis supernè, tæniâque ab oculo per medium latus ad pinnam caudalem ductâ, nigris.

D.  $\frac{14}{1}$ . A.  $\frac{3}{3}$ . P. 13. C. 16.

*Hab.* apud Trinidad.

Affinis *Chrom. punctato*, Cuv., (*Labrus punctatus*, L.). Differt a figurâ Blochianâ tæniâ laterali, pinnisque haud lineatis: differt etiam numero radiorum pinnarum.

**MONACANTHUS SETIFER.** *Mon. caudâ hispidâ*: cirris brevibus multifidis raris conspersus: pinnæ dorsalis radio 2do longissimo: pallidè brunneus, lateribus mediis nigro undulatim longitudinaliter lineatis: pinnæ caudalis rotundatæ fasciâ angustâ submediâ.

D. 1, 28. A. 29. C. 12. P. 12.

A description, by the Rev. Robert Holdsworth, of a fish taken in the seine, at Start Bay, on the south coast of Devon, in August 1825, was read. Mr. Holdsworth regards the fish in question as the *Umbriana*, *Sciæna Aquila*, Cuv.; with which species, occasionally taken in the English Channel, his description agrees.

August 9, 1831.

Dr. Horsfield in the Chair.

A letter from George Swinton, Esq., of Calcutta, Corr. Memb. Z. S., addressed to the Secretary, was read, announcing the transmission to England, as a present to the Society, of an entire *Dugong*, preserved in spirit and brine, which he hoped would arrive in a sufficiently perfect state to admit of its dissection.

Specimens of two species of *Bats*, presented to the Society with a numerous and valuable collection of birds formed at Madras by Josiah Marshall Heath, Esq., F.L. & Z.S., were exhibited, and Dr. Horsfield identified them as the *Megaderma Lyra*, Geoff., and a new species of the genus *Nycticejus*, Rafin. He pointed out in the former some discrepancies in the colouring from that described by M. Geoffroy Saint-Hilaire, apparently from a specimen preserved in spirit; the individual before the Meeting agreeing much more nearly with the colours as recently described by M. Isidore Geoffroy Saint-Hilaire, from whose description it scarcely differed, except in the less intensity of the rufous tinge of the tips of the hairs of the upper surface.

Of the *Nycticejus* two specimens were exhibited, on which Dr. Horsfield pointed out the characters by which that group had been generically distinguished from *Vespertilio* as circumscribed by modern authors. He remarked on the geographical distribution of the genus, which might be regarded altogether as an American form, were it not for the existence of a species in Java described by him in his 'Zoological Researches' as the *Vespertilio Temminckii*, and of the present species obtained on the Continent of India. As the second Indian species of this group, he regarded the present acquisition as peculiarly interesting. It is considerably larger than the Javanese species, from which it differs also remarkably in its colouring.

Dr. Horsfield thus characterized and described the species:

**NYCTICEJUS HEATHII.** *Nyct. capite cuneato supra lateribusque planis, auriculis capite brevioribus oblongis rotundatis margine posteriore parum excisis trago elongato falcato, vellere pilis sericatis brevissimis, notæo fusco, gastræo fulvo.*

Long. corporis (caudâ inclusâ), 6 unc.: expansio extremitatum anteriorum, 18 unc.

The head is of moderate length, nearly even above and compressed at the sides. The muzzle is broad and abruptly terminated. The nose is slightly emarginate. The eyes ———. The mouth is proportionally small. The lips are not rugose, and are nearly covered with delicate hairs. The ears are shorter than the head; the auricle oblong, erect, rounded, naked and slightly indented posteriorly, termi-

[No. X.] ZOOLOGICAL SOCIETY. PROCEEDINGS OF THE COMM. OF SCIENCE.

nating below in a small lobule; the *tragus* linear, erect, falciform, and shorter than the auricle.

The animal is uniformly and thickly covered by a short, very soft, delicate silky hair, closely applied to the skin: this hair is about a line in length on the back, but shorter and more delicate on the head; on the breast it is somewhat longer and downy. The colour of the body and hair above is brown with a tawny hue; underneath fulvous with a slight tendency to gray; the tint being uniformly distributed over the throat, breast, *abdomen* and sides. The transparent membrane is uniformly brown.

The collection of *Birds* formed by Major James Franklin, F.R.S. &c., on the banks of the Ganges and in the mountain chain of Upper Hindcostan, and presented to the Society by the Physical Committee of the Asiatic Society of Calcutta, (which had been laid on the table on the 23rd November last,) was again exhibited. The exhibition had been commenced at the previous Meeting of the Committee, when the *Raptorial* and *Insessorial Birds* were brought under the notice of the Members present; and it was now concluded by the *Rasorial*, *Wading*, and *Swimming Birds*. On the former occasion, Mr. Vigers, and on the latter, Mr. Yarrell, availed themselves of the opportunity to remark on the geographical distribution of many of the species contained in the collection, and on other points connected with their history. They were exhibited in the order of the following

Catalogue of Birds (systematically arranged) which were collected on the Ganges between Calcutta and Benares, and in the Vindhyan hills between the latter place and Gurrah Mundela, on the Nerbudda, by Major James Franklin, F.R.S. &c.

## ORDO I. RAPTORES.

### Fam. FALCONIDÆ.

#### Sub-Fam. *Aquilina*.—Genus *Aquila*.

1. *AQUILA VINDHIANA*. *Aq. pallidè brunneo variegata*; capite, pectore, remigibus secundariis, caudæque saturationibus, hujus apice albido graciliter marginato; remigibus primariis nigris; capitis collique plumis pallido-rufo lanceolatis.

Longitudo 26 unc.

Cawnpoor Eagle, Lath.?

#### Sub-Fam. *Falconina*.—Genus *Falco*.

2. *Falco Subbuteo*, Linn. *Hobby*, Penn. *Le Hobereau*, Buff.
3. *Falco Chicquera*, Daud. *Chicquera Falcon*, Lath. *Le Chicquera*, Le Vaill.
4. *Falco Tinnunculus*, Linn. *Kestrel*, Penn. *La Cresserelle*, Buff.

#### Sub-Fam. *Buteonina*.—Genus *Buteo*.

5. *Buteo Bacha*. *Falco Bacha*, Daud. *Bacha Falcon*, Lath. *Le Bacha*, Le Vaill.



Genus *Circus*.

6. *CIRCUS TEESA*. *Circ.* capite corporeque rufo-brunneis, plumarum rhachibus fuscis; dorso imo, reatricibusque ferrugineis, his fasciis subobsoletis fuscis septem circiter notatis; remigum tectricibus abdomineque albescenti notatis; femorum tectricibus crissoque rufescenti-albis; fronte, gula, nuchæque fasciâ gracili albis; rostro pedibusque flavis, illius apice nigro.

Longitudo  $17\frac{1}{2}$ .

Zuggun Falcon, Lath.?

7. *Circus cyaneus*. *Falco cyaneus*, Linn. Hen Harrier, Penn.  
 8. *Circus melanoleucus*. *Falco melanoleucus*, Gmel. Black and white Indian Falcon, Penn. Le Tchoug, Le Vaill.  
 9. *Circus rufus*, Briss. Moor Buzzard, Penn. Le Busard, Buff.

Sub-Fam. *Milvina*.—Genus *Elanus*, Savigny.

10. *Elanus Melanopterus*, Leach. Le Blac, Le Vaill.

Fam. *Strigida*.—Genus *Otus*.

11. *OTUS BENGALENSIS*. *Ot.* pallidè rufescens, fusco alboque undulatum variegatus; nuchæ pectorisque plumis in medio strigâ latâ brunneo-nigrâ notatis; abdomine fusco graciliter fasciato; remigibus reatricibusque lateralibus prope apicem brunneo fasciatis, his mediis per totam longitudinem similiter notatis.

Longitudo 20.

Dr. Latham alludes to this as a variety of the great-eared Owl.

Genus *Noctua*.

12. *NOCTUA INDICA*. *Noct.* cinereo-brunnea; capite guttis parvis albis, alis grandioribus notatis; abdomine albo, maculis brunneis lunulatis notato; remigibus reatricibusque albo fasciatis; regione circumoculari, gulâ, fasciâque subgulari ad aures extendente albis.

Fœm. magis rufescens, abdomine magis fasciatim maculato.

Longitudo 9.

Indian Spotted Owl, Lath.?

## ORDO II. INSESSORES.

Tribus *FISSIROSTRES*.

Fam. *Meropida*.—Genus *Merops*.

13. *Merops Philippinus*, Linn. Philippine Bee-eater, Lath. Grand Guépier des Philippines, Buff.  
 14. *Merops viridis*, Linn. Indian Bee-eater, Lath. Guépier à collier de Madagascar, Buff.

Fam. *Hirundinida*.—Genus *Hirundo*.

15. *Hirundo Klecho*, Horsf. Klecho Swallow, Lath. Hirondelle longipenne, Temm.  
 16. *HIRUNDO FILICAUDATA*. *Hir.* supra purpurascenti-atra, remigibus fuscis; corpore subtilis maculisque reatricum omnium late-

*ralium albis; capitis vertice rufo; rectrice utrinque laterali elongato, ad apicem gracillimo.*

*Statura Hir. ripariæ.*

*Wire-tailed Swallow, Lath.*

17. *Hirundo riparia*, Linn. *Sand Martin*, Penn. *L'Hirondelle de rivage*, Buff.

Genus *Cypselus*.

18. *Cypselus affinis*, Hardw. *Allied Swift*, Hardw.  
19. *Cypselus Palmarum*, Hardw. *Balassian Swift*, Lath.

Fam. *Caprimulgidæ*.—Genus *Caprimulgus*.

20. *CAPRIMULGUS MONTICOLUS*. *Cap. pallidè cinereo-brunneo, rufo, fuscoque sparsim variegatus; abdomine rufescenti-fusco fasciato; remigibus secundariis rufo nigroque fasciatis, primariis brunnescenti-nigris, quatuor externis fasciâ latâ albâ in medio notatis; rectricibus sex mediis fasciis gracilibus nigris undulatis, duabus utrinque lateralibus albis apicibus brunneis. Fœm. fasciâ alarum rufâ; caudâ concolori (sine albo).*

*Longitudo 10.*

*Great Bombay Goatsucker, Lath.?*

21. *Caprimulgus Asiaticus*, Lath., Ind. Orn. *Bombay Goatsucker*, Lath.

Fam. *Halcyonidæ*.—Genus *Alcedo*.

22. *Alcedo Bengalensis*, Gmel. *Little Indian Kingfisher*, Edw.  
23. *Alcedo rudis*, Linn. *Black and white Kingfisher*, Edw.

Genus *Halcyon*.

24. *Halcyon Smyrnensis*. *Alcedo Smyrnensis*, Linn. *Smyrna Kingfisher*, Lath. *Martin pêcheur de la côte de Malabar*, Buff.

Tribus DENTIROSTRES.

Fam. *Muscicapidæ*.—Genus *Muscicapa*.

25. *Muscicapa Banyumas*, Horsf. *Banyumas Flycatcher*, Lath. *Gobe-mouche Chanteur*, Temm.  
26. *Muscicapa nitida*, Lath., Ind. Orn. *Nitid Flycatcher*, Lath.

Genus *Muscipeta*.

27. *Muscipeta Paradisi*. *Muscicapa Paradisi*, Linn. *Paradise Flycatcher*, Lath. *Gobe-mouche Tchitrec-be, roux et blanc*, LeVaill.  
28. *Muscipeta peregrina*. *Parus peregrinus*, Gmel. *Crimson-rumped Flycatcher*, Lath. *Gobe-mouche Oranor*, Le Vaill.

Genus *Rhipidura*.

29. *RHIPIDURA ALBOFRONTATA*. *Rhip. capite colloque nigris; dorso cinereo-nigro; alis caudâque fusco-nigris; fasciâ subgracili frontali super oculos ad nucham extendente, pectore, abdomine, maculis tectricum alarum, apicibusque rectricum, duabus mediis exceptis, albis.*

*Longitudo 6.*

*White-browed Flycatcher, Lath.?*

30. RHIPIDURA FUSCOVENTRIS. *Rhip. capite nigro; dorso abdomineque cinereo-nigris; alis caudaque fusco-nigris; strigâ brevi superciliari colloque in fronte albis; rectricum trium lateralium apicibus albescentibus.*

Longitudo  $7\frac{1}{2}$ .

*Broad-tailed Flycatcher, Lath.?*

Fam. Laniadæ.—Genus *Ocypterus*.

31. *Ocypterus leucorhynchus*. *Lanius leucorhynchus*, Linn. *White-billed Shrike, Lath. Pie-griêche de Manille, Buff.*

Genus *Edolius*.

32. *Edolius cærulescens*. *Lanius cærulescens*, Linn. *Fork-tailed Indian Butcher-bird, Edw.*

Genus *Lanius*.

33. LANIUS MUSCICAPOÏDES. *Lan. brunnescenti-cinereus subtus albens; strigâ superciliari rufescenti-albâ; alis rectricibusque fusco-brunneis, his duabus lateralibus albis basi notâque ad apicem fusco-brunneis.*

Fœm. aut Mas jun. *capite corporeque suprâ albido maculatis.*

Longitudo  $6\frac{1}{2}$ .

*Keroula Shrike, Lath.?*

Genus *Collurio*.

34. *Collurio Excubitor*. *Lanius Excubitor*, var. Linn. *Cinereous Shrike, var. C. Lath.*

35. *Collurio erythronotus*, Proceed. Zool. Soc. p. 42. *Grey-backed Shrike, Lath.?*

36. COLLURIO NIGRICEPS. *Col. capite suprâ, nuchâ, alis, caudaque nigris; gulâ, pectore, abdomine medio, maculâque in medio alarum, albis; dorso cinereo; scapularibus, uropygio, abdominis lateribus, crissoque rufis.*

Longitudo  $8\frac{1}{2}$ .

*Indian Shrike, Lath.?*

37. *Collurio Hardwickii*, Proceed. Zool. Soc. p. 42. *Bay-backed Shrike, Lath.?*

Genus *Graucalus*.

38. *Graucalus Papuensis*, Cuv. *Corvus Papuensis*, Gmel. *Papuan Crow, Lath.*

Genus *Ceblepyris*.

39. *Ceblepyris cana*, Temm. *Muscicapa cana*, Gmel. *Ash-coloured Flycatcher, Lath.*

40. *Ceblepyris fimbriatus*, Temm. *Echenilleur frangé, Temm.*

Fam. Merulidæ.—Genus *Pitta*,

41. *Pitta brachyura*. *Corvus brachyurus*, Linn. *Short-tailed Crow, var. B. Lath. Short-tailed Pie, Edw.*

Genus *Oriolus*.

42. *Oriolus Galbula*, Linn. *Golden Oriole, Lath. Le Lorient, Buff.*

43. *Oriolus melanocephalus*, Linn. *Black-headed Oriole, Lath. Lorient de la Chine, Buff.*

44. *ORIOIUS MADERASPATANUS*. Or. fronte, corpore suprà, tectricibus alarum, abdomineque luteis; capite suprà, genis, remigibus, notdq̄ue medianà rectricum fusco-atris; gulà albà stris fusco-atris.

Longitudo 9.

*Oriolus Galbula*, var.  $\gamma$ . Lath. Yellow Indian Starling, Edw.  
Yellow Starling from Bengal, Albin.

Genus *Turdus*.

45. *Turdus macrourus*, Gmel. Long-tailed Thrush, Lath.  
46. *Turdus Saularis*. *Gracula Saularis*, Linn. Pastor *Saularis*, Temm. Little Indian Pie, Edw.

Genus *Timalia*.

47. *TIMALIA CHATARÆA*. Tim. suprà pallidè brunnescenti-, subtùs rufescenti-cinerea; capite corporeque suprà lineis fuscis striatis; rectricibus fusco obsoletè fasciatis; rostro pallido.

Longitudo  $9\frac{3}{4}$ .

*Gogoye Thrush*, Lath. ?

48. *Timalia pileata*, Horsf. Pileated Thrush, Lath.

49. *TIMALIA HYPOLEUCA*. Tim. suprà rufescenti-brunnea, subtùs albà; alis rufis; his caudàque subtùs cinereis, rectricibus fusco obsoletè fasciatis; rostro nigro.

Longitudo  $6\frac{1}{2}$ .

50. *TIMALIA HYPERYTHRA*. Tim. suprà olivascenti-brunnea; capite in fronte corporeque toto subtùs rufis; caudà supernè fusco obsoletè fasciatà; rostro pallido.

Longitudo 5.

Genus *Ixos*.

51. *Ixos jocosus*. *Lanius jocosus*, Linn. Jocose Shrike, Lath.  
52. *Ixos Cafer*. *Turdus Cafer*, Linn. Cape Thrush, Lath. Le Cou-rouge, Le Vaill.  
53. *Ixos fulicata*. *Motacilla fulicata*, Linn. Sooty Warbler, var. Lath. Traquet noir des Philippines, Buff.

Fam. *Sylviadæ*.—Genus *Iora*.

54. *Iora scapularis*, Horsf. Scapular Wagtail, Lath.

Genus *Sylvia*.

55. *Sylvia Hippolais*, Lath. Ind. Orn. Lesser Pettichaps, Lath. Reed Wren, Lath.

This is the bird alluded to under Dr. Latham's *Reed Wren*, as an Indian variety called *Tickra* and *Ticktickee*.

Genus *Prinia*.

56. *PRINIA CURSITANS*. Prin. corpore suprà pallidè brunneo, fusco striato; gulà juguloque albis; abdomine rufescente; rectricibus mediis fuscis, omnibus subtùs ad apicem fuscà nigrà albo terminatà notatis.

Longitudo 4.

57. *PRINIA MACROURA*. Prin. suprà grisescenti-brunnea; capite, alis, uropygioque subrufescenti tinctis; subtùs ferrugineo-albida; rectricibus quatuor mediis saturatoribus fusco obsoletè fasciatis, subtùs ad apicem fusco leviter notatis.

Longitudo  $5\frac{1}{2}$ .



58. *PRINIA GRACILIS*. *Prin. cinereo-grisea*; dorso, alis, caudâque olivascens; gula, pectore, abdomineque subtus albidis; rectricibus subtus griseis fasciâ nigrâ albo terminatâ notatis. Longitudo  $4\frac{7}{8}$ .

*Foodkey Warbler*, Lath. ?

Genus *Motacilla*.

59. *MOTACILLA PICATA*. *Mot. capite, collo, corporeque supra nigris; strigâ utrinque superciliari alterâque longitudinali alarum, corpore subtus, rectricibusque duabus lateralibus albis.* Longitudo 9.

*Pied Wagtail*, Lath. pl. 104.

60. *Motacilla flava*, Linn. *Bergeronnette jaune*, Buff., & *Bergeronnette de printemps*, Buff. *Yellow Wagtail*, Lath.

This is the Indian bird alluded to by Dr. Latham under the head of *Yellow Wagtail*, called *Peeluck*, which is its Indian name.

Genus *Saxicola*.

61. *Saxicola rubicola*, Temm. *Stone Chat Warbler*, Lath.

Genus *Phœnicura*.

62. *Phœnicura atrata*, Jard. & Selb. *Indian Redstart*, Iid.

Fam. *Pipridæ*.—Genus *Parus*.

63. *Parus atriceps*, Horsf. *Mésange cap-nègre*, Temm.

Tribus *CONIROSTRES*.

Fam. *Fringillidæ*.—Genus *Alauda*.

64. *ALAUDA CHENDOOA*. *Al. supra pallidè grisescenti-brunnea, plumis fusco in medio notatis; corpore subtus strigâque superciliari albis; rectricibus brunneis, duarum utrinque lateralium pogonii externis albis; pectore brunneo maculato, capite cristato.* Statura *Al. arvensis*, Linn.

65. *ALAUDA GULGULA*. *Al. pallidè rufescenti-brunnea, plumis in medio latè et intensè brunneo lineatis; subtus albescens, pectore brunneo lineato; femoribus rufescentibus; rectricibus brunneis, externâ utrinque ferè totâ, secundæ pogonio externo, albis.* Statura ferè præcedentis.

Genus *Mirafra*.

66. *Mirafra Javanica*, Horsf. *Alouette mirafre*, Temm.

67. *MIRAFRA PHÆNICURA*. *Mir. pallidè cinereo-brunnea; corpore subtus, remigum pogonii internis, rectricumque basi rufis; rostro albo, culmine apiceque fuscis.*

Longitudo 5.

Genus *Emberiza*.

68. *Emberiza Baghaira*. *Baag-gèyra Lark*, Lath.

This bird is the common *Ortolan* of India, called *Baghairi*.

69. *Emberiza Gingica*, Gmel. *Duree Finch*, Lath.

70. *Emberiza cristata*, Gould's Century of Himalayan Birds.

71. *Emberiza Bengalensis*. *Baya Berbera*, Asiat. Res. *Loxia Bengalensis*, Linn.

The Hindu name of this bird is *Baya*; its Sanscrit name *Berbera*.

Genus *Fringilla*.

72. *Fringilla Amandava*, Linn. *Le Bengali Piqueté*, Buff.

73. *Fringilla formosa*, Lath. *Lovely Finch*, Lath.  
 74. *Fringilla Malabarica*, ——. *Loxia Malabarica*, Linn. *Malabar Grosbeak*, Lath.  
 75. FRINGILLA FLAVICOLLIS. *Fring. suprà cinereo-grisea, subtus albida; jugulo macula flavá notato; humeris ferrugineis; alis maculis albis fascias duas exhibentibus notatis.*  
 Longitudo  $5\frac{3}{10}$ .

This bird, though placed amongst the *Finches*, differs in the form of its bill, and it may perhaps hereafter be found expedient to remove it.

Genus *Ploceus*.

76. *Ploceus Philippinus*, Cuv. *Philippine Grosbeak*, Lath.  
 Fam. *Sturnidæ*.—Genus *Pastor*.  
 77. *Pastor roseus*, Temm. *Rose-coloured Thrush*, Lath. *Le Roselin*, Le Vaill.  
 78. *Pastor tristis*, Temm. *Merle des Philippines*, Buff.  
 79. *Pastor griseus*, Horsf. *Le Martin gris de fer*, Le Vaill.  
 80. *Pastor Contra vel Capensis*, Temm. *Etourneau Pie*, Buff.  
 81. *Pastor Pagodarum*, Temm. *Le Martin Brâme*, Le Vaill.

Fam. *Corvidæ*.—Genus *Corvus*.

82. *Corvus Corone*, Linn. *Carrion Crow*, Lath.  
 This bird appears to be the common *Carrion Crow* of India; it differs only in size from the European *Crow*, and in the greater elevation of the bill.

Genus *Coracias*.

83. *Coracias Bengalensis*, Linn. *Blue Jay from the East Indies*, Edw.

Genus *Pica*.

84. *Pica vagabunda*, Wagler. *Rufous Magpie*, Hardw.

Fam. *Buceridæ*.—Genus *Buceros*.

85. *Buceros Gingianus*, Lath. *Indian Hornbill*, Lath.  
 There is some confusion with regard to this bird in Dr. Latham's General History, under the heads of *Gingi* and *Indian Hornbill*: it is the *Dhanesa* of India.

86. *Buceros Malabaricus*, Gmel. *Unicorn Hornbill*, Lath.  
 There is also much confusion with regard to this bird under the heads of *pied Hornbill* and *Unicorn Hornbill* of Latham: it is the *Dhanesa* of the latter, var. B.

Tribus SCANSORES.

Fam. *Psittacidæ*.—Genus *Palæornis*.

87. *Palæornis torquatus*, Vig. *Psittaca Borbonica torquata*, Briss. *La Perruche à double collier*, Buff.  
 88. *Palæornis Bengalensis*, Vig. *Psittacus Bengalensis*, Gmel. *Blossom-headed Parakeet*, Lath. sp. 74. var. A.  
 89. PALÆORNIS FLAVICOLLARIS. *Pal. viridis; capite lilacino-cano, flavo marginato; reatricibus mediis cæruleis apice albo.*  
 Longitudo 12.

According to the description, this would appear to be Dr. Latham's *yellow-collared Parrakeet*; but he refers to figures which do not correspond.

Fam. *Picidæ*.—Genus *Bucco*.

90. *BUCCO CANICEPS*. *Buc. gramineo-viridis*; capite, nuchâ, collo, pectoreque griseis; illius plumis in medio albido lineatis; rostro rubro; pedibus flavis; regione circumoculari nudâ flavescenti-rubrâ.

Longitudo 10.

*Fichtel's Barbet*, Lath.?

This bird is the *Bura-Bussunta* of India, and appears to be the same as var. A. of Dr. Latham's *Fichtel's Barbet*.

91. *Bucco Philippinensis*, Gmel. *Barbu des Philippines*, Buff.

Genus *Picus*.

92. *Picus Bengalensis*, Linn. *Bengal Woodpecker*, Lath.  
93. *Picus Mahrattensis*, Lath., Ind. Orn. *Mahratta Woodpecker*, Lath.

Fam. *Certhiadæ*.—Genus *Sitta*.

94. *SITTA CASTANEOVENTRIS*. *Sit. supernè griseo-plumbea*; pectore abdomineque castaneis; strigâ a rectu per oculos ad nucham extendente, remigibus, reetricumque pogoniis internis nigris; gula maculâque reetricum lateralium albis.

Longitudo 5.

*Ferruginous-bellied Nuthatch*, Lath.?

Genus *Certhia*.

95. *CERTHIA SPILONOTA*. *Certh. suprâ griseo-fusca, albo maculata*; capite albo graciliter striato; gulâ abdomineque albidis, hoc fusco fasciato; caudâ albo fuscoque fasciatâ.

Longitudo  $5\frac{1}{2}$ .

The tail of this bird is soft and flexible, in which respect it differs from the type of the genus, but it agrees in all others.

Genus *Upupa*.

96. *Upupa minor*, Shaw. *La Huppe d'Afrique*, Le Vaill.

Fam. *Cuculidæ*.—Genus *Leptosomus*.

97. *Leptosomus Afer*. *Cuculus Afer*, Gmel. *Edolian Cuckow*, Shaw.

Genus *Cuculus*.

98. *Cuculus canorus*, Linn. *Common Cuckow*, Lath.

This bird, on comparison with the *common Cuckow*, differs so little that it can scarcely be called a variety; it is the *common Cuckow* of India, and its habits and note resemble those of the European bird.

99. *Cuculus fugax*, Horsf. *Bychan Cuckow*, Lath.

The common Indian name of this bird is *Pipîha* or *Pipeeha*, from its note; in Sanscrit *Chataca*. Dr. Buchanan named it *Cuculus radiatus*.

100. *Cuculus Sonneratii*, Ind. Orn.? *Le petit Coucou des Indes*, Sonn.? *Sonnerat's Cuckow*, Lath.?

Not having either specimen or figures to refer to, I conclude, from description alone, that this bird is *Sonnerat's Cuckow*.

Genus *Centropus*.

101. *Centropus Philippensis*, Cuv. *Coucou des Philippines*, Buff. *Chestnut Coucal*, Lath.

This bird is the *Mahooka* of India, so named from its note; it is called also, by the English, *Pheasant Crow*. Dr. Latham's *chestnut Coucal* very accurately describes it, but his figure is bad; having apparently been taken from a drawing of Gen. Hardwicke's, which stated it to be a young bird. Dr. Buchanan named it *Cuculus castaneus*.

Genus *Eudynamys*.

102. *Eudynamys Orientalis*. *Cuculus Orientalis*, Linn. *Eastern black Cuckow*, Lath. *Coucou noir des Indes & Coukeel*, Buff.

This bird is the *Coel* of India, and the *Coukeel* of Buffon.

103. *Eudynamys Sirkee*. *Centropus Sirkee*, Hardw. *Sirkeer Cuckow*, Lath.

Tribus TENUIROSTRES.

Fam. *Meliphagidæ*.—Genus *Chloropsis*.

104. *Chloropsis aurifrons*, Jard. & Selby. *Malabar Chloropsis*, Jard. & Selby.

This bird is the *Huréwa* of India, and is well described by Dr. Latham as the *Hurruwa Bee-eater*.

Fam. *Cinnyridæ*.—Genus *Cinnyris*.

105. *CINNYRIS ORIENTALIS*. *Cinn. capite, collo, dorsoque splendide virescenti-purpureis; abdomine purpureo-atro; alis caudaque atris; fasciculo utrinque sub alis aurantiaco.*

Longitudo 4.

*Eastern Creeper*, Lath.

ORDO III. RASORES.

Fam. COLUMBIDÆ.

Genus *Vinago*.

106. *Vinago militaris*. *Columba militaris*, Temm. *Columbar Commandeur*, Temm. *Hurrial Pigeon*, Lath.

Genus *Columba*.

107. *Columba tigrina*, Temm. *Colombe à nuque perlée*, Temm.

108. *Columba Cambayensis*, Gmel. *Colombe maillée*, Temm.

109. *Columba risoria*, Linn. *Colombe Blonde*, Temm. *La Tourterelle Blonde*, Le Vaill.

Le Vaillant mentions a larger bird of this species which is common in Africa; the same thing occurs also in India, where there are two birds differing only in size.

110. *Columba humilis*, Temm. *Colombe terrestre*, Temm.

Fam. PHASIANIDÆ.

Genus *Pavo*.

111. *Pavo cristatus*, Linn. *Le Paon*, Buff. *Crested Peacock*, Lath.

Genus *Tragopan*.

112. *Tragopan Satyrus*, Cuv. *Meleagris Satyrus*, Linn. *Horned Pheasant*, Lath.

Fam. TETRAONIDÆ.

Genus *Pterocles*.

113. *Pterocles exustus*, Temm. *Ganga ventre-brulé*, Temm.

Genus *Francolinus*.

114. *Francolinus Ponticerianus*, Temm. *Francolin à rabat*, Temm.



115. *Francolinus vulgaris*, Steph. *Le Francolin*, Buff. *Franccolin*, Edw.

Genus *Perdix*.

116. *Perdix picta*, Jard. & Selby. *Painted Partridge*, iid. *Beautiful Partridge*, Lath.

117. *Perdix Hardwickii*, Gray. *Curria Partridge*, Lath.

118. *Perdix Cambayensis*, Temm. *Perdrix rousse-gorge*, Temm.

Genus *Coturnix*.

119. *Coturnix dactylisonans*, Meyer. *Common Quail*, Lath.

This bird is named *Ghagul*; it corresponds with the European species, and is not very common in India.

120. *Coturnix Coromandelica*. *Perdix Coromandelica*, Lath. *Perdix textilis*, Temm. *Caille nattée*, Temm.

This is the most common *Quail* of India called *Bhuteir*. Dr. Buchanan named it *Perdix olivacea*.

Genus *Hemipodius*.

121. *Hemipodius Dussumier*, Temm. *Turnix Dussumier*, Temm. *Mottled Quail*, Lath.

Fam. STRUTHIONIDÆ.

Genus *Otis*.

122. *Otis Indica*, Ind. Orn. ? *White-chinned Bustard*, Lath. ?

This bird has usually been considered as the female of the *Otis aurita*, and has been so figured and described; but it is well known to be a distinct bird. It is the common *Leek* of India, called by the English *Bastard Florican*. I am not quite certain that Dr. Latham's *White-chinned Bustard* is the bird, but his description is so near, that I have not thought it proper to make new species.

ORDO IV. GRALLATORES.

Fam. GRUIDÆ.

Genus *Grus*.

123. *Grus Orientalis*, Briss. *Ardea Antigone*, Linn. *Indian Crane*, Lath.

Fam. ARDEIDÆ.

Genus *Mycteria*.

124. *Mycteria Australis*. *Ciconia Mycteria Australis*, Hardw. *Tetaar Jabiru*, Lath.

Genus *Ardea*.

125. *Ardea purpurea*, Linn. *Le Héron pourprè huppé*, Buff. *Crested Purple Heron*, Lath.

126. *Ardea speciosa*, Horsf. *Darter Heron*, Lath.

This bird is without doubt the *Darter Heron* of Dr. Latham; and the *Ardea speciosa* of Dr. Horsfield is, I think, merely the Javanese type of the same bird.

127. *Ardea Torra*, Buch. *Ardea Egretta*, Lath. Ind. Orn. var. *Ardea alba*, Linn. var. *Great Egret*, Lath. Indian variety *Torra* or *Bughletar*.

This is the Indian *White Egret*, and it differs only in size from the

European species, being somewhat smaller. Dr. Buchanan named it *Ard. Torra*, and when without its filiform appendages on the back, *Ard. Putea*; so that these Indian terms appear to correspond with *Ard. Egretta* and *Ard. alba*.

128. *Ardea Caboga*, Penn. *Caboga Heron*, Penn. *Gibraltar Heron*, Lath. var. A.

The term *Caboga* is a corruption of the Indian term *Gao-buga*, *Cow* or *Cattle Heron*, in allusion to its frequently being seen amongst cattle, like the *Gibraltar Heron*.

Genus *Botaurus*.

129. *Botaurus cinnamoneus*. *Ardea cinnamonea*, Gmel. *Cinnamon Heron*, Lath.

Genus *Nycticorax*.

130. *Nycticorax Europæus*. *Ardea Nycticorax*, Linn. *Night Heron*, Lath.

Genus *Tantalus*.

131. *Tantalus papillosa*. *Ibis papillosa*, Temm. *Bald Ibis*, Lath.

Fam. SCOLOPACIDÆ.

Genus *Rhynchæa*.

132. *Rhynchæa Orientalis*, Horsf. *Cape Snipe*, Lath. *Bécassine de Madagascar*, Buff.

Genus *Tringa*.

133. *Tringa ochropus*, Linn. *Green Sandpiper*, Penn.  
 134. *Tringa Glareola*, Linn. *Wood Sandpiper*, Penn.  
 135. *Tringa pusilla*, Linn. *Little Sandpiper*, Lath.  
 136. *Tringa hypoleucos*, Linn. *Common Sandpiper*, Lath.

Fam. RALLIDÆ.

Genus *Parra*.

137. *Parra phœnicura*. *Gallinula phœnicura*, Lath., Ind. Orn. *Red-tailed Gallinule*, Lath. *Poule-Sultane de la Chine*, Buff.  
 138. *Parra Sinensis*, Gmel. *Chinese Jacana*, Lath.  
 139. *Parra Indica*, Lath., Ind. Orn. *Indian Jacana*, Lath.

Genus *Rallus*.

140. *Rallus niger*, Gmel. *Black Rail*, Lath.

Genus *Porphyrion*.

141. *Porphyrion hyacinthinus*. *Fulica Porphyrion*, Linn. *Purple Waterhen*, Edw.

Fam. CHARADRIADÆ.

Genus *Vanellus*.

142. *Vanellus Goensis*. *Tringa Goensis*, Lath. *Vanneau armé de Goa*, Buff.  
 143. *Vanellus ventralis*. *Charadrius ventralis*, Wagl. *Spur-winged Plover*, Hardw.  
 144. *Vanellus bilobus*. *Charadrius bilobus*, Gmel. *Bilobate Sandpiper*, Lath.

Genus *Cursorius*.

145. *Cursorius Asiaticus*, Gmel. & Lath. *Courvite de la Côte de Comorandel*, Buff.

Genus *Himantopus*.

146. *Himantopus melanopterus*. *Charadrius Himantopus*, Linn. *L' Echasse*, Buff.

Genus *Charadrius*.

147. *CHARADRIUS HIATICULOIDES*. *Char. suprâ griseo-fuscus ; fasciâ frontali alterâque verticali, corpore subtus, collarique nuchali albis ; lineâ sub oculis ad aures extendente, fasciâ ad frontem, torqueque pectorali subgracili ad nucham extendente nigris ; reetricibus, duabus mediis exceptis, albis, in medio nigro et griseo-brunneo notatis, fasciam semilunarem exhibentibus.*

This bird differs chiefly from the European species in size, being at least one third smaller, and in the narrowness of the pectoral band.

## ORDO V. NATATORES.

## Fam. ANATIDÆ.

Genus *Anser*.

148. *Anser Indicus*, Lath., Ind. Orn. *Barred-headed Goose*, Lath.  
 149. *Anser melanotos*, Gmel. *Black-backed Goose*, Lath.  
 150. *Anser Coromandeliana*, Gmel. *Sarcelle de la Côte de Coromandel*, Buff. *Anas Girra*, Hardw. *Girra Teal*, Lath.

Genus *Anas*.

151. *Anas arcuata*, Cuv. *Siley Teal*, Lath.

The name of this bird in India is *Siley* or *Silhei*, from its whistling note ; the English call it *whistling Teal* ; it scarcely differs from the Javanese species as figured by Dr. Horsfield.

152. *Anas Crecca*, Linn. *Common Teal*, Lath.

This bird is the *common Teal* of India, and agrees exactly with the British species.

## Fam. COLYMBIDÆ.

Genus *Podiceps*.

153. *Podiceps minor*, Lath., Ind. Orn. *Little Grebe*, Lath.

## Fam. PELECANIDÆ.

Genus *Carbo*.

154. *Carbo fuscicollis*. *Phalacrocorax fuscicollis*, Shaw. *Brown-necked Shag*, Lath.

Genus *Plotus*.

155. *Plotus melanogaster*, Gmel. *Black-bellied Darter*, Lath.

Genus *Sterna*.

156. *Sterna melanogastra*, Temm. *Hirondelle de mer à ventre noir*, Temm.

August 23, 1831.

Joseph Smith, Esq. in the Chair.

Two letters from Mr. J. B. Arnold of Guernsey were read, containing particulars of his experiments in the naturalization of Sea Fishes in a lake chiefly supplied with fresh water. The area of the lake is about five acres; its depth various; and its bottom also various, being muddy, gravelly, and rocky. The water is during nine months of the year drinkable for cattle, but in consequence of a supply which it receives through a tunnel communicating with the sea, is rather salt in summer, at which season the freshes do not come down so plentifully as at other times. The fishes introduced into the lake have been the *grey Mullet*, *Sole*, *Turbot*, *Brill*, *Plaice*, *Basse*, *Smelt*, and *grey Loach*. All of these have thriven well, and are believed to have increased in numbers: the *grey Mullet* especially is known to have bred as freely as in the sea itself. A single *Whiting* having been caught for three successive years, was found to have grown considerably: a *Pilchard* also throve well. All the above-mentioned fishes were placed in the lake, except perhaps the *Brill*; but others, as the *silver Bream*, appear to have introduced themselves. It is even suspected that hybrid fishes have been produced, as several have been caught which were unknown to persons well acquainted with the species usually met with on the coast of Guernsey. Mr. Arnold adds that Sea Fishes, after having been naturalized in his lake, have been transferred to ponds of spring water, where they have not only lived, but done well; and that such naturalized fishes have been carried to a long distance, being much more tenacious of life than those caught in the sea.

Numerous specimens of *Hylurgus Piniperda*, Latr., presented to the Society by Barlow Hoy, Esq., were exhibited, together with specimens of the shoots of *Pines* perforated by these insects. The mode in which the young branches are destroyed by these perforations has been illustrated by Mr. Lindley in Mr. Curtis's 'British Entomology'. Its effect was regarded by Linnæus as analogous to that of pruning.

The exhibition of the collection of *Fishes* formed at the Mauritius by Mr. Telfair, portions of which had been brought before the Committee at the Meetings in April, was resumed. From among them Mr. Bennett pointed out more particularly the following species which he believed to have been previously undescribed.

SERRANUS DELISSII. *Serr. maxillis squamosis; lobis pinnae caudalis elongatis, æqualibus; radio tertio pinnae dorsalis producto: supernè stramineus, rubro cancellatim rivulatus, infernè lilacinoruber; pinnis ventralibus aurantiaco-flavis.*

D.  $\frac{1}{7}$ . A.  $\frac{3}{7}$ .



Affinis, ut videtur, *Serr. Borbonio*, Cuv. et Val. Corpus altum, altitudo longitudinis (exclusâ pinnâ caudali) dimidium æquans. Pinnæ pectorales ventrales longitudine æquantes. Præoperculi angulus spinâ unicâ magnâ armatus.

**SERRANUS MITIS.** *Serr. maxillis alepidotis; radio ultimo pinnarum dorsalis analisque elongato: corpore elongato: argenteus, dorso obscure flavo-brunneo; pinnis flavo tinctis; dorsali nigro tenuiter submarginatâ.*

D.  $\frac{1}{1}$ . A.  $\frac{3}{8}$ .

*Serr. filamentoso*, Cuv. et Val., longior: corpus, præsertim ad humeros, crassius: oculus major: vertex rugosus (in *Serr. filamentoso* granulosis tantum): dentes antici superiores conici utrinque quatuor debiliores (in *Serr. filamentoso* majores utrinque duo): color pallidior, flavescens.

**SERRANUS TELFAIRII.** *Serr. maxillis alepidotis; radio ultimo pinnæ dorsalis analisque elongatis: saturatè roseus, dorso latè citrino maculato, posticè albidus; lateribus argenteo vittatis, guttatimque conspersis; pinnâ dorsali anticè citrinâ, basi roseo-, apice niveo-maculatâ.*

D.  $\frac{1}{1}$ . A.  $\frac{3}{8}$ .

Affinis, ut videtur, *Serr. zonato*, Cuv. et Val., quem numero radiorum æquat, cujusque formam, etiam pinnarum, æmulat. Differt picturâ, et præsertim lateribus argenteo vittatis guttatisque.

The latter two species form an interesting addition to a section of the genus *Serranus* distinguished by the elongation of the last ray of both the dorsal and the anal fin. Two other species of this section have been described by MM. Cuvier and Valenciennes, to whom they have only very recently become known. Of one of these, *Serr. filamentosus*, as well as of the two new species above described, specimens are contained in the Mauritius collection.

**DIACOPE ANGULUS.** *Diac. stramineo-flavescens, infrâ pallidior; vittis corporis utrinque septem lilacinis, superioribus obliquis, inferioribus longitudinalibus, 4tâ 5tâque anticè connexis angulum acutum postopercularem formantibus; pinnæ dorsalis parte molli supernè tenuiter nigro marginatâ.*

D.  $\frac{1}{1}$ . A.  $\frac{3}{8}$ .

Affinis, ut videtur, *Diac. duodecimlineata*, Cuv. et Val.: numerus radiorum idem, vittæque haud operculum signant. Dentes maxillæ superioris externi conici, distantes, subæquales, duo anteriores angulares solum majores; maxillæ inferioris minores, tres laterales medii utrinque majores.

**DENTEX LYCOGENIS.** *Dent. maxillis transversim dentato-cristatis: dentibus conicis anticis sex, maxillæ inferioris lateralibus majoribus: plumbeus, vittis dorsalibus plurimis argenteis, ventralibus distantibus fusco-flavis; maculâ elongatâ argenteo-albâ sub basi posticâ pinnæ dorsalis; pinnis ventralibus, pectoralibus, dorsali analique anticè rubris, caudali flavidâ.*

D.  $\frac{1}{0}$ . A.  $\frac{3}{8}$ .

**DASYLLUS UNICOLOR.** *Dasc. corpore alto unicolore nigricante.*

D.  $\frac{1}{2}$ . A.  $\frac{2}{4}$ .

Forma *Dasc. marginati*, Cuv. et Val.

**HELIASES AXILLARIS.** *Hel. pallidè cæruleo-fuscus?; axillâ nigrâ; pinnis, præsertim caudali analique, cæruleo-nigrescentibus.*

D.  $\frac{1}{3}$ . A.  $\frac{1}{3}$ .

Affinis, ut videtur, *Hel. anali*, Cuv. et Val. Radius secundus pinnæ analis fortior, sequentes longitudine aliquantulum superans. Corpus ovatum.

**JULIS CUVIERI.** *Julis caudâ subquadrata: pinnæ dorsalis radio primo longissimo (quam tertius triplo longiore): rufescenti-brunneus cæruleo punctulatus; capite virescente, vittis tribus latis rufis; pinnis dorsali analique luteis, sanguineo obliquè lineatis, nigro latè marginatis, cæruleoque fimbriatis; hujus fasciâ marginali lineâ cæruleâ longitudinali mediâ alterâque ad basin notatâ.*

D.  $\frac{2}{17}$ . A.  $\frac{2}{17}$ . P. 12. C. 13.

This new species of *Julis* is one of those fishes, now becoming numerous, which might be confounded with the *Julis Aygula*, (*Coris Aygula*, LaCép.). The latter appears to have hitherto rested solely on the figure and description preserved by Commerson, no specimen of it having been referred to as existing in collections. A specimen of that species has, however, recently been added to the Society's Museum from a collection of fishes formed in India, and agrees well with the figure published by LaCépède, in the truncation or even sublunation of its caudal fin, and in its general form; in its dried state its colour is uniformly dull blackish brown. This specimen was exhibited in illustration of the distinction between *Julis Cuvieri* and *Julis Aygula*, and also to show that the fish figured under the latter name by Dr. Rüppel differed in various particulars, especially in the rounded form of its caudal fin, from the species indicated by LaCépède. To M. Rüppel's fish, it was remarked, the name of *Julis Ruppelii* might properly be applied.

**ANGUILLA MAURITIANA.** *Ang. maxillâ superiore breviorè, obtusâ; rostro complanato; pinnæ dorsalis initio pectoralibus quam anali propiorè; lineâ laterali conspicuâ: dorso fusco pallidoque guttatim marmorato, lineolisque nigrescentibus intertextis notato; pinnis fusco nebulosis.*

P. 18?

Mr. Bennett availed himself of the opportunity afforded by the exhibition of the several species of *Pterois* contained in the Mauritius collection, to bring before the Committee a fish which he had formerly regarded as the *Pterois volitans*, under which name it was included in the catalogue of Sumatran fishes appended to the memoir of Sir T. Stamford Raffles. It formed part of the collection presented to the Society by its founder and first President. It was thus characterized:

**PTEROIS RUSSELLII.** *Pter. genis spinosim latè lineato-serratis; osse infra-orbitali antico præoperculoque infernè spinosissimis: cirris parvis sex, nasali utrinque duobusque infra-opercularibus: pinnis pectoralibus caudalis basin attingentibus.*

D.  $\frac{1}{3}$ . A.  $\frac{3}{8}$ . P. 13.

Kodipungi. Russel, *Coromandel Fishes*, No. 133.

September 13, 1831.

W. Yarrell, Esq. in the Chair.

At the request of the Chairman the following notes of a dissection of the *Alligator Tortoise* (*Chelydra serpentina*, Schweig.) were read by Mr. Martin. They were illustrated by preparations of the stomach; of the *ilium* and *colon*; and of the *cloaca*, with the *penis* and urinary bladders: a drawing of the latter was also exhibited; and a drawing of the throat, representing the *oesophagus* and *trachea* in their natural positions.

"The animal was a male, and most probably young: its length from the nose to the *anus* being 1 foot 11 inches, and from the *anus* to the end of the tail 6 inches. The length of the *carapace* was 11 $\frac{1}{4}$  inches, and its breadth, following the curve, 1 foot 1 inch.

"On the *plastron* being removed, and the *scapulæ* (which are united to it by intervening muscles) being turned back, the heart, inclosed in a peritoneal sac, was exposed; the *scapula* in their natural position extending over it like an arch: next, and in the same cavity, (for there was no division either by muscle or membrane,) the liver was seen, divided into two distinct portions, and stretching completely across from side to side: below the liver and occupying what may be called the pelvic portion of the cavity, lay the intestines, among which on the right side was seen the *colon* or commencement of the large intestines enfolding the spleen.

"The heart consisted of one ventricle and two auricles, the right of which was the largest. The figure of the auricles was rounded, each in magnitude equalled the ventricle: both auricles contained coagulated blood. The ventricle was in shape acuminate, of a red colour, and firm and fleshy in structure. Its *carneæ columnæ* were strong, distinct, and numerous, but did not separate it into cells or chambers.

"The liver consisted of two lobes. The right lobe was divided into two parts. On its inferior surface was situated the gall-bladder buried in its substance and containing dull green bile: the duct barely half an inch long. The edge of the left lobe of the liver covered the stomach, which passing under it fitted an elongated furrow in the thick part of the lobe, and was closely united to it by the *peritoneum*. The outer curvature of the stomach was placed in contact with the *parietes* of the *carapace*. The texture of the liver was soft and spongy, easily broken down, and pouring out an abundance of dark green fluid, with which it was saturated. The gall duct entered the *duodenum* 6 inches below the *pylorus*. The under surface of the liver on the right side was connected to the *duodenum*, and partially to the lung on the same side, by peritoneal attachments.

"On the liver being removed the course of the intestines was more fully exposed. Beginning with the *oesophagus*, which immediately on proceeding from the *pharynx* becomes firm and muscular (the

fibres being longitudinal), we find it dipping down on the right side of the neck, keeping a straight course, passing under the right clavicle, then crossing below the great arch of the neck within the shell, and passing under the right laryngeal branch to the cardiac portion of the stomach; its length being 7 inches. The *cardium* passes over the left laryngeal branch. The length of the stomach is  $7\frac{1}{2}$  inches; the circumference of the thickest part 3 inches; gently narrowing to the *pylorus*. Its texture was firm and muscular, especially at the pyloric portion; and between the peritoneal and muscular coats numerous small white points were observed, which on being cut into were found to arise from the presence of minute worms, of three or four lines in length, coiled up under the *peritoneum*.

“The small intestines were strong and thick: their length 3 feet 11 inches. Their internal surface presented longitudinal *ruga*. At their termination in the large intestines there appeared the rudiment of a *cæcum*.

“Encircled by a fold of the *colon* was situated the spleen, of a dark red colour, and soft spongy structure, almost round in shape, and of the size of a small egg: several tortuous veins proceeded from it, and the veins and arteries of the mesentery in general were of the same character.

“The length of the large intestines was 1 foot 7 inches; the muscular coat was particularly distinct; the villous smooth; and several black patches were observed on its surface, which exhibited great vascularity.

“The urinary bladder was double, or rather it might be said that there were two bladders, lying on opposite sides of the *rectum*, and adhering to the sides of the *pelvis*, each communicating by a distinct opening into the commencement of the *cloaca*. Their size and shape was that of a small pear: their texture very thin and fibrous, the fibres being irregularly disposed.

“The *penis*,  $2\frac{1}{2}$  inches long, lay concealed entirely within the *cloaca*. It was grooved along its upper surface with the furrow usual in the *Tortoises*, but instead of being free or disengaged, was attached by a close union throughout its whole length on the under side to the *cloaca*. The *glans* was acuminate, and full an inch from the *anus*. From this union of the *penis* to the *cloaca* it is difficult to conceive that it can ever be protruded externally, especially when its distance from the external orifice of the *cloaca* is considered. The duct of the right bladder, in length half an inch, was found to terminate just above the furrow of the *penis*, while that of the left opened an inch on one side of it.

“The *testes* were about the size of a pigeon's egg, elongated, of a bright ochre colour, and situated in the pelvic portion of the abdominal cavity, one on each side of the vertebral column; their structure was soft and somewhat granular. There were no suprarenal capsules. Beneath the *testes* lay the kidneys, large, irregular in figure, glandular in structure, consisting of brain-like reduplications, and dipping between the interstices of the three lowest ribs, (or rudiments of ribs,) on each side of the vertebral column.



“The palate was smooth, with slight transverse *rugæ*; the *pharynx* wide, simply membranous, and capable of great extension; the tongue a smooth cartilaginous point, at the base of which the *larynx* opened by a very small simple *rima*. There was no *epiglottis*; but around the *rima* a slight fold of the membrane was just perceptible. The *larynx* crossing before the *pharynx* dipped down on the left side of the neck, and passing under the left clavicle, divided into two great branches, at about a foot from the *rima*: the right branch passed before the *œsophagus*, and immediately entered the right lobe of the lungs; the left passed under the cardiac portion of the stomach to the left lobe.

“The lungs consisted of two large and equal lobes, distinct, flat, and dark red, extending from the upper edge of the *carapace* as far as the *pelvis*, but not as in the *Land Tortoises* (the *Indian* and *Greek*, for example) attached to the whole inner surface of the shell; their attachment was by one of their edges only to the vertebral column, and slightly to the liver. Their texture was firm, and their cells, though large, were not so irregular as in the *Testudo Græca*.

“Between the lungs passed two singular muscles, retractors of the head, long and slender, which arising one on each side by a tendinous origin from the base of the *cranium* passed on each side of the neck, and coming in contact below its great curve, ran together down the vertebral column, and were inserted into its sides in the spaces between the 6th and 7th and 7th and 8th ribs, each by two distinct fleshy terminations.

“The difference exhibited by this animal in the attachments and conformation of the lungs from the family of *Tortoises* in general indicates an approach, not merely in external configuration, but in internal structure, to the *Alligators*. Nor, although it must be confessed in a degree less striking, is this approach unevincenced by the structure of the urinary organs; the bladder in this species although double is yet small, while its enormous volume in the *Tortoises* in general is a singular feature in their construction: the diminution of volume in this organ seems to afford another indication, not to be overlooked, of an approach to the *Saurian Reptiles*.

“The posterior *nares* opened by two distinct orifices one quarter of an inch from the commencement of the palate and three quarters from the point of the beak: their course was obliquely upwards, and the length of each canal to the external orifice just 1 inch.

“The *os hyoides* consisted of an irregularly shaped body and four arched bones or processes united to it by cartilage; from the anterior part of the body a spinous process partly cartilaginous proceeded to support the rudiment of a tongue. The anterior pair of arched bones were connected to the base of the skull by muscles only; the second pair terminated in a broad and flat extremity, and were more abruptly curved: their use seems especially to support the *pharynx*, and they were not connected to the skull. The first pair were each 4 inches in length; the second little more than 3 inches. The rings of the *larynx* were perfect; the length of the laryngeal branches 3 inches.”

September 27, 1831.

Dr. Marshall Hall in the Chair.

An extensive collection of skins of *Birds* from the northern regions of North America was exhibited. It was presented to the Society by Viscount Goderich, Secretary of State for Colonial Affairs, and comprehended specimens of all the rarer species obtained during the last Arctic land expedition under the command of Captain Sir John Franklin. Among the one hundred and ten species thus presented to the Society (nearly the whole of which were exhibited) the following are regarded by Dr. Richardson and Mr. Swainson as new to science:

<i>Bubo arcticus.</i>	<i>Pyrgita arctica.</i>
<i>Lanius excubitorides.</i>	* <i>Linaria tephrocotis.</i>
* ——— <i>borealis.</i>	<i>Garrulus brachyrhynchus.</i>
<i>Tyrannula pusilla.</i>	<i>Tetrao leucurus.</i>
————— <i>Richardsonii.</i>	* <i>Scolopax Drummondii.</i>
<i>Cinclus Americanus.</i>	<i>Larus zonorhynchus.</i>
<i>Merula minor.</i>	* ——— <i>brachyrhynchus.</i>
————— <i>solitaria.</i>	————— <i>Franklinii.</i>
<i>Orpheus meruloides.</i>	————— <i>Bonapartii.</i>
<i>Erythaca arctica.</i>	* <i>Lestris Richardsonii.</i>
* <i>Emberiza picta.</i>	* <i>Clangula Barrovii.</i>
* ——— <i>pallida.</i>	

The species to which an asterisk is prefixed were not exhibited, the specimens not having been yet transmitted to the Society.

The whole of the above-mentioned species are described by Dr. Richardson and Mr. Swainson in the forthcoming part of the 'Fauna Boreali-Americana.'

In addition to the *Birds*, specimens of several *Mammalia*, collected during the same expedition, and similarly presented to the Society, were exhibited. Among them was a skin of the *Lagomys Princeps*, Richardson.

Mr. Yarrell exhibited a preparation of part of the intestine of an *Eel*, which was perforated by numerous examples of the *Echinorhynchus tereticollis*, described by Rudolphi in his 'Synopsis Entozoorum' as one of the many species of intestinal worms infesting the fresh-water eel. Most of these worms had penetrated both the villous and muscular coats, and their globular heads were visible under the transparent peritoneal covering. A considerable number of a species of *Filaria* were also exhibited, which had recently been taken from the abdominal cavity of an *Eel*.

Mr. Yarrell stated his belief that the opinion of some writers that the *Eel* is viviparous (an opinion which has been often expressed but never proved), was probably founded on the frequent occurrence

Sir.

To Mr. Murray

If you can spare a few minutes from the  
all engaging subject of Reform & Cholera  
allow me to draw your attention to the  
following facts.

In the Report of the Board of the Zoological  
Society of London on the business of the  
year 1845 it is stated that the following  
are the specimens collected during the  
year 1845. viz. a few of the  
North West Coast of America and  
it was presented to the Society by Sir Robert  
Scurry of Calcutta for Colonial Affairs. and  
Comptrolleur General of all the Revenue  
during the last Arctic land expedition under  
Command of Capt Sir John Franklin and  
the 100 specimens they were from the  
North West Coast of America and  
were secured by Dr. Richardson & Mr. Bennett  
as new to science. They followed as last of  
20 birds, and in addition to the birds  
of several mammalia collected during the  
same expedition and similarly presented to  
the Society were exhibited.

Very engaged with the history of the annals  
of North America, I read this account  
and went to the British Museum, that  
a public collection given on public collection

supported by the government. to an open  
to the examination of every individual.  
without any fee. But to ~~ensure~~ ~~that~~ ~~see~~ to  
see. ~~the~~ ~~what~~ ~~then~~ ~~birds~~ & ~~animal~~ ~~things~~  
doubtful that they there were the duplicates  
the collection, the first series having  
been sent to the National Establishment  
but that was very as touched when  
I was informed that they had any of  
the birds of animal of this expedition  
although they had been most carefully  
applied for,





of *Filaria* in the *abdomen* of these fishes; the *Filaria* being those which of all the species of worms occurring in serous cavities most closely resemble the Eel in form. Mr. Yarrell was inclined to doubt that Eels are viviparous from several circumstances. The species are known to be most prolific: viviparous fishes, on the contrary, produce but few young at a time, and these are of considerable size when first excluded. In illustration of this latter fact, British specimens of the viviparous Blenny (*Zoarces viviparus*, Cuv.,) and of its young as expelled from the parent fish by pressure, were exhibited. In some *Eels* examined in September the *ova* in countless thousands were distinctly apparent under a lens of very moderate power, although these *ova* would not be matured till January: the sexual organ, moreover, of an *Eel* taken in February exhibited the appearances common to that part in female fishes that had recently deposited their *ova*. Mr. Yarrell stated that comparative examinations made at this time of the year upon the two most common species of *Eels* of our rivers and lakes, showed the sexual organs of the sharp-nosed sort (*Anguilla acutirostris*) to be in a much more forward state than those of the broad-nosed *Eels* (*Anguilla latirostris*). Skeletons of both species were exhibited, showing the most obvious differences in the size and character of the bones of the head and *vertebrae*; those of the broad-nosed *Eel* being nearly as large again as the same parts of the other species in examples of the same length.

By some authorities both *Eels* and *Lampreys* have been stated to be hermaphrodites.

Mr. Yarrell exhibited preparations of the two sexes distinct both in the *Lamprey* and *Lampern*, at the time they were about to deposit their *ova* and milt; and gave the following account of his investigation of this subject.

“The common river *Lampern* (*Petromyzon fluviatilis*, L.) was obtained and examined every week from March to the middle of May. Up to the 19th of April more females than males were taken; but after this period, the females being nearly ready to deposit their roe, the males were most numerous, in the proportion of two to one. All the females taken about the 26th of April were in a state to deposit their roe; and the milt of the males, now become fluid, passed in a stream from the sheath behind the anal aperture on making slight pressure upon the *abdomen*. By the 10th of May nearly the whole of those examined had deposited their spawn. The males were entirely void of any appearance of milt, and the females at this time might be mistaken for males that had not spawned. The gelatinous matrix of the *ova* appeared swollen and of large size; and close examination showed the ruptured membrane and extravasated blood produced by the separation of the *ova*, with here and there an occasional *ovum* still adhering. The kidneys (which have been mistaken for the male sexual organs) were not observed to undergo any alteration either in size or appearance during a long series of examinations. The males could be distinguished from the females externally by their larger respiratory apparatus and lips.

“ Seven examples of the *Lamprey*, (*Petr. marinus*, L.,) were received on the 3rd of May from the Severn, about which time they ascend that river for the purpose of spawning. Of these seven, four were males and three females: the appearance of milt and *ova* being most distinct. The kidneys, lying in the cavity of the *abdomen*, were of equal size in both sexes, elongated and narrow in form, with the ureter running the whole length of the outer edge. The anal opening is situated anterior to a small sheath, which when slit up exposes four apertures, the two innermost of which lead to the ureters; the outer two open into the abdominal cavity.

“ In the *Eels* no part of the kidneys is visible within the cavity of the *abdomen*, and the vent includes but four apertures,—the most anterior of which leads to the intestine; the posterior to the urinary bladder; and two elongated lateral openings into the cavity of the *abdomen*, as in other true bony fishes.”

Specimens were exhibited of several *Fishes*, lately received from Dr. Bancroft of Kingston, Jamaica, Corr. Memb. Z. S. They were accompanied by a Letter from Dr. Bancroft, in which various details were given with respect to their distinctions from allied species: particular attention was also directed to the anatomical structure of the disc of the *Sucker-fishes*, (*Echeneis*, L.,) a new species of which genus formed part of the collection. This has the elongated form and general aspect of *Ech. Naucrates*, L., but is at once distinguished by the forked termination of its caudal fin. It may be thus characterized:

ECHENEIS LUNATA. *Ech. corpore elongato, squamoso; disci striis*  
22—25; *pinnâ caudali lunatâ; pectoralibus acutis.*

D. 30. vel 32. A. 30. vel 33. C. 16. P. 21. V. 6.

Long. circa 3-ped.

Its colour is described as a full black on the upper and anterior portion of the back, and dark grey over the rest of the body, with a lighter grey stripe from near the eye to near the vent: all the fins are of a dark grey, passing into black at the anterior and outer portions: the lateral line consists of very small black points: and the iris is of a pure white. The dorsal fin is sometimes destroyed in the middle, and is thus made to appear like two distinct fins.

A specimen of a *Cephalopterus*, Dum., included in the collection, is regarded by Dr. Bancroft as the type of a new species, amply distinguished from the *Cephalopterus Manta* described by him in the ‘*Zoological Journal*’ by the form of the anterior margin of its pectoral fins; the position of its mouth on the ventral surface; and the rounded form of its *spiracula*, which are not on the dorsal surface (as in the *Rays* generally); but are situated in a groove immediately under the anterior edge of the base of the pectoral fin. It may be thus characterized:

CEPHALOPTERUS HYPOSTOMUS. *Ceph. lavis; ore infero; pinnarum pectoralium margine antico delixi recto; spiraculis in fossa sub basin anticam pinnarum pectoralium sitis.*

The entire length of the specimen from the *apex* of the frontal

flappers to that of the ventral fins is 17 inches: that of the tail 21: extreme breadth of body 28. These dimensions were respectively 32, 27, and 44 inches in another individual formerly examined by Dr. Bancroft, which he considered to be adult.

A third species is the common *Sea-Eel* or *Conger* of Jamaica. It is perhaps identical with the *Savanne* of Martinique (*Muraena Savanna*, Cuv.), a fish of which no distinguishing mark has yet been published, except that derived from the forward position of the commencement of its dorsal fin. Its teeth are peculiar. Its characters may be thus expressed:

CONGER SAVANNA? *Cong. pinna dorsali ante basin pinnarum pectoralium incipiente: dentibus anterioribus conicis; lateralibus pluri-seriatis, serici medice majoribus, parallelopipedis, cuneatis, serierum externarum internarumque minoribus granulatis rotundatisque, omnibus confertis; vomerinis mediis majoribus triangularibus, subrecurvis, compressis, lateralibus rotundato-granulatis.*

A specimen was exhibited of a species of *Phalangista*, Geoff., which had been lately presented to the Society's Museum by — Talbot, Esq. Mr. Ogilby stated that he regarded it as forming a new species, to which he gave the name of *Phal. xanthopus*. He also called the attention of the Committee to a second undescribed species of the same genus, which is now living in the Society's Gardens.

Mr. Ogilby characterized and described these two animals as follows:

PHALANGISTA FULIGINOSA. *Phal. vellere subcrispo, suprâ et subtus fusco-fuliginoso; caudâ longâ, villosâ, dorso concolore.*

The size and proportions are those of the *Phal. vulpina*; the ears are also of similar shape and size, hairy on the outsides, but naked within. The colour is a uniform dark sooty-brown over all parts of the head and body, not even excepting the belly and inner surface of the thighs. The hair has a frizzled appearance, but is not so close nor so fine as in *Phal. vulpina*. The tail is long, black, and rather bushy; the naked slip underneath, as well as the nose and soles of the feet, which are also naked, is of a bright flesh colour. The moustaches are long, stiff, and black.

Described from a specimen at present living in the Society's Gardens, and said to have been brought from Sydney.

PHALANGISTA XANTHOPUS. *Phal. vellere densissimo, suprâ cano-fusco, infrâ canescente; pedibus fulvis; caudâ villosâ, radice dorso concolore, apice albâ.*

The upper parts of the body are of a blueish ash colour, with a dash of black, which prevails chiefly about the head and eyes; the under parts yellowish-white. The base of the ears is of the same colour as the upper parts of the body, but their tips are white, as in the *Phal. vulpina*. The tail is ash-coloured at the root, dark brown in the middle, and pure white on the last two inches. The limbs on their external surfaces are of the same colour as the body, but the feet are of a dun-yellow.

This species resembles the *Phal. Cookii* in having the tail marked with white; but in all other respects it is most closely allied to the *Phal. vulpina*. Its size, proportions, and general appearance, correspond with those of the latter species; and the ears in particular are long and elliptical, whilst they are short and semicircular in the *Phal. Cookii*. The tail also is comparatively much shorter than in that animal, and instead of being covered with very short close hair is rough and bushy, as in the *Phal. vulpina* and *Phal. fuliginosa*.

Described from a specimen in the Society's Museum.

Mr. Ogilby availed himself of the same opportunity to describe a new species of Indian *Deer*, belonging to the section of which the *Axis*, (*Cervus Axis*, Linn.) may be regarded as the type. He thus characterized and described it:

**CERVUS NUDIPALPEBRA.** *Cerv. corpore toto sub-nigro, lucido-maculato; cornibus trifurcis; palpebris regionibusque ocularibus nudis, nigris.*

About the size of a *Fallow-deer*, but of a more corpulent form; of a uniform dark brown colour, almost black, particularly on the head, neck, and median line of the back; even about the tail not a single white hair is to be seen, nor on the belly, nor inside of the thighs. The body is obscurely spotted with white, which is only apparent on attentive examination, and in particular lights. The hair is rude and coarse, longer on the body than on the head, neck and extremities, which are jet black, and without spots. The horns are very long, and bear only two antlers, one near the brow, and the other about-two thirds of the length of the shaft from its root. The muzzle is large, black, and naked; the tear-pits particularly apparent; the eyes large and prominent, and the ears broad, and shaped like those of the *Ox*. The eye-lashes and a considerable circular space about each eye are naked and black.

It inhabits the banks of the Ganges.

Described from a specimen at the Tower.



October, 11, 1831.

Joseph Cox Cox, Esq. in the Chair.

At the request of the Chairman Mr. Martin read the following notes of some particulars observed on the dissection of a *Monitor*, which died a short time since at the Society's Gardens. They were illustrated by a drawing, in which was represented the distribution of the principal blood-vessels.

“Proceeding from the ventricle by a trunk which appears single, but which in reality is divided internally, five arteries are seen, which may be characterized as two *aortæ*, two pulmonary, and one cervical.

“The cervical runs between, and somewhat anterior to, the two *aortæ*, and, continuing single for upwards of three inches, divides into two branches at the root of the neck, under the arch formed by the *scapulæ*; these two branches pass along on each side of the neck, a short distance from the *œsophagus*.

“The right *aorta* proceeds upwards for about an inch and a half, and then suddenly turns round the right bronchial tube of the *larynx*, as that tube is about to enter the lungs by two subdivisions, the superior of which is reflected up like a hook, to link with the artery turning round it, the inferior passing downwards. Having made this turn the artery proceeds downwards, but at half an inch from its turn sends off a branch at a singularly acute angle, which runs upwards just under the main cervical artery for about an inch, and then divides into two, which running obliquely upwards pass one on each side under the bronchial tubes, and then over the first rib to the *humerus*; these are the subclavian arteries. It is to be observed that before passing over the ribs they send off an artery to the under surface of the *scapulæ* and muscles of the neck. The right *aorta* having thus given off the subclavian, passes down behind the heart, and just below this organ anastomoses with the left *aorta*, which arising on the left of the cervical branch from the common stem, turns over the bronchial division on the left, exactly as happens on the right side, only a little higher up, runs down behind the heart, and after its *anastomosis* ends in two large branches, which take their course along the mesentery; so that it may be considered as analogous to the mesenteric arteries. The true or right *aorta*, taking a straight course onwards to the tail, gives off two branches just below the *anastomosis*, one of which is the splenic, the other is small, and goes to the mesentery; considerably lower another small mesenteric artery is also given off.

“The pulmonary arteries arise one on each side from the common stem, and taking a short course upwards enter the lungs, subdividing into several branches.

“The blood from the upper parts of the body is brought to the

auricle by two large veins. The blood from the lower parts and *viscera* is brought by a large vein or *vena portæ* into the liver, from which organ a *sinus* emerges, of considerable circumference, and half an inch long, which enters, or rather seems to form a part of, the right auricle.

“The *trachea* is long, and divides at six inches from the *rima* into two branches, as already noticed, which are about an inch and a half long, and are again subdivided; round the upper of which subdivisions, as has been stated above, the *aortæ* are turned. The rings of the *trachea* are entire; the *rima* small and simple.

“The *oesophagus* is wide and membranous. The stomach is firm and muscular: its circumference does not much exceed that of the intestines, and its increase at the cardiac, and diminution at the pyloric portion is gradual. The intestines are, as in all these animals, very firm. The spleen is small, dark-coloured, and oval.

“The liver is large, and consists of two lobes, in the right of which, on its under surface, the gall-bladder lies deeply imbedded.

“The lungs consist of two lobes, extending along the cavity of the chest, and attached to its dorsal aspect. They are composed of an aggregation of minute delicate membranous cells.

“The chest is divided from the *abdomen* by a partial membranous diaphragm attached to the *parietes* of the *abdomen* by numerous strings or filaments.

“As compared with that of the chest, the cavity of the *abdomen* is very small; the former occupying fully two-thirds of the length of the body.

“The liver lies in the abdominal cavity, and just below the diaphragm; and through this, covered by a reflexion of it, passes the *sinus* emerging from the liver to the auricle.

“The individual examined was a female, and the ovaries were seen following two veins along the mesentery for the length of nearly two inches.”

October 25, 1831.

Joseph Cox Cox, Esq. in the Chair.

Mr. Owen read a portion of his notes on the anatomy of a *Crocodile* (*Croc. acutus*, Cuv.), made during the dissection of a young individual which had lately died at the gardens of the Society.

Before speaking of the internal anatomy, he alluded to the peculiar structure of the tongue and *fauces*, which he described as essentially agreeing with that of the same parts in the *Egyptian Crocodile*. He explained the uses of the apparent closure of the *fauces*, in which, on looking into the mouth, no orifice or passage for the food is perceptible; and remarked on the necessity for so complete a safeguard of the *larynx* in an animal breathing air, but destroying its living prey by submersion in water.

He then proceeded to the description of the *viscera*, and commenced by remarking on the singular disposition of the serous membranes of the body in the *Crocodiles*; a disposition which he has observed in no other animal, and which is such as to resemble the effects of a general inflammatory action. It is, however, normal, and has been observed by him in three individuals of the *Crocodilus Lucius* and *Croc. acutus*.

“The serous membrane analogous to *peritoneum* is reflected from the abdominal *parietes* upon the under surface of the stomach, to the right of which it partially surrounds the gall-bladder, and is continued upon the inferior surface of the right lobe of the liver; from these parts it descends, enveloping the spleen and covering the anterior part of the kidneys and *testes*, and being continued from the middle line of the *abdomen*, surrounds the intestines in the usual manner, forming a rather loose mesentery: thus the *abdomen* appears to contain only the intestines, gall-bladder, spleen, kidneys, and genital glands. The serous membrane which covers the upper surface of the stomach is reflected upon the under surface of the left lobe of the liver, and forms a distinct cavity confined to these parts. Along the line of the stomach, where the superior and inferior serous membranes are contiguous, a quantity of fat is interposed, together with the principal vessels of the stomach, analogous to the *omentum*. The serous membranes analogous to the *pleura*, after lining the sides of the chest, entirely surround the lungs, and are reflected on each side upon the superior and lateral aspects of the liver, a process dipping down between the lung and the liver, but forming only a partial *septum*, and terminating in a concave edge towards the back. On each side of the *pericardium* there is also a distinct serous membrane, which is reflected from the lower part of that bag upon the mesial aspect of the liver: so that, including the *pericardium* itself, there are no less than seven distinct serous membranes in the trunk of the *Cro-*

*codile*; and of these, one has the additional peculiarity of being continuous with the common integument.

“The only part of the intestinal canal that presented anything worthy of notice, in addition to previous descriptions, was the stomach. This *viscus*, from its shining lateral tendons and muscular structure, has generally been considered as a gizzard: but the propriety of this denomination has been questioned by M. Geoffroy-Saint-Hilaire, on the ground of its wanting a cuticular lining. In this individual, however, the interior of the stomach presented two smooth round patches about the size of a crown-piece, situated on opposite sides of the cavity; they were not, indeed, detachable as a membrane distinct from the villous coat, and appeared to differ only in having a smoother surface: this appearance, however, adds to the analogy that this *viscus* bears to the gizzards of birds. Another circumstance in favour of this analogy is the fact of pebbles being commonly found in the stomach. M. Geoffroy-Saint-Hilaire met with them in the *Egyptian Crocodile*, and observed that they were rendered smooth by the action of triturating the alimentary substances. In the present instance, there were five small pebbles in the stomach, the largest of which was about 8 lines in the longest diameter.

“The valve at the orifice by which the small pyloric cavity communicates with the *duodenum* appears rather to oppose the passage of matter into that intestine; and both orifices are remarkably small as compared with the size of the stomach, and especially with the size of the cardiac aperture: the diameter of each did not exceed 3 lines.

“The *duodenum* formed the same double fold as described by M. Geoffroy-Saint-Hilaire in the *Egyptian species*. As he makes no mention of a *pancreas*, but describes the outer spaces of this part as occupied only by fat, I was induced to examine it minutely, and discovered the gland between the first and last portions of the gut; and having laid open the duct, an eye-probe passed readily through it into the upper end of the last portion of the *duodenum*, a quarter of an inch beyond the orifice of the biliary duct.

“The rest of the small intestines varied only in diameter where *flatus* had accumulated, and at these parts the zigzag *rugæ* were almost obliterated. Mr. Hunter has remarked in his *Anatomy of Whales* (Phil. Trans. lxxvii. p. 410), that he has ‘never found any air in the intestines of this tribe: nor indeed in any of the aquatic animals.’ But this remark does not appear to apply to those animals whose habits are only partially aquatic.

“The *rectum* opens directly into the genito-urinary cavity, and does not pass beyond it, as in *Tortoises*, to terminate in the outer cavity or vestibule (*vestibulum commune*, Geoff.) The termination in this instance was denoted by a valve not circular, but rather spirally disposed; and the character of the lining membrane of the genito-urinary cavity was very distinct from that of the *rectum*, being more coarsely villous, and of a redder colour: this cavity was an inch in length; the ureters opened at the lower part, just



above or within the valve that separates it from the outer cavity. The lower or ventral margin of the valve is grooved, and the groove is continued on into that of the *penis*.

“The peritoneal canals opened externally on two small *papillæ* placed one on either side the root of the *penis*; they also communicated at about a line distant from their external aperture, with the cavernous structure of the *penis*. From the minute size of these orifices, which barely allow of the passage of an eye-probe, and their disposition on a *papilla*, equivalent to a valvular structure on pressure from without, it is difficult to imagine that any water can be admitted from without into the peritoneal cavity; yet M. Geoffroy-Saint-Hilaire hazards the hypothesis that water is so admitted by means of a similar mechanism to that by which air passes through the *trachea* into the pulmonary cavity, the *peritoneum* being thus rendered an accessory organ of respiration. ‘Le voilà,’ he says, (speaking of the *Crocodile*, in his ‘Description des Reptiles de l’Égypte,’ page 237,) ‘veritable amphibie, dans ce sens qu’il est animal aérien par sa poitrine et animal aquatique par une modification de l’état de son abdomen.’ Yet, notwithstanding the opportunities this author enjoyed of examining the *Crocodile* under circumstances most favourable for such an observation, he does not appear to have ever detected water in the abdominal cavity; nor any peculiarity in the contents of that cavity, which would give support to his hypothesis.

“The appearances in this dissection precisely accorded with the description given by M. Geoffroy-Saint-Hilaire of the diaphragm and its connection with the liver in the *Egyptian Crocodile*.

“The spleen lies on the right side of the *abdomen*, beneath the right lobe of the liver; it was two inches and a half in length, and about half an inch across at the broader part. It is entirely surrounded by *peritoneum*, and lies very loose, being connected only by a very small process of that membrane accompanying the vessels to the upper part of the duodenal fold. It is here, therefore, that the structure most favourable for the detection of an excretory duct obtains, if the spleen really possessed such an appendage, its passage from the gland, in that case, being limited to a very small space, and this space circumscribed by a diaphanous membrane. But it was easy to see that this membrane contained only a small artery derived from the branch that supplied the *pancreas*, (having none analogous to the *vasa brevia* in man); a vein of disproportionate size, which terminated in the *vena portæ*; two small nervous filaments; and a delicate connecting tissue.

“There is a lacteal gland at the root of the mesentery as large as the spleen.”

Mr. Owen stated his intention of bringing before the Committee at an early meeting the remaining portion of his notes on this subject.

Mr. Owen also read to the Meeting the following Notes on the Anatomy of the *Nine-banded Armadillo*, (*Dasyus Peba*, Desm.)

“This animal was the female specimen lately presented to the Society, which died almost immediately after its arrival. Its ad-measurements were as follows :

	ft.	in.	lines.
From the end of the nose to the setting on of the tail	1	1	0
From ditto to the <i>vertex</i>	4	0	0
From the <i>vertex</i> to the first band	4	0	0
From the last band to the skirt of the armour	3	10	
Breadth of the head across the eyes	1	6	

The ears were contracted and tubular at the base, but the rest of the conch expanded, with the *apex* rounded ; their length 1 inch 10 lines ; their extreme breadth 10 lines. The openings of the eyelids were 3 lines in length, and oblique from behind upwards and forwards ; their margins tumid, and the *cilix* chiefly on the lower eyelid towards the nose. The *membrana nictitans* could be drawn over the nasal half of the *cornea*. The globe of the eye was about the size of a peppercorn, the *cornea* occupying almost the whole of the anterior half. The pupil was dilated and round. The anterior extremities being formed for digging, the animal has strong clavicles, which are concave anteriorly. There were four small nipples, two in the pectoral and two in the inguinal regions : the number of young produced at the Gardens of the Society by the *Weasel-headed* species, (*Dasyus 6-cinctus*, Linn.) have not exceeded two.

“The contents of the *abdomen* were partly concealed by a thin *epi-ploon* devoid of fat, as indeed was the case with all the *viscera*. The *oesophagus* runs an inch below the diaphragm before it terminates. The stomach is almost of a globular form ; but suddenly contracted in its dimensions for about an inch at the pyloric end. The *oesophagus* enters at the distance of an inch and a half from the left extremity, the cuticular lining terminating at the *cardia*. The villous membrane presented two distinct appearances, two-thirds of the cavity at the cardiac end being lined by a membrane of a redder colour with coarser *villi*, and elevated into a few solitary but well defined *rugæ* ; while the rest of the cavity was lined by a smoother membrane, only puckered near the *pylorus*. There was a slight contraction between these parts, which disappeared on distending the stomach ; it is probably increased during the digestive process so as to produce a greater degree of separation between the two parts of the cavity, for the pyloric end is evidently adapted for powerfully triturating the alimentary matter, and the *pylorus* is provided with a valvular apparatus to prevent the propulsion of the contents of the stomach, until they have undergone the necessary comminution. The muscular coat is here thrice the thickness of any other part of the cavity ; and the exterior of the stomach has at this part a tendinous appearance on each side. A semilunar ridge defines the lower part of the pyloric aperture, and above this ridge there is a protuberance about the size of a hazel-nut, upon which the villous membrane is puckered ; this protuberance is equally obvious externally. It is not glandular, but is chiefly occasioned by an accumulation of condensed cellular membrane between the mus-

cular and mucous membranes. A precisely similar structure guards the pyloric aperture of the stomach of the *Seal* and that of the *Llama*. From the position of this projection with respect to the semilunar fold below, the *pylorus* has the form of a semicircular aperture with the concavity upwards. This valvular structure is not alluded to by Sir Edward Home in his description of the stomach of the *Nine-banded Armadillo*, but he describes a zone of glands surrounding the orifice of the *pylorus*.

“The *duodenum* is enlarged at its commencement, and is connected by a loose process of *peritoneum*, which becomes narrower as the gut descends, and is continued from its lowest part upon the right kidney; the *duodenum* then crosses the spine and becomes a loose intestine. The small intestines contained a little dark-coloured matter; they were smooth on the inside: their whole length was 18 feet. They enter the *colon* in the same way as in the *Crocodile*: that gut suddenly expanding. There is a small circular production of the inner membrane, where the small intestine is inserted, but it seems incapable of forming an effectual valve. The inner membrane of the *colon* was raised into a few small longitudinal *rugæ*. The *faeces* were of an oval form, about 9 lines in length, and tolerably coherent. Two follicles open exteriorly near the verge of the *anus*.

“The liver is divided into four lobes and a *lobulus Spigelii*. The third from the right is the largest, and in this are lodged the gall-bladder, and the remains of the umbilical chord. The *ductus choledochus* enters the *duodenum* two inches from the *pylorus*. The *pancreas* is a thick mass, 4 inches in length, and extended as usual behind the stomach from the spleen to the *duodenum*. The spleen is a simple elongated trihedral body,  $2\frac{1}{2}$  inches in length.

“The kidneys are conglobate and simple, *i. e.* terminating in a single *papilla*. The supra-renal glands are half an inch in length, of a yellow colour, loosely connected with the kidneys, but closely attached to the coats of the contiguous large veins.

“In the heart the right ventricle terminated one third from the *apex*, and stood out from the left like an appendage to it; an appearance, however, that was chiefly owing to its being distended with blood, while the other cavity was contracted. The arteries are given off from the arch of the *aorta*, precisely as in the human subject. The lungs also have a similar correspondence in the number and proportions of their lobes.

“The tongue is of a trihedral elongated form; it is half an inch broad at the root, and from thence gradually tapers to the extremity: its superior surface is convex, transversely wrinkled and finely papillose; at about an inch from the root are two fossulate *papillæ* on the same transverse line, and behind these a mesial furrow extending to the *epiglottis*. There is a fold of membrane on each side of the *frænum lingue*, which is continued forwards to the *symphysis menti*; and external to these folds are twenty filamentary processes, ten on each side, about 2 lines in length, which appear to be elongated follicles. The soft palate extends to the base of the tongue; on its anterior surface are two little cavities containing the tonsils.

“There is a peculiar structure connected with the salivary system, which appears to have been hitherto unnoticed in this or any other mammiferous animal. The secretion of the submaxillary gland, a gland of very large size, is received prior to its expulsion into a sac, in which it becomes very tenacious; the sac is about the size of a french-bean, and receives the *saliva* by four or five short ducts entering at its posterior part and having valves at their orifices, by which a retrograde course of fluids is prevented from the sac to the gland. A long duct is continued from the anterior extremity of the sac, and terminates by a minute orifice immediately behind the *symphysis menti*.

“The *epiglottis* rises behind the soft palate into the posterior nares, nor does the structure appear to admit of its ever passing beneath that part; it is deeply notched at the *apex*. The muscular *parietes* of the *pharynx* and *oesophagus* are very thick, for from the nature of the teeth, small, conical and wide apart, the food can undergo but little comminution in the mouth, and hence the necessity of additional power for propelling imperfectly divided substances into the stomach, and of a structure analogous to the gizzards of birds for completing their trituration in that cavity. The rings of the *trachea* overlap each other behind, but do not coalesce: they are irregular in their size.

“The thyroid glands are of the size of french-beans, and united by a very thin transverse band, like a connecting vessel.

“No morbid appearances were met with in either of the preceding dissections.”



November 8, 1831.

William Yarrell, Esq. in the Chair.

An extract of a letter from Captain Fayrer, Corr. Memb. Z.S., was read. It was dated on board H. M.'s Packet Arrow, Port Patrick, October 23, 1831, and referred to the migrations of certain birds from that neighbourhood. That of the *Larks* commenced about Oct. 12. "Their numbers," says Captain Fayrer, "are beyond anything I would venture to state, but millions. They start at daylight, steer directly across to the Capelona Islands off Belfast Loch; and seem to prefer the wind directly against them. Very large flocks of *Starlings* have arrived within the last few days: they start before sun-rise, but steer to the southward. The *Lapwings* have also arrived: but these birds do not take their flight till day has set well in: they appear to go directly across. I see all these birds at each end of their passage (21 miles), and few, I think, perish."

A letter was read from E. W. A. Drummond Hay, Esq. H. M.'s Consul for Marocco, dated Tangier, Oct. 6, 1831. It accompanied a present to the Society from that gentleman, consisting of two *Ichneumons*, (*Herpestes Pharaonis*, Desm.,) and a pair of striped *Barbary Mice*, (*Mus Barbarus*, Linn.) The former were caught in the neighbourhood of Tangier, where they are called by the natives, in the dialect of the Arabic used there, *Sërro*. The *Mice* are not rare: the name given to them by the natives is *Phâr-Azëff*, the *Palmetto Mouse*.

Mr. Drummond Hay also referred to four *Ostriches* sent in the same transport as a present to His Majesty from the Sultan of Marocco, which have since been graciously presented by His Majesty to the Society. They were obtained in a region of the Desert called Hämādah, situated about eight or ten days journey from Tafi-leht in the direction to which the Moösselmin address their prayers. Though yet so young as not to have assumed their adult plumage, (no external distinction being at present observable in them,) two of them were seen in the act of treading while they remained at Tangier.—The same precocity, it may be remarked, has been previously noticed in other birds.

The letter concludes by promising a continuance of Mr. Drummond Hay's exertions on behalf of the Society, and by referring particularly to his endeavours and those of Mr. Willshire, H. M.'s Consul at Mogadore, to procure skins and living specimens of several interesting *Mammalia* and Birds, and especially the quadruped known to the Arabs as the *Mhōrr*.

A collection of *Fishes* was exhibited, consisting of nearly thirty species. It was presented to the Society by Captain Belcher, R.N., by whom it was formed during his recent survey of part of the At-

lantic coast of Northern Africa. The following apparently new species contained in it were pointed out by Mr. Bennett.

**POLYNEMUS ARTEDII.** *Pol. digitis quinque corpore longioribus; pinnâ anali elongatâ: pinnis dorsalibus, caudali, pectoralique nigro-irroratis.*

D. 7,  $\frac{1}{5}$ . P. 15. A.  $\frac{2}{5}$ .

*Pol. quinquarius?* Linn.—Seba, *Thes. tom. iii. pl. xxvii. f. 2.*

Longitudo corporis,  $6\frac{1}{2}$ ; pinnæ caudalis,  $2\frac{1}{4}$ ; digitorum 3<sup>ii</sup> 4<sup>tique</sup>, 16; latitudo corporis  $1\frac{3}{4}$  unc.

Except in the elevation and triangular form of the first dorsal fin, in which it agrees with the other *Polynemi*, this species differs in no respect from the fish figured by Seba, and described by Artedi in the text of the 'Thesaurus' under the name of *Pentanemus*. On this Linnæus established his *Pol. quinquarius*. MM. Cuvier and Valenciennes have recently united the latter with *Pol. paradiscus*, Linn., to form their *Pol. longifilis*: a union to which they were induced by a belief that *Pol. quinquarius* was founded on a mutilated specimen, in which two of the free rays on each side had been removed,—their extensive inquiries having failed in procuring for them any *Polynemus* possessing free rays exceeding the body in length and only five in number. There is, however, another marked distinction in Seba's figure in the length of the anal fin, which is nearly twice that usual in the genus, containing almost double the usual number of rays. In this respect and in the number and length of the free rays beneath the pectoral fin, *Pol. Artedii* agrees with the figure and description of *Pol. quinquarius*, with which, but for the difference in the form of the first dorsal fin, it must have been regarded as specifically identical. Its distinction from the other known species is easy, on account of the very remarkable characters just noticed.

Fam. SCOMBRIDÆ.

Genus APOLECTUS.

*Corpus elongatum, subalepidotum.*

*Linea lateralis æqualiter squamata.*

*Pinnæ dorsales approximatae, subcontinuae.*

*Dentes maxillares fortes, conici, distantes.*

Genus *Cybio*, Cuv., maximè affine: vix differt nisi dentibus conicis dissitis.

Adjungendus videtur *Scomber maculatus*, Mitchill, Trans. New York, vol. i. p. 248. pl. vi. f. 8.

**APOLECTUS IMMUNIS.** *Ap. immaculatus, supra pallidè cæruleus, ad latera et infra argenteus; pinnâ dorsali priore anticè atrâ.*

D. 18, 24 (8 spur.). A. 23 (8 spur.). P. 19.

**NOMEUS MACULOSUS.** *Nom. argenteus, dorso latè, lateribus, pinnisque nigro maculatis: pinnis ventralibus nigris.*

D. 10, 28. A. 27. P. 20. V.  $\frac{1}{2}$ . C. 19.

Picturâ abundè differt a figurâ *Scombri maculati*, Mitch., qui, momente cl. Cuvierio, idem ac *Nomeus Maurittii*, Cuv., (*Gobius Gronovii*, Gmel.).

**EXOCÆTUS PINNATIBARBATUS.** *Exoc. pinnis pectoralibus analem, ventralibus caudalem attingentibus; dorsali altâ (depressâ cauda-*

*lis medium attingente*); cirro lato mentali profundè 15—20 radiatim secto.

D. 13. A. 10. P. 13.

Affinis, ut videtur, *Exocoeto Nuttallii*, Mitch., formâ et proportione pinnarum. Differt cirro mentali unico, multi-secto, numeroque radiorum pinnarum. Specimen 2-unciale. Pinnæ ventralis dorsalisque ultra medium nigræ; pectorales nigro fasciatæ.

ALOSA SENEGALENSIS. *Al. maxillis edentulis; pinnâ anali parum elevatâ: suprâ chalybea, infrâ et ad latera alba argenteo vittatim varians.*

D. 16. A. 20. V. 9. P. 19.

*Clupeâ Fintâ*, Cuv., latior: latitudo altitudinis dimidium æquat; altitudo minor est longitudinis parte quartâ.

Fam. PLEURONECTIDÆ.

Genus PSETTODES.

Os æquilaterale.

*Dentes maxillares* prælongi, distantes: *palatini* breves, acuti, uniseriati: *vomerini* pauci, acuti, parvi: *pharyngei*, *linguales*, *branchialesque* numerosi, conferti, setaceo-acuti.

*Pinnæ pectorales* æquales.

*Pinna dorsalis* longè ponè oculum incipiens.

*Oculus superior* subverticalis.

*Nares* utrinque positi.

Genus *Pleuronectidarum* adhuc cognitarum maximè aberrans.

*Hippoglosso*, Cuv., affine, sed differt dentibus, situ oculi superioris, initioque pinnæ dorsalis.

Adjungenda videntur *Nooree Nalaka*, Russel, Coromandel Fishes, lxxvii, et *Pleuronectes Erumei*, Schn. *Adelah*, Russel, Ibid. lxxix.

PSETTODES BELCHERI. *Psett. oblongus*: latere sinistro nigrescenti, dextro albido; pinnarum pectoralium brevium rotundatarum sinistro pinnâque caudali quadratâ in medio subproductiore nigro guttatis: dentibus maxillaribus semi-sagittatis: lineâ laterali declivi.

RHOMBUS HETEROPHTHALMUS. *Rhomb. latè ovalis*, anticè supernè gibbus; oculis maximè distantibus, superiore prope gibbum posito, interstitio subplano paulum excavato; maxillâ orbitâque inferiore 1-spinosis; pinnâ caudali rotundato-lanceolatâ; pinnarum pectoralium radiorum extremitatibus vix liberis: latere sinistro fusco, ocellis numerosis notato.

Affinis, ut videtur, *Rhombo manco*, Cuv., (*Pleuronectes mancus*, Brouss.): differt gibbo capitis et radiis pinnarum pectoralium membranâ per totam longitudinem connexis.

SOLEA HEXOPHTHALMA. *Sol. oblongo-ovalis*; pinnis dorsali analique a caudali discretis: suprâ pallidè brunnea, fasciis latis saturatoribus pallidiori rivulatis septem, quarum 4tâ 5tâ et 6tâ oculo magno nigro iride albâ prope pinnam dorsalem alterâque prope pinnam analem notatis; pinnis dorsali analique nigrescentibus, pectorali nigrâ, caudali brunneâ nigro-punctatâ; infrâ pinnâque pectorali rubescenti-albidâ.

SOLEA IMPAR. *Sol. elongata*, dorso semi-ovalis, ventre subrecto;

*pinnis dorsali analique a caudali discretis: latere dextro flavescente, fuscescente vario; pinnâ pectorali dextrâ ad apicem maculâ parvâ nigrâ notatâ.*

**TETRODON GUTTIFER.** *Tetr. oblongus, lævis; ventre aculeato-hispido; pinnis pectoralibus posticè subrotundatis; dorsali analique rotundato-acutis; caudali lunatâ; dentibus superioribus anticè parum elevatis: suprâ olivaceo-brunneus albo guttatus; infrâ lacteus.*

D. 11. A. 10. P. 21.

**CARCHARIAS FISSIDENS.** *Carch. dentibus triangularibus, singulis versus angulum oris profundè emarginatis, incisurâ acutâ; pinnâ dorsali 2dâ supra analis medium incipiente.*

Figura dentium apud *La Cépède, Hist. Nat. des Poiss., tom. i. pl. viii. f. 2.*

The single notch on each tooth on the side directed towards the angle of the mouth is so deep and acute as to give to the teeth, when viewed from the side, a close resemblance to so many arrow-heads.

**RAIA BISPECULARIS.** *Raia supernè aspera, aculeis dorsalibus in unicâ serie per caudam excurrente: fusca, maculâ pinnæ pectoralis rotundâ hyalinâ nigro-cinctâ.*

Affinis, ut videtur, *Raiæ Miralete*, Risso: differt corpore toto supernè aspero, caudæque aculeis uni-seriatis. Specimen minimum, 2-unciale.

Among the previously described species contained in the collection was a specimen of *Scyllium marmoratum*, Benn., (Memoirs of Sir T. Stamford Raffles, Appendix) hitherto only known as an inhabitant of the Indian seas.



November 22, 1831.

Dr. Horsfield in the Chair.

A letter from Sir R. Ker Porter, Corr. Memb. Z.S., dated City of Caracas, Sept. 10, 1831, was read. It contained a detailed description of the *Myrmecophaga jubata*, Linn., under the name of *Orso Hormeguero* or *Ant-Bear*, together with an account of the habits of that animal; and was accompanied by a drawing of the fully grown individual from which the description was taken. Sir R. Ker Porter was particularly struck with the difference in structure which exists between the fore and the hinder feet, and with the curious disposition of the parts of the former in the act of progression, which has been slightly referred to by D'Azara. In the figure (in which the animal is represented in a standing position) the claws of the fore feet do not project in front, but are doubled backwards under the wrist; evidencing a mode of progression in the *Myrmecophagæ* similar to that recently described by Col. Sykes as existing in the species of *Manis*. "To receive the additional length and point of the middle toe," observes Sir R. Ker Porter, "a protruding mass of hard flesh stood out from the wrist, wherein was a cavity destined for the reception of the unguled elongation when the animal was in a standing position." He adds, "From the awkward formation of the fore feet, quickness of motion becomes impossible; hence they may be caught in the smallest open space (when seen) with little difficulty."

Sir R. Ker Porter adds a list of the *Mammalia* known to exist in the Province of Caracas, and describes the arrangements which he has made for preserving such of them as he may succeed in procuring for the Society until an opportunity occurs of transmitting them to England. He also refers to several Birds which he hopes to procure, including the *common* and *galeated Curassows*.

The skins were exhibited of two animals forming part of a small collection of *Mammalia* and Birds brought from the neighbourhood of Swan River by Lieut. Matthew Friend, R. N., Corr. Memb. Z. S., and presented by him to the Society. Mr. Ogilby expressed his belief that both these animals had been hitherto unnoticed by systematic writers, and read the following descriptions of them.

*HYPSPRYMNUS SETOSUS.* *Hyps. pilis supra setosis, fusco-cinereis, infra canescentibus; auriculis latis, nudis, nigris; caudâ mediocri, gracili, squamatâ, pilis brevissimis rigidis vestitâ.*

"Of the different species of *Hypsiprymni* inhabiting the continent and dependencies of Australia, and of which the characters are but little known, many have been hitherto confounded with the *Kangaroos*. That to which I have given the name of *Hyps. setosus* is known in the colony of New South Wales by the native name of *Bettong Kangaroo*. The specimen now described is believed to

[No. XIII.] ZOOLOGICAL SOCIETY. PROCEEDINGS OF THE COMM. OF SCIENCE.

have been brought from the Swan River ; an interesting circumstance, since it shows that some, at least, of the species common to the eastern shores are found equally upon the opposite coast.

"This species is about the size of a small Rabbit, with a larger head, and comparatively shorter tail and legs, than are generally found among other Saltigrade Marsupial animals. It has a small muzzle; round naked ears like those of a Rat, but almost concealed in the long shaggy fur which surrounds them; a tail not quite two thirds the length of the body, of a dark scaly appearance, sparingly provided with a few coarse black hairs. The legs and feet are also dark, and covered with very short coarse hair. All the upper parts, the head, neck, shoulders, back and loins, are covered with long shaggy hair, of a rude bristly quality and a dark ashy-brown colour, thinly interspersed with single hairs of a light bay or sandy gray colour. Beneath, on the chin, breast, and belly, the fur is of a very fine close quality, and of a uniform light ashy-brown colour; and it is to be observed, that a thick coat of the same fine fur is found beneath the coarse hair upon the upper surface of the body."

ORNITHORHYNCHUS BREVIROSTRIS. *Orn. rostro brevi; vellere densissimo, suprâ fusco-rufo, infrâ albescente.*

"At first sight this animal might be regarded as identical with *Orn. rufus*, which it closely resembles in the quality and fineness of the fur, as well as in the general colour of the body; but a careful comparison of these circumstances, and particularly of the proportions of the bill and other parts, is sufficient to establish the specific difference of these two animals. The fur of the new species is thickly furnished, rather longer, and of a softer quality than in the other *Ornithorhynchi*, and presents something of a shining or metallic lustre when rubbed smoothly down with the hand. It is of a uniform dark vinous red colour on the upper parts of the body, and of a silvery white beneath; the head is dark brown; and the feet are light gray. But the peculiar character of *Orn. brevirostris* is found in the bill, which is very nearly as broad as it is long, whilst in the other species the length of this organ is at least double its breadth. In other respects its characters, as far as they can be ascertained at present, agree with those of its congeners. The bill is of a very dark colour, approaching almost to black; the skin remarkably thick for so small an animal. The following are its principal dimensions:—

	ft.	in.
Length from the base of the bill to the origin of the tail . . . . .	1	0
— of the tail . . . . .		$3\frac{1}{2}$
— of the bill . . . . .		$1\frac{1}{2}$
Breadth of the bill . . . . .		$1\frac{1}{4}$ "

Stuffed specimens of *Orn. rufus* and *Orn. fuscus* having been placed on the table, the distinctions between these and *Orn. brevirostris* were pointed out by Mr. Ogilby.

About thirty Bird-skins, collected during the last summer in Shet-

land by Mr. William Lord, and presented by him to the Society, were exhibited. The most worthy of particular notice were a specimen of the *long-tailed Duck*, *Anas glacialis*, Linn., in its summer plumage; and an example of the *brown-headed Gull*, *Larus capistratus*, Temm. As this *Gull* has received but little notice as a British bird, Mr. Yarrell added the following description of the specimen, also in its summer plumage.

“This bird is at once distinguished from *Larus atricilla*, Linn., and *Larus ridibundus*, Leisl., (both also British Gulls, and with both of which it has been confounded,) by its more slender as well as shorter beak, shorter *tarsi*, and smaller feet. The whole length of this specimen from the point of the beak to the end of the tail feathers is 15 inches; from the point of the beak to the first feathers, 1 inch and half a line; from the point of the beak to the *riectus*, 1 inch 10 lines; from the *carpus* to the end of the first primary (which is the longest), 11 inches 8 lines; length of the *tarsus* 1 inch 7 lines; of the middle toe and nail 1 inch 6 lines. The beak brownish red; the head and upper part of the neck brocoli-brown, bounded by blackish brown, descending lowest at the fore part, some of the dark feathers at the margin in front tipped with white; the remaining portion of the neck, the breast, *abdomen*, vent and tail, pure white; upper surface of the wings pale ash-gray, under surface grayish white; primaries white, edged and tipped with black, broadest on the inner web, shafts white; legs and toes brownish red, webs of the feet chocolate-brown.

“Inhabits the Shetland and Orkney islands.”

At the request of the Chairman, Mr. Gould exhibited about thirty recent specimens of the *Stormy Petrel*, *Thalassidroma pelagica*, Vig., received by him from the eastern coast of England; and a recent specimen of the *Pomarine Gull*, *Lestris Pomarinus*, Temm., obtained from the same locality. A living pair of the latter bird have since been added to the Society's Menagerie by the kindness of James Cornish, Esq. who obtained them on the coast of Devonshire.

The following Notes by Mr. Owen, taken at the dissection of two *Seals* (*Phoca vitulina*, Linn.), which died at the Society's Gardens, were read.

“All the parts bore the deep venous tint which appears to be peculiar to those *Mammalia* whose aquatic habits tend to impede their respiration. The cellular texture was extremely tough, with a granular appearance, somewhat resembling the structure of the *corpus cavernosum*: it is the same in the *Porpoise*. It was also gorged with bloody *serum*, a great quantity of which was contained in the cavity of the *abdomen*. The *omentum* was very thin and without fat, (of which indeed there was a deficiency over the whole body): it extended over half the contents of the *abdomen*.

“The stomach was situated in the left *hypochondrium*: its pyloric end was bent acutely upon the cardiac: the *æso-phagus* entered at the left extremity, leaving no *saccus cæcus* beyond it. The pyloric aperture was extremely small as compared with the size of the stomach;

it was provided with a valvular apparatus similar to that described in the stomach of the *Armadillo* (p. 142.), consisting of a tubercle composed of condensed cellular structure, which projected above the orifice, and gave it a semilunar form. This valve, together with the small size of the orifice, must contribute to retain the food in the stomach until it has undergone complete digestion. It is difficult to imagine that the cranial bones or *vertebræ* of fishes can pass through this aperture, unless they are previously dissolved. Are they regurgitated, like the castings of Owls? The transverse diameter of the *pylorus* was half an inch, its vertical diameter not more than 2 lines; the diameter of the cardiac aperture was 1 inch and a half.

“The *duodenum* descends abruptly from the *pylorus*, and is connected by a continuation of *peritoneum* with the pyloric end of the stomach. It is contracted at its origin, but soon dilates, and a *sacculus* is formed between its muscular and mucous coats for the reception of the biliary and pancreatic secretions, which afterwards are conducted through a narrow passage into the intestine. Having descended as far as the right kidney, the *duodenum* turns to the left in the usual manner, but has a complete investment of *peritoneum* through its whole course: at the left side of the *abdomen* it carries forward this process of *peritoneum*, which forms the mesentery in the usual manner. The small intestines do not exceed 1 inch and a half in circumference, but their deficiency in this article of their dimensions is compensated for by their great length. The large intestines commence by a short round *cæcum*, which in both instances was situated close to the pyloric end of the stomach: the greatest circumference of the *colon* was 4 inches.

“The interior of the stomach was smooth and without *rugæ*; the intestines had the same character.

“The liver consisted of five lobes, which were remarkably elongated, somewhat triedral, and pointed at the extremity. The gall-bladder, 2 inches and a half long, was lodged in the third lobe, counting from the right; the suspensory ligament entered another division of this lobe. The gall-bladder received two small ducts directly from the liver, or hepato-cystic ducts. The cystic duct was joined by a small hepatic duct about half an inch from the gall-bladder; and a little lower down was joined by a larger hepatic duct, which was formed by the junction of two other ducts, each of which was also formed by the union of two ducts, coming distinctly from the four smaller lobes of the liver. The *ductus communis* was 1 inch and a half long; it was joined by the pancreatic duct, as it terminated in the dilated *sacculus* before mentioned.

“The *pancreas* was composed of a large and a small portion of the usual structure and in the usual situation. The spleen, a flattened body with an irregular notched margin, measured 5 inches and a half in length. It was attached to the *epiploon* in such a manner that it could be drawn away for some distance from the stomach, and in the intervening membrane were situated a number of small dark glandular bodies from the size of a horse-bean to that of a pea, which, if they had been met with in a *Porpoise*, I should have considered as



accessory spleens. This circumstance was noted in the dissection of the first *Seal*, but was not attended to in the second.

“The kidneys were conglomerate and of large size. The veins ramify on the exterior, but are different both in the manner of ramification and in proportionate size from those of the feline tribe. In the latter animals about one fourth only of the venous blood is thus returned, and the veins put on an arborescent appearance; but in the *Seal* the whole of the blood is carried back along the exterior of the kidney, and the veins form a network around the gland, filling up the interstices of the lobules.

“The *viscera* of the chest were disposed in the usual manner.

“The *pericardium* was attached by cellular membrane both to the *sternum* and to the diaphragm. The inferior *cava* was consequently shorter than in most quadrupeds; it was also smaller above than below the diaphragm, where it appeared to form a capacious *sinus* by the union of the large hepatic veins. The heart was flat and broad, much resembling in figure the ventricular part of the *Turtle's* heart; its *apex* obtuse. The appendix of the right auricle had two processes, one covering in the usual manner the origin of the pulmonic artery, the other lying upon the right ventricle. In the interior of this cavity are seen in a striking manner the original relations of the inferior *cava*; the *septum* of the auricles appears to be formed by a continuation of the left *parietes* of the superior *cava*, and terminates in an arched form to the right of the orifice of the inferior *cava*. This vein in consequence appears to open directly into the left auricle. In the younger of the two *Seals* the valve which cuts off this original communication (*valvula foraminis ovalis*) was incomplete, and a large *foramen ovale* was the consequence: in the other *Seal* it was complete as to its formation, but not with respect to its adhesion,—an oblique aperture, sufficient to admit a goose-quill, still remaining at its upper margin. I should not imagine an open *foramen ovale* to be an essential condition in the structure of the adult *Seal*.

“In the younger *Seal* the *ductus arteriosus* had still a smooth cavity, but was closed at the extremities, so as to prevent any admixture of pulmonic and systemic blood through this passage. In the older animal the cavity was totally obliterated.

“The lungs were of large size, and had the same livid, gorged appearance as in the *Porpoise*. They were partially divided into two lobes on each side; the upper being half the size of the lower lobes, and the left lung somewhat larger than the right. The cartilages of the *trachea* were complete circles, as in the *Porpoise*. The *epiglottis* was of a triangular form, its point projecting above the *velum palati*, and slightly indicating the structure which is carried through the *Dugong* to such a peculiar extent in the true *Cetacea*. The thyroid glands were detached bodies, each of the size of an almond, and exactly resembling the absorbent glands in this animal, which were generally of large size.

“The tongue was thin, narrow, and bifid at the extremity. The *os hyoides* was attached to the styloid process by ligament. The only salivary glands found, were the submaxillary, which were about the size of nutmegs.

“With respect to the organs of generation in the male, the *testes* lay obliquely upon the body of the *pubis* outside the *abdomen*, but, as is common to the aquatic *Mammalia*, without making any projection externally; the communication between the *tunica vaginalis* and *abdomen* was large enough to allow these glands to be pushed back into the latter cavity. There were no *vesiculæ seminales*, and only a very small prostate. The *penis* has a pointed *glans*, and a bone about half an inch long, of a flattened form with thicker extremities; into this bone are inserted two *retractor* and *depressor* muscles, which arise from the common anterior tendon of the *sphincter ani*. From the prepuce to the *anus* measured 5 inches, the *penis* being inclosed in a sheath and making no projection externally.

“The muscles of the fore and hind-flippers were dissected: in the latter are two peculiar muscles for expanding the web of the foot, which have been described in detail by Carus. The extent of origin of the *pectoralis major* is increased by a cartilaginous process, 3 inches long, continued from the *manubrium*, or first bone of the *sternum*. This circumstance involuntarily reminds one of the *Mole*, where a similar structure exists, also in connexion with vigorous rotatory movement of the anterior extremity: but in that animal the structure is by so much the more marked, as progressive motion is attended with the displacement of denser and more resisting matter; it may be said, indeed, to swim in the earth.

“The following admeasurements are from the larger of the two animals.

	ft.	in.	lines.
From the snout to the end of the hind-flippers.....	3	0	0
————— tail .....	2	7	6
————— commencement of the fore-flippers .....	0	10	0
Circumference of the body, taken behind the fore-flippers .....	1	10	0
————— of the tail, behind the hind-flippers .	0	3	0
Length of the stomach .....	1	5	0
Circumference of widest part, when distended, ....	1	2	0
Length of intestinal canal.....	42	10	0
————— of <i>cæcum</i> .....	0	0	10
————— of large intestines.....	2	0	0.”

Mr. Owen also read the following “Notes on the anatomy of a young *Weasel-headed Armadillo*, *Dasypus 6-cinctus*, Linn., which was brought forth at the Society’s Gardens on the 3rd of September, and died on the 16th of November. It had nearly acquired its full growth, and had increased in weight during that short period 52oz. 2dr.

“Its admeasurements were as follows:—

	in.	lines.
From the end of the nose to the setting on of the tail	11	3
————— to the <i>vertex</i> .....	3	6
From the <i>vertex</i> to the first band .....	2	6
Breadth of the head across the eyes .....	2	3

“This species is of a darker colour and more hirsute character than

the *nine-banded Armadillo*, the anatomy of which has been recently given (p. 141.). Its head is shorter and broader, and the coronal plate of a triangular, instead of an oval, form. The middle bands also become more gradually blended with the last portion of the armour, and the tail is much shorter, measuring only  $4\frac{1}{2}$  inches in the present species, while in the *nine-banded* it is nearly 9 inches in length. The ears, though of the same form, are also proportionally shorter, being but 1 inch in length and half an inch in breadth. The most important differences, however, are in the additional toe on the fore-foot of the *Weasel-headed* species, and the additional teeth implanted in the intermaxillary bones. Of these this young animal had already acquired its full complement, having 9—9 in the upper jaw, and 10—10 in the lower, all of one character, simple, cylindrical, and separated by interspaces. There are also remarkable differences in the forms and proportions of the scales in different parts of the armour of the two species.

“On laying open the *abdomen* the *viscera* presented much the same appearance as in the *nine-banded* species, except that the gall-bladder, being more deeply imbedded in the liver, appeared on the convex side of that *viscus*.

“The stomach had the same general form; but a greater proportion of the cavity was situated to the left of the *œsophagus*, the whole of the dilated globular part or reservoir being so placed. The length of the stomach when distended was  $3\frac{1}{2}$  inches, its greatest perpendicular diameter or depth  $2\frac{1}{4}$  inches: the *œsophagus* entered 2 inches from the left extremity. The lining membrane was uniformly villous; *rugæ* were seen about the middle of the cavity; these were few in number, longitudinally disposed, and converging towards the pyloric end. The *parietes* of the stomach, which are thin at the greater end, become increased (as in the species formerly described) by the accession of muscular fibres, and at the *pylorus* attain a thickness of 2 lines. This part is unprovided with the valvular protuberance observed in the stomach of the *nine-banded* species, but the pyloric orifice was so small that it was with some difficulty that I could discover it: from its oblique situation and the thickness of the surrounding *parietes*, I have no doubt that the same purpose is attained of opposing the egress of the alimentary matter during the time it is undergoing the requisite comminution. The stomach externally has the same tendinous appearance on each side at the smaller end.

“The *duodenum* receives the biliary and pancreatic secretions at the distance of 1 inch from the *pylorus*; its dispositions and connections, together with those of the rest of the small intestines, were the same as in the *nine-banded* species; but their length was in this specimen much less, being only 9 feet 6 inches. With respect to the large intestines a remarkable difference presented itself in the presence of two short but wide *cæca*, between which the small intestine entered the *colon*, and terminated. The largest of these pouches was very thin in its coats, and its length was an inch; the *parietes* of the smaller pouch were thicker, and exhibited patches of glands on the inside; its length was half an inch. The terminal orifice of the *lium* is in the

form of a slit with tumid margins situated on the middle of the ridge which separates the two pouches, and therefore liable to be closed by the lateral pressure of the fecal matter distending those pouches.

“Should this structure be confirmed by subsequent examinations of other individuals of the *six-banded* species, the absence of a *cæcum* can no longer be admitted among the generic characteristics of *Dasypus*. And it is interesting to observe, that the absence or presence of a *cæcum* as a generic distinction holds with as little force in the allied genus *Myrmecophaga*: for according to Daubenton there exist in one species (*Myrm. diductyla*, Linn.) two small *cæca*; while the *Tamandua* (*Myrm. Tamandua*, Cuv.), we are assured by M. Cuvier, has not any. In these apparently capricious variations of structure among the *Edentata*, it is impossible not to observe a tendency or an approximation to the structure of another class; which I am inclined to think is that of *Birds*. For in addition to the double *cæcum*, a peculiarity so remarkable in that class, we have also a gizzard-like structure exhibited in the tendinous external appearance and thickened muscular coat of the stomachs of the *Dasypodæ*, and a still nearer approximation to that form of stomach in the *Manis*, where the muscular coat at the pyloric end is 5 lines in thickness, and the inner surface is defended by a strong cuticle, roughened with *papillæ*. A similar structure exists also in the *Myrmecophagæ*, which moreover supply the want of grinders in the mouth by swallowing, in the same manner as the *Gallinaceous Birds*, small pebbles for the purpose of bruising and destroying the vitality of the insects which constitute their food. [See Burt in Asiatic Researches, vol. ii. p. 354, with respect to the fact of small stones and gravel being swallowed; and Lawrence's Blumenbach, Comp. Anat. 2nd edit. p. 89. for the true physiology of the fact.] In this genus also we find mucous glands about the *os hyoides* of the nature of those follicles which in *Birds* take the place of the conglomerate salivary glands of the *Mammalia*, and the secretion of which serves in the *Ant-eaters*, as in the *Woodpeckers*, to lubricate a projectile tongue. In another group of the *Edentata*, viz. the *Bradypodæ*, we are presented with a still more marked affinity to the structure of birds, in the abnormal number of cervical *vertebræ* exhibited in the *three-toed Sloth*, a peculiarity which it is difficult to refer to any other circumstance than the disposition of nature to pass by means of this anomalous order from the *Mammalia* to the *Birds*. The transition is indeed nearly completed by the *Monotremata*; for of the two genera contained in this order, *Echidna* presents us with the quills, and *Ornithorhynchus* with the beak, of a bird; and it is far from being proved that the mode of generation is not the same.

“With respect to the *Armadillo*: The commencement of the *colon*, which is formed by the union of the two *cæca* above described, is nearly 2 inches in diameter, but quickly diminishes to half an inch: near its termination it is again slightly dilated. A well marked chain of lacteal glands accompanies the mesenteric artery.

“The lungs were divided into three lobes on both sides, the additional lobe having reference probably to the greater breadth of the chest in this species. The *larynx*, *pharynx*, *fauces* and tongue pre-



sented the same appearances as in *Das. Peba*; but the latter part is proportionally shorter, corresponding to the difference in the length of the jaws.

"The liver and *pancreas* resembled those of *Das. Peba*. The spleen was broader and flatter, and a small supernumerary spleen was lodged in the head of the *pancreas*: probably an accidental variety.

"The submaxillary glands are of the same proportionate magnitude, and have a similar bag appended to them as in the species before described. The cyst is situated on the inner side of the anterior extremity of the gland; a similar provision exists to prevent regurgitation of the *saliva* by the *ductus inferentes*, or those which pass from the gland to the bag; and the *ductus efferens* terminates as in *Das. Peba* close behind the *symphysis* of the lower jaw.

"The organs of generation presented many circumstances worthy of notice; but I shall defer giving an account of them, until I have an opportunity of examining them in the adult animal. There was, however, a peculiarity in the urinary bladder which may be noticed here. The *urachus*, instead of coming off as is usual from the summit of the *fundus*, is continued from the middle of the anterior part of the *bladder*, to which point the remains of the umbilical arteries also converged. A process of *peritoneum* is continued from this part and down the middle line of the bladder below to the abdominal *parietes* in front of the bladder. It is my intention to investigate this peculiarity in other *Edentata*."

December 13, 1831.

The Honourable Twiselton Fiennes in the Chair.

The Chairman exhibited a specimen of a hybrid *Duck* bred between a male *Pintail* and a *common Duck*. It was one of a brood of six, several of which were subsequently confined with the male *Pintail* from which they sprung, and produced young. A specimen of a female of this second brood was also exhibited.

A specimen was exhibited of a young *Puma*, *Felis concolor*, Linn., which had recently been brought forth at the Society's Gardens, but had immediately died. Like the young of the other species of *Felis* it was variously spotted and striped, the depth of its markings approaching nearly to black, and being more intense than that observed in the *Lion*. The muzzle was nearly black, as was also the greater part of the tail. The young specimen was strongly contrasted with a specimen of the adult, which was placed on the table for comparison.

Preparations were exhibited of the swimming-bladder and of a portion of the roe of a female *Conger Eel* of considerable size (*Conger vulgaris*), presented to the Society by William Gladdish, Esq.; and Mr. Yarrell read the following notes of his examination of the individual from which the preparations were obtained.

"The specimen, weighing 36lbs., was of the usual uniform hair brown colour above, passing into dirty white beneath; the dorsal and anal fins white at the base and black on the edge throughout their whole length; the body distended by its contents; from the anal aperture the tail tapered off rapidly, ending almost in a point. It proved to be a female.

"The *abdomen*, when opened, was found to contain two very large lobes of roe, extending the whole length of the body, and passing several inches beyond the vent to the extreme end of the internal cavity; these lobes were composed of *ova* of a size to be distinctly apparent to the unassisted eye, particularly when directed towards the margins of the numerous *laminae*. The liver was formed of one single elongated lobe, which was broadest at the upper part, and, gradually diminishing both in width and thickness, ended acutely; the gall-bladder was rounded in form, and filled with bile of a fine olive-green colour.

"Behind its peritoneal covering the bright silver-coloured membrane which forms the elongated swimming-bladder was beautifully contrasted by the dark purplish-red colour of its gland, which in two expanded portions occupied a lateral but central situation between the two extremities; and from the swimming-bladder a canal

directed forwards reached the upper part of the stomach, opening into it by a very minute orifice.

“The differences, internal as well as external, between the salt-water *Conger* and the *sharp-nosed* fresh-water *Eel* will be made more apparent by a short description of the appearances taken from a small specimen of each of equal size and length.

“The head of the *Conger* is larger; the mouth wider and deeper; the lips fleshy; the upper jaw the longest; the teeth occupying a narrow linear space on both maxillary bones, forming three rows, of which those in the middle line are much the largest; numerous smaller teeth, more uniform in size, occupy the line of the *vomer*, but do not extend far backwards. The eye is as large again as in the *Anguilla*; the pectoral fins arise in this small specimen 3 inches and 3 lines from the point of the nose, long, narrow and white; the dorsal fin arises 4 inches 10 lines from the nose, and but 9 lines behind the end of the pectoral fin rays. The head of the *Anguilla* is narrow; the nose pointed; the mouth small, lips thin, lower jaw the longest; the teeth occupying a broader surface in both jaws, and extending backwards over a considerable portion of the *vomer*; the eye much smaller, and placed nearer the nose than in the *Conger*, and over the angle of the gape in both; the pectoral fin, round in shape and dark in colour, arises 2 inches 4 lines from the nose; the dorsal fin commences 6 inches from the end of the nose and 2 inches 8 lines behind the end of the pectoral fin rays.

“The whole of the inferior surface in both specimens being removed to expose all the *viscera*, the heart in the *Conger* is seen to occupy a lower situation than in the other *Eel*, the *aorta* issuing from the ventricle in both examples on a line with the origin of the pectoral fins. The stomach of the *Conger* is as long as the abdominal cavity, of nearly equal breadth throughout, and finishes by a broad rounded end; the calibre of the intestine is greater; and the *parietes* of both stomach and intestines very thin. The stomach of the fresh-water *Eel* is widest at the cardiac portion, and diminishes gradually, ending 1 inch 3 lines short of the *anus* in a narrow point, which is attached to the peritoneal covering of the swimming-bladder; the intestinal canal is narrow; and the *parietes* of that and the stomach thick and muscular.

“The *broad-nosed* fresh-water *Eel* is equally distinct from the *Conger*, having more numerous teeth, which occupy a much broader surface on both maxillary bones, and the dorsal fin commencing still lower down the back than in the *sharp-nosed Eel*.”

A preparation was exhibited of the organs of generation of a female *Kangaroo*; and Mr. Owen explained many of their peculiarities. He referred particularly to the supposed existence of peritoneal canals, and pointed out on the preparation the appearances which seemed to him to have deceived the only observers by whom the presumed canals had hitherto been noticed.

In illustration of the subject he read the following Notes:

“The interest which attaches to everything relating to the gene-

ration of the *Marsupial* animals, induces me to offer the following observations on the anatomy of the *Kangaroo*, although they do little more than record a negative fact.

“Having had opportunities of verifying the discoveries of M. Geoffroy-Saint-Hilaire of the peritoneal canals in the *Crocodile* and *Tortoise*, I felt desirous of putting also to the test of observation his more recently recorded discovery of similar canals in the *Kangaroo*. The accidental death at the Society’s Gardens of a fine female of the common species (*Macropus major*, Shaw,) afforded a favourable opportunity of making the investigation, and the following results were obtained.

“The disposition of the *peritoneum* at the pelvic region of the *abdomen* is as follows: an anterior fold of the membrane is reflected from the mesial line of the abdominal *parietes* upon the anterior part of the urinary bladder; two lateral folds are continued from the sides of the bladder to the posterior part of the middle *uterus*, from whence they are reflected to the iliac and lumbar regions of the *abdomen*, representing the broad ligaments, and including the uterine vessels, Fallopian tubes, and ovaries. In the pouch thus formed behind the bladder, the lateral uterine tubes and body of the *uterus* are contained. From the posterior part of the neck of the *uterus* the *peritoneum* is reflected upon the *rectum*, and as it is in this situation that the peritoneal outlets exist in the *Crocodile*, the membrane was here first examined, but without the slightest appearance of an aperture being detected. The peritoneal cavity between the *uterus* and bladder was next examined, and particularly where the membrane is reflected from the lower part of the lateral tubes (*ad uterums*, Geoff.), this being the situation where the description of M. Geoffroy-Saint-Hilaire would lead us to expect them. There was, indeed, in the angle between the lateral and middle *uterus* a narrow peritoneal pouch, which seen from above appeared like the orifice of a canal; but on sounding this with an eye-probe, uniform resistance was met with, and on laying the cavity carefully open the membrane was found to be entire and imperforate at the bottom. The remainder of the *peritoneum* in this neighbourhood was searched over, but with the same want of success.

“The female was adult, but was believed never to have been with young.

“I repeated the examination on the female parts of an adult *Kangaroo* (also without young), which had been preserved in spirits from a former dissection, and in which the peritoneal connexions between the bladder, *uterus* and *rectum* were entire. The same small blind pouches were found in the situation indicated above, but not any trace of the orifices of canals. M. Geoffroy-Saint-Hilaire acknowledges he was unable to find analogous canals in a male *Kangaroo* that he examined subsequently to the female; and as the dissection on which his supposed discovery is founded appears not to have been performed by himself, these canals, unless confirmed by further observation, must be considered as at least of doubtful existence.



“While on the subject of the *Kangaroo*, I take the opportunity to add a few remarks on the disposition of the stomach of this animal. From the account of this part by Sir Everard Home it would appear that the *œsophagus* is encompassed by the stomach in a remarkable manner [Phil. Trans. vol. xcvi. p. 152.]: but this disposition I have not been able to observe in four dissections of the *Kangaroo*; nor, from the peritoneal connexions of the *viscus*, can it ever occur in the living animal. The stomach, indeed, is situated in a manner very analogous to what is ordinarily found in the *Mammalia*, excepting that from its great size it occupies a larger space in the *abdomen*.

“On laying open that cavity the sacculated character of the stomach sufficiently distinguishes it from every other part of the intestinal canal, and it generally extends as low down as the left lumbar region. The left extremity lies in the epigastric and left hypochondriac region, folded upon itself and sternad of the *œsophagus*. This part must be turned to the left, and a little dissection performed, before the *œsophagus* can be brought into view, when it will be seen long and narrow, running 4 or 5 inches within the *abdomen* before it terminates. The extent of the stomach to the left of the cardiac orifice is about 5 inches, and the termination of the cavity at that end is bifid, as represented by Mr. Clift. From the cardiac orifice the stomach enlarges in bulk, and descends to the left lumbar region; it then turns obliquely upwards, crossing the *abdomen* to the right *hypochondrium*, where the pyloric end makes a sudden turn downwards and backwards, and terminates in the *duodenum* just above the right kidney. From this part and the *duodenum* a process of *peritoneum* is continued to the right iliac region, firmly binding them down in that situation.

“On inflating the stomach before any of its connexions are destroyed, the only alteration in its position is to raise it, and throw its lower boundary forwards: but on dividing the peritoneal band which ties down the *pylorus* and cutting across the *duodenum* beyond the ligature, and then continuing the inflation, the pyloric end of the stomach immediately rises and winds round behind the *œsophagus* to the left side of the *abdomen*. It is therefore most probable, that the description alluded to was taken after the stomach had been removed from the body and blown up; as the beautiful drawing certainly was, which illustrates the description.

“The account given in the Paper referred to of the cuticle, villous surface, and glands on the interior of the stomach, perfectly accords with nature: but the *sacculi* resemble more nearly those appended to the first cavity of the stomach of the *Llama* than the human *colon*; and I should think the former a more natural analogy.”

Mr. Owen also read the following Notes on the anatomy of the *American Tapir*, *Tapir Americanus*, Gmel.

“The death of the male *American Tapir* having afforded an opportunity of examining its anatomical structure, I proceed to lay before

the Committee a portion of the notes taken on that occasion, confining myself to such additional circumstances as have not appeared in previous accounts. Of this species the latest anatomical description is that which is given by Mr. Yarrell in the 4th volume of the 'Zoological Journal' to the accuracy of which this dissection bore ample testimony.

"The disposition of the *viscera* of the *abdomen* was as follows. The liver occupied the epigastric region and a part of both *hypochondria*: the stomach lay transversely below the liver: two large transverse folds of the *colon* stretched across the umbilical region: and in the lowest part of the *abdomen* the *cæcum* alone was visible. These *viscera* were partially covered by a thin *epiploon*, in which was very little fat.

"The *œsophagus* enters the stomach about one third from the left extremity. The cuticular membrane is continued from it into the stomach, for the extent of 3 inches towards the left end, and for 7 inches towards the *pylorus*; the rest of the cavity had a smooth or compact villous surface, with a few narrow but well defined *rugæ*; the villous coat became thicker and apparently more glandular towards the *pylorus*. The pyloric end of the stomach had a tendinous lustre on each side. The colour of the villous coat of the stomach was different from that of the *duodenum*. In this intestine the villous membrane was raised in transverse folds or *valvula conniventes* for the extent of 4 or 5 inches; but the inner surface of the rest of the small intestines was without any folds. The diameter of the small intestines was 1 inch and a half, their length 45 feet. Near the termination of the *ilium* there were some small ulcerations. The mesenteric arteries form only a single series of arches in the mesentery close to the intestine. The principal mass of the mesenteric glands was situated at the termination of the *ilium*, and appeared to be diseased, being hard and scirrhus, and containing gritty or calcareous particles. The large intestines commenced by a capacious *cæcum* of the form described and represented by Mr. Yarrell; after this the *colon* forms the transverse folds before mentioned, which are connected together; and then becomes free, or has a loose *mesocolon*; and it is here that the *faces* appear to be first formed or separated.

"The liver consists of four lobes, the two external being connected by a transverse band passing along the under surface of the liver. The largest lobe, the third from the right, had two deep notches, into the left of which the coronary ligament and remains of the umbilical chord passed. The gall-bladder is deficient, and the gall-duct emerges from the transverse connecting band mentioned above; it is about 2 lines in diameter, and terminates in the *duodenum* 3 inches from the *pylorus*. From this point it was traced backwards for 7 inches without varying its diameter. The *pancreas* extended from the spleen to the *duodenum*, and measured 9 inches in length; at the *duodenum* a process descended at a right angle in the process of the *peritoneum* connecting the *duodenum* to the *cæcum*, which process measured 5 inches in length. The spleen is a flattened elongated body, measuring in length 1 foot 8 inches, and in breadth 4 inches.

"The kidneys were conglobate, 6 inches long,  $3\frac{1}{2}$  inches broad:

the cortical substance from 1 inch to 1 inch and a half in extent: the tubular part terminating in a very small *pelvis*, but not projecting in the form of *mammillæ*. The ureters contained opake fluid like *pus*, but the kidneys did not appear diseased. The suprarenal capsules were 3 inches in length, and 1 in width; along the middle of these bodies there was a line of substance differing in colour from the rest: the cortical part was striated, the *striæ* converging to the central line.

“The whole of the lungs had a mottled appearance, arising from the deposition of numerous large masses of tubercular matter similar to that observed in the mesenteric glands.

“The heart is large in proportion to the animal, and of a rounded form with an obtuse *apex*; the length of this organ was 7 inches, its breadth across the base 6 inches. The *trachea* was small in its diameter, but the cartilages are thick and strong, and incomplete behind.

“The *os hyoides* is articulated to the base, not the *apex*, of the styloid processes.

“The *proboscis* is provided with two strong round *levatores* arising from the *ossa nasi*; there are also *depressores* arising from the intermaxillary bones, and *fasciculi* of muscular fibres in its substance, forming a texture similar to the *proboscis* of the *Elephant*; the strong *levatores* are well adapted to enable this part to turn up the soil, when the animal is in search of roots, &c.

“The *testes* are elongated glands, 4 inches in length, situated externally in a slightly indicated *scrotum* at the distance of 6 inches from the *anus*. The *cremaster* was remarkably powerful, being composed of a strong *fasciculus* of fibres continued from the lower margin of the internal oblique muscle, of upwards of 1 inch in breadth. The *tunica vaginalis* had a free communication as usual with the cavity of the *abdomen*. The *penis*, of great length, terminates in an enlarged truncate extremity, the orifice of the *urethra* being near the lower margin of the disc. There are no *levatores* muscles; but a quantity of elastic cellular membrane extends from the abdominal muscles along the *dorsum penis*.

“On comparing my notes with those taken by Mr. Clift at the dissection of the *Sumatran Tapir*, I find the differences in the admeasurements of the alimentary canal, especially of the *cæcum*, not so considerable as are stated by Mr. Yarrell. It must, however, be remembered that the individual dissected by the latter gentleman was much younger than that from which my notes are derived.

“Thus in the Account published by Sir Everard Home in the *Philosophical Transactions* for 1821, the dimensions of the *cæcum* of the *Sumatran Tapir* are stated to be 1 foot in length, and 1 foot in breadth: in the *American Tapir* the length of the *cæcum* was 1 foot 3 inches, its greatest breadth 1 foot.

	ft.	in.
The length of the small intestines in the <i>Sumatran Tapir</i>	69	0
————— in the <i>American Tapir</i>	45	0
————— of the large intestines in the <i>Sumatran Tapir</i>	19	6
————— in the <i>American Tapir</i>	9	0

The comparative shortness of the intestinal canal in the *American*

*Tapir* is a specific difference difficult to be accounted for in the present state of knowledge respecting the natural habits of the two species, but further examination of the *Sumatran Tapir* seems wanting to prove that it is compensated for by an increased size of *cæcum* in the *American species*."

At the request of the Chairman, Mr. Spooner adverted to the case of a *Leopard* lately living at the Society's Gardens. It had been suspected to be labouring under *ascites*, but on its death its bulk was found to have been occasioned by an excessive deposition of fat both in the *abdomen* and *thorax*. A conversation ensued among the Members present; and Mr. Spooner having stated his belief, corroborated by his having observed similar results in *Dogs*, that distant periods of feeding with full meals occasioned corpulence and disease of skin, while frequent and more sparing meals led to the recovery of health and activity, it appeared to the Committee desirable that this proposition should be submitted to the test of direct experiment.

It was therefore ordered,

That it be suggested to the Council to select, for the purpose of experimenting as to the best mode of feeding them, at least two feline animals: that one be fed in the manner now practised at the Society's Gardens, viz. with one full meal daily, and that the other be fed twice a day with one half the quantity of flesh now given for a meal; that notes be made of the circumstances of the animals at the time of commencing the experiment, of the quantity of food taken daily by each, of the times of feeding, and of the results; and that reports thereon be made monthly during the continuance of the experiment: that to render the results of the experiment more conclusive it be tried on the greatest number of any one species that the state of the Society's collection will permit: and that, so far as the collection will allow, similar experiments, varying only according to circumstances, be tried on animals of other carnivorous genera.



December 27, 1831.

William Clift, Esq. in the Chair.

Mr. Vigors reported that the Resolution agreed to at the last Meeting of the Committee had been communicated to the Council: that the Council, fully concurring in the propriety of instituting the experiments suggested therein, had directed that they should be tried on two Leopards, two Ocelots, and two Hyænas: and that instructions had been accordingly given to the Head-keeper to carry them into effect.

A collection of animals preserved in spirit, and recently presented to the Society by Charles Barclay, Esq., was exhibited. It was collected by Charles Telfair, Esq., of the Mauritius, Corr. Memb. Z. S., and contained specimens of *Mammalia*, Fishes, Reptiles, and Insects. Among the former were individuals of two species of *Tenrec*, *Centenes*, Illig., which were pointed out as the *Cent. setosus* and *Cent. semispinosus*, and reference was made to the habits of the animals of this genus as described by Mr. Telfair in a communication read to the Committee on June 14 (p. 89). The apparently good state of preservation of the specimens authorized the hope that their anatomical structure might be properly investigated.

The remaining portion of the collection of *Fishes* formed at the Mauritius by Charles Telfair, Esq., Corr. Memb. Z. S., and presented by him to the Society, was exhibited. The species contained in it were brought in succession under the notice of the Committee by Mr. Bennett, who pointed out more particularly those which he believed to be new to science. As such he named and characterized the following:

**SCOLOPSIDES PHLÆOPS.** *Scol. lobis pinnæ caudalis filamentosis: rostro superciliisque alepidotis, nigrescentibus, illo vittâ argenteâ infra oculum productâ infernè marginato; lineâ obliquâ pallidè argenteâ ab oculo ad præoperculi angulum decurrente; operculo toto squamato; vittâ dorsali utrinque argenteâ supra lineam lateralem; caudâ supernè maculâ nigrescenti notatâ.*

D.  $\frac{13}{2}$ . A.  $\frac{7}{2}$  &c.

*Scol. frenato*, Cuv. & Val., videtur maximè affinis. Differt vittâ dorsali argenteâ et operculo toto squamato.

**AMPHIPRION FUSCIVENTER.** *Amph. niger, ventre parum pallidiori; fasciâ angustâ operculari, alterâ laterali mediâ, tertiâque obsoletâ caudali albâ; pinnâ caudali posticè pinnarumque dorsalis analisque parte molli albo fimbriatis; pinnis ventralibus internè dimidiatim flavis.*

D.  $\frac{12}{2}$ . A.  $\frac{17}{2}$  &c.

[No. XIV.] ZOOLOGICAL SOCIETY. PROCEEDINGS OF THE COMM. OF SCIENCE.

*Amph. chrysogastris*, Cuv. & Val., simillimus. Differt ventre, pinnis pectoralibus, ventraliumque dimidio externo corpori concoloribus.

OBS. In *Amph. chrysogastre* radii spinosi pinnæ dorsalis variant 10 vel 11.

## Fam. MUGILIDÆ.

## Genus AGONOSTOMUS.

*Rostrum* subproductum.

*Os* inferum.

*Dentes* in utrâque maxillâ minimi, acuti, pluriseriati.

*Maxilla inferior* rotundata.

Genus *Mugili*, Linn., maximè affine. Formâ et pinnis simillimum. Differt tantummodo figurâ et situ oris, dentibusque pluriseriatis.

AGONOSTOMUS TELFAIRII. *Ag. suprâ nigrescens, infrâ fusco-argenteus.*

D. 4,  $\frac{1}{8}$ . A.  $\frac{2}{3}$ . P. 14.

ATHERINA AFFINIS. *Ath. pinnis pectoralibus caudalique apicem versus nigro irroratis.*

D. 5, 11. A. 15.

Affinis, ut videtur, *Ath. Neso-Gallicæ*, Cuv. Differt numero radiorum a figurâ Cepedianâ.

GOBIOUS COALITUS. *Gob. pinnis dorsalibus subcontinuis, 2dâ priore paullo altiore: brunneus, nigrescenti maculatus cæruleoque punctatus, punctis ventralibus caudalibusque longitudinaliter seriatis; pinnis cinereis, radiis nigrescenti punctatis.*

D. 6, 10. A. 8. P. 16.

*Gob. Giuri*, Ham., ut videtur, affinis.

ELEOTRIS MAURITIANUS. *El. niger; pinnâ caudali rotundatâ; dorsali 2dâ priore altiore.*

D. 6, 9. A. 9. P. 14.

An verè distinctus ab *El. nigricante*, Quoy et Gaim.? Membrana branchiostega maxima, infra operculum longè latèque producta, membranæ lateris oppositi marginem internum tegente.

LABRUS AXILLARIS. *Labr. rostro subproducto; pinnæ dorsalis (per partem spinosam) membranâ profundè excisâ; pinnâ caudali rotundatâ: anticè et ad dorsum brunneus, infrâ posticèque pallidè fuscus; maculâ rotundâ ad basin pinnarum pectoralium, secundâ irregulari ad initium pinnæ dorsalis, tertiâ ad apicem radiorum quatuor priorum mollium ejusdem pinnæ, quartâque ad apicem radiorum sex priorum mollium pinnæ analis atris; hâc (pinnâ) præterea pinnisque ventralibus nigrescenti guttatis; caudali pectoralibusque flavescens immaculatis, illâ nigrescenti supernè infernèque marginatâ: dentibus quatuor anterioribus in utrâque maxillâ majoribus, alteroque magno ad commissuram utrinque.*

D.  $\frac{1}{2}$ . A.  $\frac{1}{2}$ .

Formâ, incisurâ membranæ pinnæ dorsalis, numero radiorum, dentibusque *Labr. Dianam*, LaCép., refert: coloribus omnino differt.

LABRUS LEUCOSTICTICUS. *Labr. pinnâ caudali sublunatâ: aurantiacus?; maculis dorsalibus parvis albis utrinque quatuor; axillâ punctisque numerosis subseriatis humeralibus nigris.*

D.  $\frac{1}{2}$ . A.  $\frac{1}{2}$ .

Præcedenti affinis; cui similis formâ (præter caudalis pinnæ), dentibus, numero radiorum, &c.

**CHEILINUS PUNCTATUS.** *Cheil. fuscus, anticè virescens; capite supernè rubro lituratim vario; genis pectoreque fulvo-guttatis; corpore miniaceo lineatim punctato; pinnis pectoralibus rotundatis flavidis, axillis miniaceis; dorsali fuscâ, purpureo sparsim punctatâ, ad marginem, posticèque latè, rubrâ, vittâ intra marginem punctisque plurimis cæruleis; ventralibus elongatis purpureis; anali saturatè miniacèd, intra marginem cæruleo vittatâ; caudali rotundatâ versus apicem rubrâ ibique ocellis minutioribus cæruleis numerosis ornatâ: dentibus viridibus, duobus intermediis maxillæ inferioris unoque laterali anticè utrinque maxillæ superioris maximis.*

D.  $\frac{1}{9}$ . A.  $\frac{3}{8}$ . P. 11. C. 11.

Affinis, ut videtur, *Cheil. lunulato*, Cuv., (*Labrus lunulatus*, Forsk.). Differt egregiè coloribus.

*Var.* Pinnis anali caudali parteque dorsalis molli posticè viridibus. Picturâ *Sparo chloruro*, Bl. haud absimilis; sed forma pinnæ caudalis maximè diversa.

**CHEILINUS COMMERSONII.** *Cheil. pinnâ caudali rotundatâ: fuscescenti-brunneus; pinnis anali caudali dorsalisque parte molli viridibus; capite pone et ante oculos vittato; operculo præoperculoque castaneo obliquè lineatis; dentibus duobus anterioribus in utrâque maxillâ maximis, maxillæ superioris exterioribus.*

D.  $\frac{1}{7}$ . A.  $\frac{3}{8}$ .

Maximè affinis videtur *Cheil. Digrammæ*, Cuv., (*Labrus Digramma*, LaCép.): Differt præcipuè numero radiorum.

**JULIS SCAPULARIS.** *Julis pinnâ caudali rotundatâ: capitis rivulis, corporis lunulis, tæniâ pectorali pône pinnae obliquè ad ventrem ductâ, vittâque pinnæ analis roseis; pinnis dorsali caudalique roseis, hac cæruleâ transversim rivulatâ, illâ lunulis baseos, vittâ mediâ, apiceque partis mollis cæruleis; pinnâ pectorali hyalinâ, ad basin flavâ; vittâ latâ humerali, ad apicem pinnæ pectoralis truncatâ, nigrâ.*

D.  $\frac{1}{7}$ . A.  $\frac{1}{7}$ .

**JULIS BICATENATUS.** *Julis pinnâ caudali quadratâ: capite dorsoque viridibus?; lateribus rubris, tæniis utrinque duabus e serie macularum grisearum oblongarum transversalium constantibus ornatis; pinnis dorsali analique flavo ad apicem latè vittatis; caudalis apice flavo; pectorali nigrâ, maculâ magnâ basali marginem inferiorem attingente aurantiacâ; ventralibus flavidis.*

D.  $\frac{1}{7}$ . A.  $\frac{1}{7}$ .

**CRENILABRUS ANTHIOIDES.** *Cren. capite brevi, fronte subdeclivi; pinnâ caudali hirundinacè: capite nigro; corpore aurantiaco; caudâ flavâ, suprâ infrâque vittâ latâ nigrâ per caudalis pinnæ margines excurrente notatâ; pinnâ dorsali maculâ anticâ plagâque latâ posticâ partis spinosæ anticâque partis mollis nigris insignitâ.*

D.  $\frac{1}{7}$ . A.  $\frac{1}{7}$ .

**CYPRINUS MAURITIANUS.** *Cypr. ore haud barbato; pinnâ caudali lunatâ; anali breviorè; corpore subalto, subcompresso; squamis*

majoribus: suprâ plumbeus, infrâ argenteus; pinnis, præsertim versus apices, nigricantibus.

D.  $\frac{17}{7}$ . A.  $\frac{2}{2}$ . C. 19. P. 19. V. 9.

**CLUPEA DELICATULA.** *Clup. elongata, lata; pinnâ dorsali in equilibrio positâ; ventralibus sub basin posticam dorsalis.*

D. 11. A. 9.

Numero radiorum parvo a congeneribus differt. Corporis longitudo in specimine parvo (3-poll.) sextuplo altitudinem superat.

**ENGRAULIS NESO-GALLICUS.** *Engr. elongatus, compressus, ventre serrato: suprâ plumbeus, infrâ et ad latera argenteus.*

D. 14. A. 32. V. 7. P. 14.

**BELONE PLATYURA.** *Bel. dorso subplano; caudâ depressâ, (altitudine latitudinis dimidio subæquali); pinnâ caudali bifurcâ; pinnis dorsali analique subelongatis, anticè falcatis, anali longiore: suprâ plumbeo-virescens, infrâ dimidiatim argenteo-flavicans.*

D. 14. A. 18. P. 12.

Long. rictûs, 4 poll.; a rictu ad orbitam, 4 lin.; orbitæ, 8 lin.; operculi, 1 poll.; pinnæ pectoralis, 1 poll. 5 lin.; pinnæ dorsalis, 1 poll. 9 lin.; alt. ejusdem pinnæ, 1 poll.; long. pinnæ analis, 2 poll. 2 lin.; alt. ejusdem, 1 poll. 2 lin.; long. tot. 20 poll.

**RHOMBUS PARVIMANUS.** *Rhomb. oculis sinistris parum distantibus, interstitio excavato: fusco nigrescentique marmoratim varius, guttisque pallidis parvis adpersus.*

P. 10.

Formâ et picturâ *Rhomb. mancum*, Cuv., (*Pleuronectes mancus*, Brouss.) refert, sed os inerme oculique approximati.

**CONGER FLAVIPINNATUS.** *Cong. dentibus maxillæ superioris anterioribus tantum, vomeris ossiumque palatinorum minimis in arcibus tribus latis asperis dispositis; pinnâ dorsali suprâ medium pectoralium incipiente; lined laterali conspicuâ, impressâ: pinnis omnibus flavis, anali posticè dorsalique nigro marginatis, hac insuper ad basin fusciscente.*

P. 15.

**MURÆNA FIMBRIATA.** *Mur. dentibus maxillaribus acutis uni-seriatis, anterioribus longioribus; vomerinis anticis duobus elongatis acutis: castaneus; nigro subseriatim crebrè guttatus, pinnarum guttis aliquando in fascias confluentibus; pinnis flavo fimbriatis.*

**BALISTES AUROMARGINATUS.** *Bal. ovalis; squamis omnibus, præter capitis dorsique anterioris, tuberculo parvo subspinoso armatis; pinnâ caudali subquadrata, supernè infernèque paululum productâ: nigrescens, pinnarum dorsalis 2dæ analisque anticè fulcatorum marginibus, caudalisque marginibus apice guttâque subbasali, flavis.*

D. 3, 28. A. 25. P. 13. C. 12.

Coloribus *Bal. flavimarginato*, Rupp., similis: differt armaturâ caudæ. Lateribus corporeque toto posticè spinoso-scabris convenit cum *Bal. Willughbeii*, Benn., (*Guaperua longa*, Will., Ichth., tab. I. 20); cui tamen formâ corporis pinnarumque valdè dissimilis.

**BALISTES LIMA.** *Bal. ovalis, fuscus; squamis omnibus, præter capitis dorsique anterioris, in mediò pallidioribus tuberculatisque; pinnâ caudali subquadrata, in medio, supernè et infernè paululum*



*productá; pinnarum dorsalis 2dæ analisque anticè magis elevata-  
rum fimbriá, caudalisque marginis fasciá lunatá, nigrescentibus.*  
D. 1?, 29. A. 26. P. 13.

Præcedenti valdè affinis; sed pictura alia, pinnæ anticè minùs elevatae, numerusque radiorum paullo major.

**BALISTES MITIS.** *Bal. latè ovalis; pinnæ caudali rotundatá, extre-  
mitatibus paullum productis; seriebus septem vel octo aculeorum  
caudalium minimorum: pallidè brunneus, pallidiori varius.*  
D. 3, 30. A. 28. P. 15. C. 12.

Mr. Bennett availed himself of the opportunity to remark that the *Serranus*, characterized by him from this collection on the 23rd of August, as the *Serr. Telfairii* (p. 127), had been described about the same time by MM. Cuvier and Valenciennes under the name of *Serr. argyro-grammicus*. He also stated, that those eminent zoologists having used as the designation of a distinct genus of *Scombridae* from that to which he had applied it (p. 146), the classical name *Apolectus*, he proposed, with the view of preventing confusion, to apply to the group indicated by him the name of *Apodontis*.

Mr. Bennett subsequently observed, that the *Birds* described by him (p. 13), had during the summer completed the change of their plumage, and had thereby assumed the full adult characters of the *Angola Vulture* of Pennant, *Vultur Angolensis*, Gmel. The *Polyborus? hypoleucus* sinks therefore into a synonym, and the description of it is that of the *Angola Vulture* in its change from immature to adult plumage.

Mr. Owen read the following additional Notes on the anatomy of *Crocodylus acutus*, Cuv., taken at the dissection of the female of that species, which lately died at the Society's Gardens.

"The same subdivision of the serous membranes, as was noticed in the dissection of the male (p. 139), was again observed; and in addition to those cavities previously described, another distinct one was found between the back part of the liver and *oesophagus*.

"The interior of the stomach did not present the distinct patches observable in the previous dissection (and still obvious in the preparation), which must therefore be considered as an accidental variety: but the lining membrane was a smooth uniform villous surface, stained of a yellow colour, and highly vascular, as is proved by injection of size and vermilion.

"The small intestines presented a dilatation immediately beyond the folds of the *duodenum*; which is most probably a normal structure, and not depending on the accumulation of *flatus*, as was supposed in the dissection of the male.

"The spleen was in the same relative situation, and exhibited the same loose mode of connection, but the process of *peritoneum* was somewhat broader. On holding it up to the light an equally satisfactory view of its contents was obtained; and I am therefore inclined to consider it an *experimentum crucis* on the negative side of the question regarding the duct of the spleen.

"In the *trachea* of this species, we have an additional instance of the resemblance between the structure of the *Crocodile* and that of *Birds*. It is folded on entering the chest like that of the *Demoiselle*, *Ardea Virgo*, Linn., as regards the extent of the loop, which is, however, disposed on a horizontal instead of a vertical plane, inclining first to the left side, then turning towards the right, and ascending for the extent of 3 inches, where it divides; the *branchiæ* descending to the right of the loop, and separating on a level with the lower part of it to pass to their respective lungs.

"The ovaries formed two thin granular patches, of a gray colour, attached, like the ovary of the *common Fowl*, to the sides of the *vena cava*. The oviducts were of a flattened puckered form, not unlike a tape-worm; they terminated in the genito-urinary cavity."

Mr. Vigors exhibited the sixth and last portion of the species comprising the 'Century of Birds from the Himalayan Mountains,' drawn and lithographed by Mr. and Mrs. Gould, the publication of which was now drawing to a close. Among them were the following species apparently new to science; the first of which exhibited a striking diversity of form among the *Eagles*, which was characterized as follows under the generic name of

#### HÆMATORNIS.

*Rostrum* subforte, satis elongatum; *mandibulâ* superiori ad basin rectâ, ad apicem valdè curvatâ; *naribus* ovalibus obliquè in cerâ positis.

*Alæ* longæ, subrotundatæ; *remige* primâ subbrevis, secundâ tertiâque longioribus, quartâ quintâque ferè æqualibus longissimis, cæteris gradatim decrescentibus.

*Pedes* subdebiles, subelongati; *tarsis* rugosis squamatim reticulatis; *digitis* subbrevibus, reticulatis; *unguibus* fortibus.

*Cauda* satis longa, subrotundata.

HÆMATORNIS UNDULATUS. *Hæmat. suprà* intensè brunneus, *subtùs* brunnescenti-rufus; *pectore* fusco undulatim fasciato; *abdomine* ocellis albis brunneo circumdatis notato; *capite* cristato caudâque nigro-brunneis, *illius plumis ad basin* albis, *ad apicem* rufescenti marginatis, *hæc fasciâ latâ in medio*, *marginæque gracili ad apicem* rufescenti albidis, notatâ; *regione carpalî* ocellis albis maculatâ.

Longitudo 2 ped. 7 unc.

This group was observed to bear a near affinity to the genus *Pandion* in the shape of the bill, wings, and the rugose reticulated scales of the *tarsi*, but to differ from it in the comparative length and weakness of the legs and claws, as well as in having the nails grooved underneath, and not convex, as in the latter group. To this genus belongs the *Falco Bacha*, Lath.\* of Africa, and the Manilla bird lately described in the 'Proceedings' of the Committee (page 96) under

\* Mr. Vigors expressed his doubts whether the *Falco Bacha*, Lath., and *Falco Bido*, Horsf., were the same species, although they were generally supposed to be identical. He had not the opportunity of examining a sufficient number of African specimens to determine the point.

the name of *Buteo holospilus*. These, from the apparent weakness of their limbs, had hitherto generally been ranked among the *Buzzards*; although from the description of the courageous habits of the *Bacha Falcon*, the only one well known of the group, doubts had been expressed of the propriety of ranking them with that tribe. Mr. Vigors suggested the subfamily of *Eagles* as a more appropriate station for them; where, united by many important characters to *Pandion*, they apparently led off by the length of their *tarsi* to the genus *Limnaëtus* ('Memoirs of Sir S. Raffles,' Append. p. 648.) and others of the long-legged *Eagles*. The three species of the group were exhibited; their general similarity in colour and markings pointed out; and their specific differences explained. These consist chiefly in size, the *Hæmat. holospilus* being one-third smaller than *H. Bacha*; while *H. undulatus* considerably exceeds the latter. The first is spotted all over the body, the second only on the abdomen; while the third is marked by spots on the wing-coverts, and by *ocelli* bearing an undulated appearance on the abdomen, the breast also being crossed by undulating *fasciæ*.

MUSCICAPA MELANOPS. Mas. *Musc. unicolor cæσιο-cærulea*; regione *rictali circumocularique atris*; *caudâ subtius fusco-atrâ*.

Fœm. *minùs intensè colorata*; *viridisque magis quàm cærulea*.

Species *Musc. Indigo*, Horsf. simillima, ejusdemque staturæ: differt colore magis intenso, notâque capitis atrâ.

TURDUS ERYTHROGASTER. Mas. *Turd. grisescenti-cæruleus*; *genis, colli lateribus, remigibusque atris*; *pectore, abdomine, crissoquerufis*.

Fœm. *Cinerascenti-brunnea, dorso imò obscurè fusco fasciato*; *collo in fronte albescenti, fusco-brunneo notato*; *pectore, abdomine, crissoque rufescenti-albo undulatim notatis*.

Statura *Turdi saxatilis*, Linn.

CINCLOSOMA ERYTHROCEPHALUM. *Cinclos. suprâ cineraceum, subtius pallidius, colore rubro leviter tinctum*; *nuchâ maculis atris semilunaribus grandibus, pectore gracilioribus notatis*; *gulâ notisque auricularibus nigris*; *capite notâque alarum castaneo-rufis*.

Longitudo 9½ unc.

MYOPHONUS TEMMINCKII. *Myoph. ater, azureo nitens, corporis in fronte plumis in medio metallicè splendentibus*; *abdomine fusco-atro*; *capite suprâ in fronte regioneque carpali alarum lazulinis*; *tectricibus alarum parcè cæσιο-albo maculatis*; *rostro flavo*.

Statura *Myoph. flavirostris* (*metallici*, Temm.), cui simillimus: differt rostro graciliori, colore splendidiore corporis caudæque, capitisque vertice lazulino.

A species belonging apparently to the family of *Merulidæ*, and to that portion of it which, from their long legs and short wings and tails, indicate their station to be on the ground, afforded an opportunity of characterizing a form which seems hitherto to have been unnoticed. The length, strength, and arcuated *culmen* of the bill, and the length and strength of the *hallux*, formed the most distinguishing points of modification.

## ZOOTHERA\*.

*Rostrum* forte, elongatum, subcurvatum, subcompressum, culmine elevato; *mandibulâ* superiori subemarginatâ, dente subapicali vix decernendâ; *naribus* ovalibus, lateralibus; *rictu* vibrissis rigidis munito.

*Alæ* subbreves, subrotundatæ; *remigibus* primâ brevi, secundâ multo longiore, tertiâ quartâ quintâque ferè æqualibus longissimis, sextâ his breviori at primâ longiori, cæteris gradatim decreescentibus.

*Pedes* subelongati, subfortes, *acrotarsiis* integris; *digitis* anterioribus subfortibus, externis ad basin membranâ connexis, internis liberis, medio longissimo; *halluce* elongato fortissimo, ungue forti elongato.

*Cauda* subbrevis, æqualis; *rectricibus* duodecim.

ZOOTHERA MONTICOLA. *Zooth. saturatè brunnea; colli in fronte notâ longitudinali, pectoris notis parvis, abdomineque albis, hoc brunneo squamatim notato; femorum tectricibus, crissoque fuscis, hoc albo maculato.*

Longitudo corporis,  $11\frac{1}{2}$  unc.; *rostri*,  $1\frac{1}{2}$ ; *alæ* a carpo ad apicem remigis  $4\frac{1}{2}$ , 6; *tarsi*,  $1\frac{3}{8}$ ; *caudæ*, 4.

PETROCINCLA CINCLORHYNCHA. *Petr. genis, dorso, alis caudâque nigris; pectore, abdomine, crisso, uropygioque rufis; capite suprâ, jugulo, regioneque carpali alarum cano-lazulinis; maculâ alarum albâ.*

Longitudo  $6\frac{3}{4}$  unc.

This bird was observed to bear an affinity to the family of *Merulidæ* by the strength and Thrushlike form of the bill; and by its general character of form and colour to that portion of it which includes the *Rock Thrushes*; where it was provisionally placed, until more accurate comparison of the species with contiguous groups determined its station. Its bill was more that of the true *Thrush*, than of the *Rock Thrush*. Its colours were those of *Phœnicura*; under which genus it was erroneously ranked by accident on the plate. The bill is too powerful to admit the species among the *Sylviadæ*.

PHÆNICURA FRONTALIS. *Phæn. fusco-atra; abdomine, crisso, uropygio, rectricumque apicibus, duarum mediarum exceptis, rufis; fronte lazulino splendente.*

Longitudo,  $5\frac{3}{4}$  unc.

PICUS NANUS. *Pic. supernè fusco-brunneus, alis caudâque maculis, dorso fasciis albis, notatis; subtùs albescens, fusco-brunneo latè striatus; strigâ superciliari alterâque suboculari albis; capitis fronte verticeque brunneis, occipite nigro, strigâ gracili auriculari coccinea.*

Longitudo,  $4\frac{1}{2}$  unc.

CUCULUS HIMALAYANUS. *Cuc. corpore suprâ rufo, fusco fasciato;*

\* The group seems to have many characters in common with *Pomatorhinus*, Horsf. The strong and elevated bill constitutes the chief mark of separation. The alliance between the two groups may serve to indicate the general affinities of the latter genus, whose place in the system has been hitherto undetermined.



*subtùs albo, nigro fasciato, pectore rufo tincto; remigibus reetricibusque fuscis, illis externè rufo, internè albo maculatis, his duabus mediis rufo obliquè fasciato, cæteris albo, rufo variegato, maculatis.*

Longitudo 11 unc.

**CUCULUS SPARVERIOIDES.** *Cuc. corpore suprâ brunnescenti-cinereo, capite plumbeo-cinereo; subtùs albo, collo rufo striato, abdomine brunneo fasciato, pectore rufo tincto; remigibus externè leviter rufo maculatis; reetricibus fasciis brunneis latis rufo marginatis quatuor notatis.*

Longitudo 16 unc.

**POMATORHINUS ERYTHROGENYS.** *Pom. cinerescenti-brunneus, subtùs albescens; fronte, capitis colli abdominisque lateribus, crissoque rufis; caudâ fusco obscurè fasciatâ; rostro pedibusque pallidis.*

Longitudo 11 unc.

**VINAGO SPHENURA.** *Vin. suprâ olivaceo-, subtùs flavo-, viridis; capite in fronte pectoreque aureis; alarum tetricibus, regioneque interscapulari vinaceo-purpureis; caudâ cuneatâ.*

Longitudo 15 unc.

**TOTANUS GLOTTOIDES.** *Tot. suprâ fusciscenti-griseus, capite colloque fusco striatis, dorso alisque strigis fasciisque fuscis undulatis; fronte corporeque toto subtùs niveis; reetricibus duabus mediis grisescentibus, lateralibus albis; quatuor mediis utrinque, cæteris externè, fusco fasciatis.*

Statura formaque *Tot. glottidis*; differt notis supernis gracilioribus, corporeque subtùs toto niveo, haud notato.

The number of species exhibited at the present and former Meetings, which were considered to have been hitherto undescribed, amounted to sixty. To these were added the following species, which, although previously described, had either remained unfigured, or had not been figured with sufficient accuracy for the present state of science, or which had been figured elsewhere during the progress of the work; viz. *Falco Chicquera*, Daud.; *Otus Bengalensis*, Franklin ('Proceedings,' No. X. p. 115.); *Muscipeta peregrina*, ♂ & ♀; *Cinclosoma leucolophum*; *Pitta brachyura*; *Cinclus Pallasii*, Temm.; *Pica erythrorhyncha*, Wagl.; *Pica vagabunda*, Wagl.; *Pica Sinensis*, Hardw. & Gray; *Buceros cavatus*, Shaw; *Bucco grandis*, Gmel.; *Picus Mahrattensis*, Lath. ♂ & ♀; *Vinago militaris*, Cuv. ♂ & ♀; *Lophophorus Impeyanus*, Cuv. ♂ & ♀; *Tragopan Satyrus*, Cuv.; *Phasianus Pucrasia*, Hardw. & Gray, ♂ & ♀; *Perdix Chucar*, Hardw. & Gray; *Parra Sinensis*, Gmel.; *Vunellus Goensis*; *Anser Indicus*.

The foregoing species completed the series of the Himalayan collection which had originally formed the basis of the 'Century of Birds.' All of these, Mr. Vigors observed, had been most liberally presented by Mr. Gould to the Society, and were deposited in the Museum as authentic types of the species figured in that work. To these species were added a few others from the same locality, which the liberality of their owners allowed to be exhibited to the Committee, and to be made use of for the benefit of science. Among them were the following species, which had been kindly communicated by Dr. Scouler of the Glasgow University.

**ENICURUS SCOULERI.** *En. capite, collo, dorso superiori, alis, caudaque atris; fronte, fasciâ alarum, dorso imo, abdomine, caudæ basi lateribusque albis; abdomine maculis, dorso imo fasciâ, atris notatis.*

Longitudo corporis,  $5\frac{1}{2}$  unc.; caudæ, 2.

Mr. Vigors expressed his pleasure in dedicating this species to an active and liberal friend to science.

**PYRRHULA ERYTHROCEPHALA.** *Pyrr. capite suprâ, nuchâ, pectoreque rufis; dorso, scapularibus, gutture, abdomineque imo cinereis; fronte, regione rictali, gulâ, remigibus, alarum tectricibus, rectricibusque intensè atris; fasciâ alarum, uropygio, crissoque albis.*

Longitudo corporis, 6 unc.

**CERTHIA HIMALAYANA.** *Certh. suprâ brunnea, capitis dorsique plumis in medio albescenti-rufo lineatis, alis fasciam mediam rufam exhibentibus; subtùs albens; remigibus, rectricibusque pallidiori brunneis, fasciis fuscis gracilibus frequentibus notatis.*

Statura formaque *Certh. familiaris*, Linn. Differt fasciis confertioribus gracilioribusque alarum rectricumque.

A very striking modification of form was conspicuous in the following bird, which, with the bill and plumage of some of the typical *Wading Birds*, exhibited the tridactyle conformation and general character of the legs of some of the *Charadriadae*. In the former particulars it approached to *Ibis* and *Numenius*; in the latter to *Hæmatopus*. A knowledge only, it was observed, of its habits and internal construction, at present wanting, could determine with accuracy the exact affinities of the group, which was thus characterized:

#### IBIDORHYNCHIA.

*Rostrum* gracile, elongatum, deorsùm curvatum, *Ibidis Numenii*que rostris simile; *naribus* lateralibus, longitudinalibus, membranâ per totam longitudinem clausis.

*Corpus* gracile, *Grallatorum* typicorum formam exhibens.

*Alæ* subelongatæ, subgradatæ; *remigibus* secundis et tertiis æqualibus longissimis, primâ paulò breviori, cæteris gradatim decrescentibus.

*Pedes* mediocres, tridactyli, *Hæmatopodum* pedibus simillimi; *digitis* internis liberis, externis membranâ usque ad pollicem primam connexis, omnibus marginatis; *unguibus* obtusis.

*Cauda* mediocris, æqualis.

**IBIDORHYNCHIA STRUTHERSII.** *Ibid. corpore suprâ colloque in fronte pallidè griseis; corpore subtùs albo; capitis vertice, facie guttureque nigris albo variegatis; torque pectorali subgracili, ad nucham extendente latiori, uropygioque extremo atris; rectricibus mediis fusco obscurè undulatim fasciatis, prope apicem nigro notatis, lateralium pogniis externis albis nigro fasciatis.*

Longitudo 14 unc.

This bird was named in honour of Dr. Struthers, a zealous naturalist, who had formed the collection in the Himalayan Mountains, out of which the four preceding species were selected.

In addition to the birds thus kindly placed by Dr. Scouler at the disposal of the Society, for exhibition and description, Mr. Vigors exhibited a species of *Woodpecker* belonging to the three-toed section of that genus, nearly allied to *Picus Tiga*, Horsf., but differing in its greater size, in more intenseness of the scarlet colour on the back and wings, and in being marked by a light gray patch on the throat. The species was discovered in the Himalayan Mountains by the Hon. Frederick J. Shore of the East India Company's civil service, and was kindly forwarded to the Society for exhibition by his brother, the Hon. C. J. Shore. The species was named in honour of the discoverer, whose observations made on the spot on many of the Himalayan birds will form the most valuable part of the letter-press accompanying the forthcoming work on these birds;—it was characterized as follows :

PICUS SHORII. *Pic. suprâ aurantio-viridis; capite cristato, dorso tropygioque coccineis; subtùs albus; strigâ postoculari, alterâ a rictu extendente, nuchâ, remigibus, reatricibus, notisque squamosis pectoris abdominisque atris; thorace pallidè grisescenti-brunneo.*

Longitudo 12 unc.

A drawing by Mr. Gould of a species in the Liverpool Museum, which was obligingly communicated by Dr. Traill for description, was exhibited, and the bird was characterized as follows :

PASTOR TRAILLI. Mas. *Past. suprâ subtùsque brunnescenti-coccineus; capite, collo, alisque nigris.*

Fœm. *suprâ brunnea, subtùs albescens, strigis brunneis notata; capite, collo remigibusque nigris; caudâ brunnescenti-coccineâ.*

Longitudo 10 $\frac{3}{4}$  unc.

Mr. Vigors observed that this bird appeared to approach nearer to *Pastor* than to any other known group; but that at the same time it exhibited some modifications of that form. As he had however only a drawing of the bird before him, he refrained from any more detailed observations. He expressed his pleasure in having the opportunity of inscribing it to an active and scientific naturalist. He begged here also to refer to a bird which he had characterized at a preceding Meeting (Feb. 8), the description of which had been published in the Committee's 'Proceedings' (No. III. p. 35.), the *Phasianus Staceii*. This bird was to be included in the list of those which had been liberally communicated by other Institutions for the general benefit of science, having been forwarded for exhibition to the Committee by Philip B. Duncan, Esq. Keeper of the Ashmolean Museum in Oxford, where the specimen is deposited; to whom, and to whose equally liberal brother, J. Shute Duncan, Esq., his predecessor in the Museum, every lover of zoology is aware how deeply their science is indebted. The species commemorates the name of Major Stacey of the East India service, who had obtained the bird in the Himalayan range, and had presented it, with several other valuable species, to the Ashmolean Museum.

Mr. Vigors, in closing this subject, called the attention of the Committee to some errors which had occurred in the lettering of the plates on which the foregoing birds had been lithographed. The *Picus auri-*

ceps ('Proceedings,' No. IV. p. 44.) was by some accident named *Picus brunnifrons*, which name, as it had appeared on the plate, he wished to be retained to the species. The *White-crowned Crow* of General Hardwicke, which had been figured in the 'Century,' was erroneously called a *Garrulus*. It seems rather to belong to the tribe of *Dentirostrès*, and the genus *Cinclosoma*. Some verbal errors in the lettering were also pointed out; all of which, together with the mistakes in the names, Mr. Vigors attributed to the hurry in which some of the numbers of the work were obliged to be printed off in order to answer the demand that was made for them on the day of the monthly publication. And he concluded by trusting that the supporters of the work, and the lovers of science would overlook these accidental blemishes in the lettering of the plates in the midst of so many superior excellencies.



# INDEX.

The names of New Species and of Species newly characterized are printed in Roman Characters: those of Species previously known, but respecting which novel information is given, in *Italics*: those of Species respecting which Anatomical Observations are made, in CAPITALS.

	Page.		Page.
Agonostomus, n. g. <i>Benn.</i> .....	166	<i>Ardea speciosa</i> , Horsf. ....	123
<i>Telfairii</i> , <i>Benn.</i> ...	166	<i>Torra</i> , Buch. ....	123
<i>Alauda alpestris</i> , L. ....	35	<i>Ateles frontalis</i> , <i>Benn.</i> .....	38
<i>Chendoola</i> , <i>Frankl.</i> ....	119	<i>Atherina affinis</i> , <i>Benn.</i> ....	166
<i>Gulgula</i> , <i>Frankl.</i> .....	119	<i>Aulacodus</i> , <i>Van Swind.</i> .....	111
<i>Alcedo Bengalensis</i> , Gmel. ....	116	<i>Swinderianus</i> , Temm. ....	111
<i>guttatus</i> , <i>Vig.</i> ....	22	<i>Balistes auromarginatus</i> , <i>Benn.</i> ..	168
<i>rudis</i> , L. ....	116	<i>Lima</i> , <i>Benn.</i> ....	168
<i>Alosa Senegalensis</i> , <i>Benn.</i> ....	147	<i>mitis</i> , <i>Benn.</i> ....	169
<i>Amphiprion chrysoaster</i> , Cuv... ..	165	<i>Belone platyura</i> , <i>Benn.</i> ....	168
<i>fusciventer</i> , <i>Benn.</i> ... ..	166	<i>Bos Bubalus</i> , <i>Briss.</i> .....	105
<i>Anas arcuata</i> , Cuv. ....	125	<i>Taurus</i> , var. <i>Indicus</i> .....	105
<i>Chiloensis</i> , <i>King.</i> .....	15	<i>Botaurus cinnamomeus.</i> ....	124
<i>Coromandeliana</i> , Gmel....	125	<i>Brachypteryx Horsfieldii</i> , Sm... ..	11
<i>Crecca</i> , L. ....	125	<i>Bucco caniceps</i> , <i>Frankl.</i> ....	121
<i>Fretensis</i> , <i>King.</i> ....	15	<i>grandis</i> , Gmel. ....	173
<i>occidua</i> , ..... ..	35	<i>nanus</i> , <i>Vig.</i> .....	93
<i>sponsa</i> , L. ....	35	<i>Philippinensis</i> , Gmel....	121
<i>Terræ Leeuwin</i> , <i>Riche.</i> ...	26	<i>Buceros cavatus</i> , Shaw. ....	173
ANGUILLA ACUTIROSTRIS, Yarr. 133, 159		<i>Gingianus</i> , Lath.....	120
LATIROSTRIS, Yarr. 133, 159		<i>Malabaricus</i> , Gmel. ...	120
<i>Anguilla acutirostris</i> , Yarr. ....	133	<i>Buteo Bacha</i> .....	114, 171
<i>latirostris</i> , Yarr. ....	133	<i>holospilus</i> , <i>Vig.</i> .....	96, 171
<i>Mauritiana</i> , <i>Benn.</i> .....	128	<i>Callomys Viscacia</i> , Isid. G. St. Hil. 33	
<i>Anser griseus</i> , Vieill. ....	27	<i>Camelus Dromedarius</i> , L. ....	104
<i>Indicus.</i> ....	125, 173	<i>Canis aureus</i> , L. ....	101
<i>inornatus</i> , <i>King.</i> .....	15	<i>Dukhunensis</i> , <i>Sykes.</i> ....	100
<i>melanotos</i> , Lath. ....	125	<i>Kokree</i> , <i>Sykes.</i> ....	101
<i>Antilope Bennetti</i> , <i>Sykes.</i> ....	104	<i>pallipes</i> , <i>Sykes.</i> ....	101
<i>Cervicapra</i> , Pall. ....	104	<i>Capra Hircus</i> , L. ....	105
<i>Hodgsonii</i> , <i>Abel.</i> .....	52	<i>Caprimulgus Asiaticus</i> , Lath....	116
<i>picta</i> , Pall. ....	37, 105	<i>macrotis</i> , <i>Vig.</i> .....	97
<i>Apodontis</i> , n. g. <i>Benn.</i> ....	169	<i>monticola</i> , <i>Frankl.</i> ..	116
<i>Apolectus</i> , n. g. <i>Benn.</i> ....	146, 169	<i>Carbo fuscicollis.</i> ....	125
<i>immunis</i> , <i>Benn.</i> ... ..	146, 169	<i>Carcharias fissidens</i> , <i>Benn.</i> .....	148
<i>maculatus?</i> ....	146, 169	<i>Carduelis caniceps</i> , <i>Vig.</i> ....	23
<i>Aquila Vindhiana</i> , <i>Frankl.</i> ....	114	<i>spinoïdes</i> , <i>Vig.</i> .....	44
<i>Ardea Caboga</i> , Penn. ....	124	CASTOR FIBER, L. ....	12, 19
<i>Gardeni.</i> .....	27	CAVIA COBAYA, L. ....	20
<i>Nycticorax</i> , L. ....	27	<i>Cavia Patachonica</i> , Penn.....	57
<i>purpurea</i> , L. ....	123	<i>Ceblepyris canus</i> , Temm.....	117

	Page.		Page.
<i>Ceblepyris fimbriatus</i> , Temm....	117	<i>Collurio nigriceps</i> , Frankl. ....	117
<i>Centenes setosus</i> , Desm.....	89, 165	<i>tephronotus</i> , Vig. ....	43
<i>Centropus Philippensis</i> , Cuv. ...	121	<i>Columba Cambayensis</i> , Gmel....	122
<i>Cephallepis</i> , n. g. Lodd. ....	12	<i>Fitzroyii</i> , King.....	15
<i>Cephalopterus hypostomus</i> , Bancr. 134		<i>humilis</i> , Temm. ....	122
CEREQPSIS NOVÆ HOLLANDIÆ,		<i>leuconota</i> , Vig.....	23
<i>Lath.</i> .....	25	<i>risoria</i> , L.....	122
<i>Cereopsis Novæ Hollandiæ</i> , Lath. 26		<i>tigrina</i> , Temm.....	122
<i>Certhia Himalayana</i> , Vig. ....	174	<i>Conger flavipinnatus</i> , Benn. ...	168
<i>spilonota</i> , Frankl. ....	121	<i>Savanna</i> , Cuv. ? .....	135
<i>Cervus campestris</i> , F. Cuv.....	57	<i>vulgaris</i> .....	159
<i>equinus</i> , Cuv. ....	104	CONGER VULGARIS.....	158
<i>humilis</i> , Benn.....	27	<i>Coracias Bengalensis</i> , L. ....	120
<i>Muntjak</i> , Zimm. ....	104	<i>Corvus Corone</i> , L. ....	120
<i>nudipalpebra</i> , Ogilb.....	136	<i>Corythaix porphyreolopha</i> , Vig. 93	
CERVUS TARANDUS, L.....	14	<i>Coturnix Coromandelica</i> .....	123
<i>Chætodon flavescens</i> , Benn. ...	61	<i>dactylisonans</i> , Meyer..	123
<i>Lunula</i> , Cuv. & Val... 61		<i>Falklandica</i> , Vig.....	3
<i>strigangulus</i> , Sol.....	61	CRAX YARRELLII, Benn. ....	33
<i>vittatus</i> , Schn. ....	61	<i>Crenilabrus anthioides</i> , Benn....	167
<i>Zoster</i> , Benn.....	61	CROCODILUS ACUTUS, Cuv....	139, 169
<i>Charadrius hiaticuloides</i> , Frankl. 125		CTENODACTYLUS MASSONII, Gray 48	
<i>Cheilinos Commersonii</i> , Benn....	167	<i>Ctenodactylus Massonii</i> , Gray... 48	
<i>punctatus</i> , Benn.....	167	<i>Cuculus canorus</i> , L.....	121
CHELYDRA SERPENTINA, Schweig. 129		<i>fugax</i> , Horsf. ....	121
CHINCHILLA LANIGERA.....	31	<i>Himalayanus</i> , Vig.....	172
<i>Chloropsis aurifrons</i> , Jard. & Selb. 122		<i>Sonneratii</i> , Lath. ?.....	121
<i>Chromis Tænia</i> , Benn.....	112	<i>sparverioïdes</i> , Vig.....	173
Cinclosoma, Horsf. & Vig.....	55	<i>Cursorius Asiaticus</i> , Lath. ....	124
<i>capistratum</i> , Vig... 56		Cygnus anatoides, King. ....	15
<i>erythrocephalum</i> , Vig 171		Cyprinus Mauritanus, Benn....	167
<i>leucolophum</i> ....	173, 176	<i>Cypselus affinis</i> , Hardw. ....	116
<i>lineatum</i> , Vig.....	56	<i>Palmarum</i> , Hardw. ...	116
<i>ocellatum</i> , Vig.....	55	Dacelo Lessonii, Vig. ....	97
<i>variegatum</i> , Vig. ...	56	<i>Lindsayi</i> , Vig.....	97
Cinclus Pallasii, Temm. ....	54, 173	<i>Dascyllus unicolor</i> , Benn. ....	127
<i>unicolor</i> , Bonap.....	54	DASYPROCTA ACUSCHY, Ill. ....	75
Cinnyris Gouldiæ, Vig.....	44	<i>Dasyprocta Acuschy</i> , Ill.....	6
<i>Orientalis</i> , Frankl.....	122	DASYPUS PEBA, Desm.....	141
<i>Circus cyaneus</i> .....	115	SEXCINCTUS, L.....	154
<i>melanoleucus</i> .....	115	6-cinctus, L. ....	48, 142
<i>rufus</i> , Briss. ....	115	<i>Dendrocolaptes albo-gularis</i> , King 30	
<i>Teesa</i> , Frankl. ....	115	<i>Dentex lycogenys</i> , Benn.....	127
<i>Clupea alba</i> , Yarr. ....	13	<i>Diacope Angulus</i> , Benn.....	127
<i>Alosa</i> , L. ....	34	<i>Dipus maximus</i> , Blainv. ....	33
<i>delicatula</i> , Benn.....	168	<i>Echeneis lunata</i> , Bancr. ....	134
<i>fallax</i> , Lacép. ....	34	<i>Echinorhynchus tereticollis</i> , Rud. 132	
<i>Harengus</i> , L. ....	34	<i>Edolius cærulescens</i> .....	117
<i>Leachii</i> , Yarr.....	34	<i>Elanus melanopterus</i> , Leach....	115
<i>Coccothraustes icterioïdes</i> , Vig.. 8		<i>Eleotris Mauritanus</i> , Benn.....	166
<i>Collurio</i> , n. g. Vig. ....	42	<i>Emberiza Baghaira</i> , Lath. ....	119
<i>erythronotus</i> , Vig... 42, 117		<i>Bengalensis</i> .....	119
<i>Excubitor</i> , Vig.....	117	<i>cristata</i> , Vig. ....	35, 119
<i>Hardwickii</i> , Vig... 42, 117		<i>Gingica</i> , Gmel. ....	119
<i>meridionalis</i> , Vig.....	96	<i>Emys Caspica</i> , Schweig. ....	107

	Page.		Page.
EMYS CONCENTRICA, Leconte....	74	<i>Himantopus melanopterus</i> .....	125
Engraulis Neso-gallicus, Benn.	168	<i>Hirundo filicaudata</i> , Lath. ....	115
Enicurus maculatus, Vig.....	9	<i>Klecho</i> , Horsf. ....	115
Scouleri, Vig.....	174	<i>riparia</i> , L.....	116
<i>Equus Asinus</i> , L.....	104	<i>Hyæna vulgaris</i> , Cuv. ....	102
<i>Caballus</i> , L. ....	104	<i>Hylactes</i> , n. g. <i>King</i> .....	15
<i>Erinaceus Capensis</i> , Sm.....	11	<i>Tarnii</i> , King. ....	15
<i>Eudynamys Orientalis</i> .....	122	<i>Hylurgus piniperda</i> , Latr. ....	126
<i>Sirkee</i> .....	122	<i>Hypsipetes</i> , n. g. <i>Vig</i> . ....	43
Exocætes pinnatibarbatus, Benn.	146	<i>psaroides</i> , <i>Vig</i> .....	43
<i>Falco Bacha</i> , Lath. ....	170	<i>Hypsiprymnus setosus</i> , <i>Ogilby</i> ..	149
<i>Chicquera</i> , Daud.....	114, 173	<i>Hystrix leucurus</i> , <i>Sykes</i> .....	103
<i>Subbuteo</i> .....	114	<i>Ibidorhyncha</i> , n. g. <i>Vig</i> .....	174
<i>Tinnunculus</i> , Daud. ....	114	<i>Struthersii</i> , <i>Vig</i> ..	174
<i>tinnunculoïdes</i> .....	96	<i>Iora scapularis</i> , Horsf.....	118
<i>Felis Chaus</i> , Gûld. ....	102	<i>Irena cyanogastra</i> , <i>Vig</i> . ....	97
<i>concolor</i> , Linn. ....	158	<i>Ixos Cafer</i> . ....	118
<i>jubata</i> , Schreb. ....	102	<i>fulicatus</i> .....	118
<i>Leopardus</i> ....	102	<i>jocosus</i> .....	118
<i>Pardus</i> .....	102	<i>Julis Aygula</i> , Lacép. ....	128
<i>Tigris</i> , L.....	102	<i>bicatenatus</i> , Benn. ....	167
<i>torquata</i> , F. Cuv.....	102	<i>Cuvieri</i> , Benn.....	128
<i>venatica</i> , Sm.....	102	<i>Ruppelii</i> , Benn. ....	128
FELIS LEO, L. ....	28	<i>scapularis</i> , Benn.....	167
<i>Francolinus Ponticerianus</i> , Temm.	122	<i>Labrus axillaris</i> , Benn. ....	166
<i>vulgaris</i> , Steph. ....	123	<i>leucosticticus</i> , Benn. ...	166
<i>Fringilla Amandava</i> , L. ....	119	<i>maculatus</i> , Bl.....	17, 34
<i>domestica</i> , Linn. ....	96	<i>Lagostomus trichodactylus</i> , Brookes	33
<i>flavicollis</i> , <i>Frankl</i> .....	120	<i>Lampromorpha amethystina</i> , <i>Vig</i> .	98
<i>formosa</i> , Lath. ....	120	<i>chalcopepla</i> , <i>Vig</i> . ....	92
<i>Malabaria</i> .....	120	<i>Lamprotornis spilopterus</i> , <i>Vig</i> ...	35
<i>rodochroa</i> , <i>Vig</i> .....	23	<i>Lanius</i> .....	42
<i>rodopepla</i> , <i>Vig</i> .....	23	<i>erythropterus</i> , <i>Vig</i> .....	22
<i>Garrulus bispeularis</i> , <i>Vig</i> .....	7	<i>Excubitor</i> , L. ....	117
<i>lanceolatus</i> , <i>Vig</i> .....	7	<i>meridionalis</i> , Temm. ...	96
<i>striatus</i> , <i>Vig</i> .....	7	<i>muscipapoides</i> , <i>Frankl</i> . ....	117
<i>Gobius coalitus</i> , Benn.....	166	<i>Larus capistratus</i> , Temm. ....	151
<i>Graucalus Papuensis</i> , Cuv.....	117	LEMUR MACACO, L.....	58
<i>Grus Orientalis</i> , Briss.....	123	<i>Lemur Potto</i> , Gmel. ....	109
<i>Gulo Barbarus</i> , L.....	74	<i>Leptosomus Afer</i> .....	121
<i>larvatus</i> , Ham., Sm. ....	95	<i>Lepus nigricollis</i> , F. Cuv.....	103
<i>orientalis</i> , Horsf. ....	57, 94	<i>Lestris Pomarhinus</i> , Temm.....	151
<i>Hæmatornis</i> , n. g. <i>Vig</i> .....	170	<i>Lophophorus Impeyanus</i> , Cuv...	173
<i>Bacha</i> , <i>Vig</i> .....	171	<i>Lutra Nair</i> , F. Cuv. ....	100
<i>holospilus</i> , <i>Vig</i> . ...	171	<i>Macacus radiatus</i> , Geoff.....	99
<i>undulatus</i> , <i>Vig</i> .....	171	MACROPUS MAJOR, Shaw.....	159
<i>Halcyon Smyrnensis</i> . ....	116	<i>Macrosclides rupestris</i> , Sm. ...	11
<i>Heliases axillaris</i> , Benn. ....	128	<i>Manis pentadactylus</i> , L. ....	104
<i>Helictis</i> , n. g. <i>Gray</i> . ....	94	<i>Megaderma Lyra</i> , Geoff.....	113
<i>moschata</i> , <i>Gray</i> .....	94	<i>Merops Philippinus</i> , L. ....	115
<i>Hemipodius Dussumieri</i> , Temm.	123	<i>viridis</i> , L. ....	115
<i>Heniochus monoceros</i> , Cuv. & Val.	61	<i>Micropterus Patachonicus</i> , <i>King</i>	15
<i>Herpestes griseus</i> , Desm.....	101	<i>Mirafrá Javanica</i> , Horsf.....	119
<i>Pharaonis</i> , Desm. ....	145	<i>phœnicura</i> , <i>Frankl</i> . ...	119
<i>Hierax erythrogenys</i> , <i>Vig</i> . ....	96	<i>Monacanthus setifer</i> , Benn.....	112

	Page.		Page.
MONITOR.....	137	OURAX MITU, Cuv.....	59
<i>Moschus Meminna</i> , Erxl.....	104	<i>Ovis Aries</i> , L.....	105
<i>Motacilla flava</i> , L.....	119	Paguma, n. g. Gray.....	95
<i>picata</i> , Frankl.....	119	<i>larvata</i> , Gray.....	95
<i>Muræna fimbriata</i> , Benn.....	168	<i>Palæornis Bengalensis</i> , Vig.....	120
<i>Mus Barbarus</i> , L.....	145	<i>flavicollaris</i> , Frankl.....	120
<i>decumanus</i> , Pall.....	103	<i>torquatus</i> , Vig.....	120
<i>giganteus</i> , Hardw.....	103	<i>Paradoxurus Typus</i> , F. Cuv.....	102
<i>Gundi</i> , Rothm.....	48	<i>Parra Indica</i> , Lath.....	124
<i>Musculus</i> , L.....	103	<i>phaenicura</i> .....	124
<i>Sumatrensis</i> , Temm.....	95	<i>Sinensis</i> , Gmel.....	124, 173
MUS RATTUS, L.....	20	<i>Parus atriceps</i> , Horsf.....	119
<i>Muscicapa Banyumas</i> , Horsf.....	116	<i>erythrocephalus</i> , Vig.....	22
<i>melanops</i> , Vig.....	171	<i>melanolophus</i> , Vig.....	23
<i>nitida</i> , Lath.....	116	<i>monticola</i> , Vig.....	22
<i>occipitalis</i> , Vig.....	97	<i>xanthogenys</i> , Vig.....	23
<i>Muscipeta brevirostris</i> , Vig.....	43	Pastor <i>Contra</i> , v. <i>Capensis</i> ,	
<i>Paradisi</i> .....	116	Temm.....	120
<i>peregrina</i> .....	116, 173	<i>griseus</i> , Horsf.....	120
<i>Princeps</i> , Vig.....	22	<i>Pagodarum</i> , Temm.....	120
<i>Mystela Galera</i> , L.....	57	<i>roseus</i> , Temm.....	120
<i>Myxeria australis</i> .....	123	<i>Traillii</i> , Vig.....	175
<i>Myophonus Horsfieldii</i> , Vig.....	35	<i>tristis</i> , Temm.....	120
<i>Temminckii</i> , Vig.....	171	<i>Pavo cristatus</i> , L.....	122
<i>Myrmecophaga jubata</i> , Linn.....	149	<i>Perdix Cambayensis</i> , Temm.....	123
<i>Noctua cuculoïdes</i> , Vig.....	8	<i>Chucar</i> , Hardw. & Gray.....	173
<i>Indica</i> , Frankl.....	115	<i>Falklandica</i> , Lath.....	3
<i>Nomeus maculosus</i> , Benn.....	146	<i>Hardwickii</i> , Gray.....	123
<i>Nucifraga hemispila</i> , Vig.....	8	<i>picta</i> , Jard. & Selb.....	123
<i>Nycticejus Heathii</i> , Horsf.....	113	<i>Perodicticus</i> , n. g. Benn.....	109
<i>Nycticorax Europæus</i> .....	124	<i>Geoffroyi</i> , Benn.....	109
<i>Manillensis</i> , Vig.....	98	<i>Petrocincla cinclorhyncha</i> , Vig.....	172
<i>Nyctinomus plicatus</i> , Geoff.....	99	PETROMYZON FLUVIATILIS, L.....	133
<i>tenuis</i> , Horsf.....	99	MARINUS, L.....	134
<i>Ocypterus leucorhynchus</i> .....	117	<i>Petromyzon fluviatilis</i> , L.....	133
<i>Ocythoë antiquorum</i> .....	107	<i>marinus</i> , L.....	134
<i>Cranchii</i> .....	107	<i>Phalacrocorax erythroptus</i> , King.....	30
<i>Oriolus acrorhynchus</i> , Vig.....	97	<i>imperialis</i> , King.....	30
<i>Galbula</i> , L.....	117	<i>Sarmientonus</i> , King.....	30
<i>Maderaspatanus</i> , Frankl.....	118	<i>Phalangista Cookii</i> , Cuv.....	136
<i>melanocephalus</i> , L.....	117	<i>fuliginosa</i> , Ogilb.....	135
<i>Ornithorhynchus brevirostris</i> , Ogil-		<i>xanthopus</i> , Ogilb.....	135
<i>by</i> .....	150	<i>Phasianus albo-cristatus</i> , Vig.....	9
<i>Ortyx</i> .....	2	<i>lineatus</i> , Lath.....	24
<i>affinis</i> , Vig.....	3	<i>Pucrasia</i> , Hardw. &	
<i>noxenus</i> , Vig.....	3	Gray.....	173
<i>Osphromenus Goramy</i> , Comm.....	89	<i>Reevesii</i> , Hardw. & Gray.....	77
<i>Otis Afraoides</i> , Sm.....	11	<i>Staceii</i> , Vig.....	35
<i>ferox</i> , Sm.....	11	<i>veneratus</i> , Temm.....	77
<i>Himalayanus</i> , Vig.....	23	PHOCA VITULINA, Linn.....	151
<i>Indica</i> , Lath.....	123	<i>Phœnicura atrata</i> , Jard. & Selb.....	119
<i>Kori</i> , Burch.....	50	<i>cæruleocephala</i> , Vig.....	35
<i>nigriceps</i> , Vig.....	35	<i>frontalis</i> , Vig.....	172
<i>Vigorsii</i> , Sm.....	11	<i>fuliginosa</i> , Vig.....	35
<i>Otus Bengalensis</i> , Frankl.....	115, 173	<i>leucocephala</i> , Vig.....	35



	Page.		Page.
<i>Phoenicura rubeculoïdes</i> , Vig....	35	<i>Rhinolophus Dukhunensis</i> , Sykes	99
<i>Pica cyanea</i> .....	96	<i>Rhipidura albofrontata</i> , Frankl.	116
<i>erythrorhyncha</i> , Wagl.....	173	<i>fusciventris</i> , Frankl.	117
<i>Sinensis</i> , Hardw. & Gray...	173	<i>nigritorquis</i> , Vig.....	97
<i>vagabunda</i> , Wagl.....	120, 173	<i>Rhizomys</i> , n. g. <i>Gray</i> .....	95
<i>Picus Bengalensis</i> , L. ....	121	<i>Sinensis</i> , <i>Gray</i> .....	95
<i>brunnifrons</i> , Vig.....	176	<i>Sumatrensis</i> , <i>Gray</i> ...	95
<i>hyperythrus</i> , Vig. ....	23	<i>Rhombus heterophthalmus</i> , Benn.	147
<i>Mahrattensis</i> , Lath....	121, 173	<i>parvimanus</i> , Benn.....	168
<i>melanocephalus</i> , King.....	14	<i>Rhynchæa Capensis</i> , Sav.....	62
<i>modestus</i> , Vig.....	98	<i>Orientalis</i> , Horsf.....	124
<i>nanus</i> , Vig.....	172	<i>picta</i> , <i>Gray</i> .....	62
<i>occipitalis</i> , Vig. ....	8	<b>RYZÆNA TETRADACTYLA</b> , Ill....	39, 51
<i>pygmæus</i> , Vig. ....	44	<i>Ryzæna tetradactyla</i> , Ill.....	27
<i>Shorii</i> , Vig.....	175	<i>Saxicola cachinnans</i> , Temm.....	96
<i>spilolophus</i> , Vig.....	98	<i>rubicola</i> , Temm.....	119
<i>squamatus</i> , Vig.....	8	<i>stapazina</i> , Temm.....	96
<i>Pitta brachyura</i> .....	117, 173	<i>Sciæna Aquila</i> , Cuv.....	112
<i>Platalea Telfairii</i> , Vig.....	41	<i>Sciurus Elphinstonii</i> , Sykes...A.	103
<b>PLATYCERCUS EXIMIUS</b> , Vig.....	36	<i>Palmarum</i> , Briss.....	103
<i>Platycercus unicolor</i> , Vig. ....	24	<i>Scolopsides phæops</i> , Benn. ....	165
<i>Platysternon</i> , n. g. <i>Gray</i> .....	106	<i>Scyllium marmoratum</i> , Benn. ...	148
<i>megacephalum</i> ,		<i>Semnopithecus Entellus</i> , F. Cuv.	99
<i>Gray</i> .....	107	? <i>albugularis</i> , Sykes	105
<i>Ploceus chrysogaster</i> , Vig. ....	92	<i>Serranus argyro-grammicus</i> , Cuv.	169
<i>gutturalis</i> , Vig.....	92	<i>Delissii</i> , Benn.....	126
<i>Philippinus</i> , Cuv. ....	120	<i>mitis</i> , Benn. ....	127
<i>spilonotus</i> , Vig. ....	92	<i>Telfairii</i> , Benn.....	127, 169
<i>Plotus melanogaster</i> , Lath. ....	125	<b>SIMIA SATYRUS</b> , L.....	4, 9, 28, 67
<i>Plytolophus Leadbeateri</i> , Vig..	61	<b>TROGLODYTES</b> , L.....	5, 9, 28, 68
<i>Podiceps minor</i> , Lath.....	125	<i>Sitta castaneiventris</i> , Frankl....	121
<i>Polyborus?</i> <i>hypoleucus</i> , Benn.	13, 169	<i>Solea hexophthalma</i> , Benn.....	147
<i>Polynemus Artedii</i> , Benn.....	146	<i>impar</i> , Benn. ....	147
<i>Pomatorhinus erythrogegens</i> , Vig.	173	<i>Sorex giganteus</i> .....	100
<i>Porphyrio hyacinthinus</i> .....	124	<i>Indicus</i> , Geoff. ....	99
<i>Prinia cursitans</i> , Frankl.....	118	<i>Sterna melanogastra</i> , Temm. ...	125
<i>gracilis</i> , Frankl.....	119	<i>Strix personata</i> , Vig. ....	60
<i>macroura</i> , Frankl.....	118	<i>Sturnus unicolor</i> , Marm.....	96
<i>Psetodes</i> , n. g. <i>Benn</i> .....	147	<b>SULA BASSANA</b> .....	90
<i>Belcheri</i> , Benn. ....	147	<i>Sus Scrofa</i> , L. ....	104
<i>Erumei?</i> .....	147	<i>Sylvia conspicillata</i> , Marm.....	96
<i>Psittacara leptorhyncha</i> , King... 14		<i>Hippolais</i> , Lath. ....	118
<b>PSITTACULA GALGULA</b> , Kuhl.....	36	<i>Tithys</i> , Scop.....	18
<i>Psittacula rubifrons</i> , Vig.....	97	<i>Synallaxis anthoïdes</i> , King.....	30
<b>PSITTACUS MITRATUS</b> , Kuhl.....	36	<b>TACHYPETES AQUILUS</b> , Vieill... 62	
<i>Pterocles exustus</i> , Temm.....	122	<i>Tantalus papillosus</i> .....	124
<i>Pterois Russelii</i> , Benn.....	128	<b>TAPIR AMERICANUS</b> , Gmel.....	161
<b>PTEROMYS VOLUCELLA</b> , Cuv.....	38	<i>Tapir Americanus</i> , Gmel. ....	94
<i>Pteropus medius</i> , Temm.....	99	<b>TESTUDO GRÆCA</b> , L. ....	63, 74
<i>Pyrrhula albifrons</i> , Vig. ....	92	<b>INDICA</b> , L.....	46
<i>erythrocephala</i> , Vig....	174	<i>Tetrao hybridus</i> , Gmel.....	73
<i>Raia bispecularis</i> , Benn. ....	148	<i>rupestris</i> , Penn. ....	74
<i>Rallus niger</i> , Gmel.....	124	<i>Tetrix</i> .....	73
<i>Rana Rubeta</i> , L. ....	61	<i>Tetrodon guttifer</i> , Benn.....	148
<i>Ratelus</i> , n. sp. ? .....	57	<i>Thalassidroma pelagica</i> , Vig... 151	

	Page.		Page.
<i>Timalia Chataræa</i> , Frankl. ....	118	<i>Upeneus bitæniatus</i> , Benn. ....	59
<i>hyperythra</i> , Frankl. ...	118	<i>immaculatus</i> , Benn. ...	59
<i>hypoleuca</i> , Frankl. ....	118	<i>Mauritanus</i> , Benn. ...	59
<i>pileata</i> , Horsf. ....	118	<i>pleurostigma</i> , Benn. ...	59
<i>Totanus glottoïdes</i> , Vig. ....	173	<i>Upupa minor</i> , Shaw. ....	121
<i>Tragopan Hastingsii</i> , Vig. ....	8	UROGALLUS MEDIUS. ....	73
<i>Satyrus</i> , Cuv. ....	122, 173	<i>Ursus labiatus</i> , Blainv. ....	100
<i>Tringa Glareola</i> , L. ....	124	URSUS THIBETANUS, F. Cuv. ....	76
<i>hypoleuca</i> , L. ....	124	<i>Vanellus bilobus</i> . ....	124
<i>ochropus</i> , L. ....	124	<i>Goensis</i> . ....	124, 173
<i>pusilla</i> , L. ....	124	<i>ventralis</i> . ....	124
<i>Trochilus Fernandensis</i> , King. ...	30	<i>Vinago militaris</i> , Cuv. ....	122, 173
<i>Loddigesii</i> , Gould. ....	12	<i>sphenura</i> , Vig. ....	173
<i>Stokesii</i> , King. ....	30	<i>Viverra Indica</i> , Geoff. ....	101
<i>Turdus erythrogaster</i> , Vig. ....	171	<i>Vultur Angolensis</i> , Lath. 13, 67, 169	
<i>guttatus</i> , Vig. ....	92	<i>auricularis</i> , Daud. ....	66
<i>macrourus</i> , Gmel. ....	118	<i>Ponticerianus</i> , Daud. ....	67
<i>Magellanicus</i> , King. ....	14	<i>Yunx pectoralis</i> , Vig. ....	93
<i>pœcilopterus</i> , Vig. ....	54	<i>Zoothera</i> , n. g. Vig. ....	172
<i>Sauularis</i> , L. ....	118	<i>monticola</i> , Vig. ....	172

PROCEEDINGS

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OF

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OF THE

ZOOLOGICAL SOCIETY

OF LONDON.

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PART II.

1832.

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LIST  
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	<i>page</i>
<b>BENNETT, E. T. Esq.</b>	
Characters of a New Species of <i>Otter</i> ( <i>Lutra</i> , Erxl.), and of a New Species of <i>Mouse</i> ( <i>Mus</i> , L.), collected in Chili by Mr. Cuming .....	1
Characters of some New Species of <i>Fishes</i> , collected by Mr. Cuming .....	4
Characters of a New Genus of <i>Lemuridæ</i> , presented by Mr. Telfair .....	20
Characters of a New Genus of <i>Rodent Mammalia</i> , from Chili, presented by Mr. Cuming .....	46
Characters of two New Species of the Genus <i>Mus</i> , L., collected by Colonel Sykes in Dukhun .....	121
On several Skins of <i>Mammalia</i> from Algoa Bay .....	122
Characters of two New Species of <i>Hedgehog</i> ( <i>Erinaceus</i> , L.) from the Himalaya Mountains .....	123
Characters of several New Species of <i>Fishes</i> , from Ceylon, presented by Dr. Sibbald .....	182
Characters of two New Species of <i>Fishes</i> , from the Mauritius, presented by Mr. Telfair .....	184
Characters of a New Species of <i>Hedgehog</i> ( <i>Erinaceus</i> , L.) from South Africa, collected by Mr. Steedman .....	193
<b>BRODERIP, W. J. Esq.</b>	
Characters of New Species of <i>Mollusca</i> and <i>Conchifera</i> , collected by Mr. Cuming .....	25, 50, 104, 124, 173, 194
<b>CHILDREN, J. G. Esq.</b>	
On Specimens of the <i>Phytotoma Bloxhami</i> , Childr., collected by Mr. Cuming in Chili .....	3
<b>COX, J. C. Esq.</b>	
On Atmospheric Causes as influencing the Health of Exotic Animals kept in confinement in England .....	33

	page
CUMING, H. Esq.	
Characters of New Species of <i>Mammalia</i> , <i>Birds</i> , and <i>Fishes</i> , collected by .....	1
Characters of New Species of <i>Stomapodous Crustacea</i> , col- lected by .....	5
Characters of New Species of <i>Mollusca</i> and <i>Conchifera</i> , collected by .....	25, 50, 104, 113, 124, 173, 194
Characters of a New Genus of <i>Rodent Mammalia</i> , pre- sented by .....	46
Characters of New Species of <i>Cypræa</i> , chiefly collected by	184
DANIELL, W. Esq. R.A.	
Exhibition of numerous Drawings of <i>Antelopes</i> , &c. made by his Brother .....	24
DESJARDINS, JULIEN.	
Abstract of the Proceedings of the "Société d'Histoire Naturelle de l'Île Maurice, pendant la 2de Année." .....	111
FULLER, DEVEREUX.	
Report on certain Experiments on the Feeding of <i>Carnivo-     rous Mammalia</i> .....	49
Report on the period of Gestation of the <i>Puma</i> ( <i>Felis con-     color</i> , L.) .....	62
GOULD, Mr. JOHN.	
On a New Species of <i>Wagtail</i> ( <i>Motacilla</i> , L.) .....	129
On a New Species of <i>Woodpecker</i> ( <i>Picus</i> , L.) .....	139
On a Collection of <i>Birds</i> from the Orkneys. ....	189
GRAY, J. E. Esq.	
Characters of a New Genus of <i>Mammalia</i> , and of a New Genus and two New Species of <i>Lizards</i> , from New Holland	39
On the Specific Distinction of <i>Mus giganteus</i> , Hardw., and <i>Mus setifer</i> , Horsf. ....	40
On the Animal of the Genus <i>Antipathes</i> .....	41
On the Family of <i>Viverridæ</i> and its generic Subdivisions; with an enumeration of the Species of <i>Paradoxurus</i> , and Characters of several new ones .....	63
Characters of several New Species of <i>Cypræa</i> , chiefly col- lected by Mr. Cuming .....	184
HALL, MARSHALL, M.D.	
On a particular Function of the Nervous System .....	190
HODGSON, B. H. Esq.	
Characters and Descriptions of New Species of <i>Mammalia</i> and <i>Birds</i> from Nepaul .....	10
HORSFIELD, T., M.D.	
On the Specific Distinction of <i>Viverra Rasse</i> , Horsf., and <i>Viverra Indica</i> , Geoffr. ....	22

	page
JENYNS, Rev. L.	
On a Species of <i>Crested Wren</i> ( <i>Regulus</i> ) new to England	139
On the Occurrence in England of the <i>Sorex remifer</i> , Geoffr. ....	139
LODDIGES, GEORGE, Esq.	
Characters of four New Species of <i>Humming-birds</i> ( <i>Tro-</i> <i>chilus</i> , L.) from Popayan, in the collection of Mr. Gould ..	6
LOWE, Rev. R. T.	
List of a Collection of <i>Fishes</i> formed on the Coast of Ma- deira, and presented to the Society .....	139
MACKENZIE, Sir F.	
On the Breeding of <i>Woodcocks</i> ( <i>Scolopax rusticola</i> , L.) in Scotland .....	133
MARTIN, Mr. WILLIAM.	
On the Anatomy of the <i>Jaguar</i> ( <i>Felis Onça</i> , L.) .....	7
MAULE, Hon. LAUDERDALE.	
On the Habits and Economy of the <i>Ornithorhynchus</i> ....	145
OWEN, R. Esq.	
Characters of some New Species of <i>Stomapodous Crusta-</i> <i>cea</i> , collected by Mr. Cuming .....	5
On the Habits of the <i>Birgus Latro</i> , Leach .....	17
On the Morbid Appearances of a <i>Mandrill</i> ( <i>Cynocephalus</i> <i>Maimon</i> ) .....	17
On the Anatomy of the <i>Cercopithecus albogularis</i> , Sykes	18
On a Malformation of the Beak of <i>Psittacus Erithacus</i> , L.	23
On the Anatomy of the Animal of <i>Stilifer Astericola</i> ....	61
On the Anatomy of <i>Capromys Fournieri</i> , Desm. ....	68
On the Peculiarities of the Skeleton of <i>Capromys Fournieri</i> , Desm. and <i>Dasyprocta Acouchy</i> , F. Cuv. ....	100
On the Anatomy of two Species of <i>Armadillo</i> ( <i>Dasypus</i> , L.)	130
On the Osteology of the <i>Weasel-headed Armadillo</i> ( <i>Da-</i> <i>sypus 6-cinctus</i> , L.) .....	134
On the Anatomy of the <i>Flamingo</i> ( <i>Phœnicopterus ruber</i> , L.)	141
On the Mammary Gland of <i>Echidna Hystrix</i> , Cuv. ....	179
On the Teeth of the <i>Capybara</i> ( <i>Hydrochærus Capybara</i> , Erxl.) .....	187
On the Anatomy of the <i>Cape Hyrax</i> ( <i>Hyrax Capensis</i> , Schreb.) .....	202
PALMEDO, A. P. Esq.	
Note on the Breeding together of the <i>Moufflon</i> and <i>Domes-</i> <i>tic Sheep</i> .....	9
SIBBALD, Dr.	
Characters of New Species of <i>Fishes</i> , from Ceylon, pre- sented by .....	182

	page
SMITH, ANDREW, M.D.	
Notice of a Collection of <i>Birds, Land-Shells, and Corals</i> , presented by .....	1
SMITH, W. Esq.	
Notice of the Capture of an <i>Arctic Fox</i> ( <i>Canis Lagopus</i> , L.) on an Ice-berg .....	189
STRICKLAND, ARTHUR, Esq.	
On a Species of <i>Puffin</i> ( <i>Puffinus</i> , Ray) new to Great Bri- tain .....	128
SOWERBY, G. B. Esq. ]	
Characters of New Species of <i>Mollusca</i> and <i>Conchifera</i> , collected by Mr. Cuming .....	25, 50, 104, 113, 173, 194
SPOONER, Mr.	
Notes of the <i>post-mortem</i> Examination of a <i>Dromedary</i> ( <i>Camelus Dromedarius</i> , Linn.) .....	126
SWINTON, G. Esq.	
Notice of a <i>lineated Pheasant</i> ( <i>Phasianus lineatus</i> , Lath.) presented by .....	193
SYKES, Lieut.-Col. W. H.	
Catalogue of <i>Birds</i> observed in the Dukhun .....	77, 149
Characters of two New Species of the Genus <i>Mus</i> , L. col- lected by .....	121
TELFAIR, C. Esq.	
Characters of a New Genus of <i>Lenuridæ</i> , presented by .	20
Characters of New Species of <i>Fishes</i> , presented by .....	184
TRIPP, H. Esq.	
On the Provision made by a Male <i>Hawk</i> , after the De- struction of its Female, for the Nourishment of their Young	62
VIGORS, N. A. Esq.	
Characters of several New Species of <i>Birds</i> , collected by Mr. Cuming in Chili and Mexico .....	3
WEATHERHEAD, Dr.	
On the Habits and Economy of the <i>Ornithorhynchus</i> ....	145
WOODS, H. Esq.	
On the Claw of the Tip of the Tail of the <i>Lion</i> ( <i>Felis Leo</i> , L.)	146
YARRELL, W. Esq.	
On a hybrid bred by the Society between a <i>Muscovy Drake</i> ( <i>Anas moschata</i> ,) and a <i>Common Duck</i> ( <i>Anas Boschas</i> ) ....	100
On two Species of <i>Mammalia</i> new to Britain; one of them also new to Science .....	109



PROCEEDINGS  
OF THE  
COMMITTEE OF SCIENCE AND CORRESPONDENCE  
OF THE  
ZOOLOGICAL SOCIETY OF LONDON.

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January 10, 1832.

Joshua Brookes, Esq., in the Chair.

Specimens were exhibited of several *Birds*, *Land-Shells*, and *Corals*, together with the *cranium* of a *Balænoptera*, LaCép., all collected at the Cape of Good Hope by Dr. Andrew Smith, Corr. Memb. Z. S., and presented by him to the Society. In illustration of the subjects exhibited, extracts were read from a letter from Dr. Smith which accompanied his present. The *Balænoptera* was there referred to as *Bal. Capensis*: it is apparently the *Rorqual du Cap* of M. Cuvier in his 'Ossemens Fossiles,' which has since been named by M. Desmoulins *Bal. Poeskop*, and by M. Fischer *Bal. Lalandii*.

Specimens were also exhibited of several *Mammalia*, *Birds*, and *Fishes*, collected by Mr. H. Cuming chiefly in Chili.

Among the *Mammalia*, Mr. Bennett pointed out as apparently new to science an *Otter* and a *Mouse*, which may be characterized as follows:

LUTRA CHILENSIS. *Lut. suprâ saturatè vinaceo-brunnea, infrâ pallidior; caudâ brunneo-nigricante, corporis dimidio parum brevior.*

*Hab.* in aquis Chiliæ.

The fur is composed of hairs of two kinds: the inner woolly and thickly furnished; the outer silky, also thickly set, and completely concealing the inner. The colour of the fur of the upper surface is glossy brown on the head, (where the hairs are comparatively short,) and increasing in depth as it proceeds backwards becomes blackish on the rump, and still more decidedly so on the tail. The lower surface of this member, for the extreme three-fourths of its length, is of the same colour with the upper; near the vent it becomes paler and assumes a reddish hue; and this colour is continued, with a slight canescent tint, along the whole of the under

surface, scarcely becoming lighter on the throat and lower jaw. The margin of the upper lip, the cheeks, and a patch under each ear, are of the same colour with the under surface. Of the *moustaches*, which are short, some of the hairs are yellowish, while the greater number are blueish black. The legs are of the colour of the upper surface of the body, which becomes deeper on the feet. The whole of the silky hairs exhibit that varying somewhat metallic gloss which is common to most aquatic *Mammalia*.

The naked muzzle is of moderate size. The claws are short, those of the hinder toes being somewhat flattened, while the anterior claws are compressed but not acute. "The eyes," Mr. Cuming states, "are small, their colour dark-blue."

"The total length is 2 feet 4 inches; from the nose to the root of the tail, 1 foot 7 inches; girth at the belly,  $9\frac{1}{2}$  inches."

Its habits, according to Mr. Cuming's observations, agree with those of the *European Otter*; and it is equally capable of domestication.

MUS LONGICAUDATUS. *Mus caudá longissimá: suprâ pallidè fulvus nigrescente varius; infrâ et ad pedes albensens.*

*Hab.* in arborea Chiliæ, nidum e foliis graminum construens.

The most striking peculiarity of this *Mouse* is the extreme length of its tail, which approaches nearly to double that of the body; the length of the head and body, taken in a straight line, being 3 inches, while that of the tail is  $5\frac{1}{2}$ .

The fur is soft, smooth, and well furnished. The hairs are deep ashy grey at their base: those of the upper surface are fawn-coloured or pale rufous towards their points, the extreme tip being frequently black; those of the under surface are tipped with white slightly tinged with fawn.

The face is covered with short hairs of mingled fawn and black: the lips are nearly white: the *moustaches* extremely long, black at their base and silvery at the tip. The ears are rounded and of moderate size: their lobe is well covered on the inside with short hairs of the colour of those of the face, and on the outside is sparingly furnished with very short whitish hairs which are scarcely discernible on the blackish skin. The colour of the back is mixed fawn and black; the black disappears on the sides, which are almost purely fawn-coloured, as are also the front of the fore-legs and the outside of the hinder legs. The tail is scaly, and furnished with numerous very short bristly hairs, which are brownish above and nearly white beneath. The hairs of the upper surface of the *tarsi* are short, and of a very pale fawn approaching to white; those of the toes still more white; and the lengthened bristles covering the claws almost silvery.

The length of the head is 1 inch and 2 lines; of the ears, 5 lines; breadth of the ears, 5 lines; length of the anterior limbs, 9 lines; of the posterior limbs, 1 inch and 6 lines; of the anterior *tarsus* and toes, 5 lines; of the posterior *tarsus* and toes, 1 inch and 2 lines; and of the *moustaches*, 1 inch and 6 lines.

Among the *Birds* were two specimens of the *Phytotoma Bloxhami*, Child., which having been submitted to Mr. Children, that gentleman reported that one of the specimens was apparently a female or a young male of the species. It differed from the adult male in being devoid of the ferruginous colour on the crown; and in the total absence of the same colour on the breast and *abdomen*, which were of a dirty yellowish white streaked with fuscous. The colours of the upper part of the body were also less deep than in the adult male. Mr. Children stated that the male specimen accorded accurately with that which he originally described in Jardine and Selby's 'Illustrations of Ornithology.' He added, that more recently, in 1830, both sexes of the bird had been described and figured in the 'Mémoires présentés à l'Académie Impériale des Sciences de St. Petersbourg,' by M. Kittlitz, who, not being aware that it had been previously published, had given to it the name of *Phyt. silens*. As M. Kittlitz's description was subsequent to that of Mr. Children, so also was his discovery to that of Mr. Bloxham, whose name is commemorated by Mr. Children in that of the bird, which was shot by him at Valparaiso certainly not later than December 1825, while M. Kittlitz did not observe the species in Chili until March or April 1827. Mr. Children added, that the "two serrated *tomia* or ridges" in the margin of the upper mandible, mentioned by him in his description of *Phyt. Bloxhami*, are very distinct in both the specimens submitted to his inspection.

The following species from the same locality were apparently new to science, and were characterized by Mr. Vigors as follows:

**CAPITO AURIFRONS.** *Cap. occipite, genis, collo superiori, nuchá, dorsoque atris albido-flavo striatis; abdomine albido-flavo, atrofusco striato; jugulo tectricibusque alarum aurantiacis, illius plumis subgraciliter, hujus latius in medio nigro striatis; fronte verticeque aureis, hoc subfuscescenti; remigibus reetricibusque fuscis.*

Longitudo  $7\frac{3}{4}$  unc.

**XANTHORINUS CHRYSOCARPUS.** Mas. *Xanth. ater, plumis obscure ferrugineo marginatis; regione carpali-aureo-flavá.*

Fœm. *colore superno minus saturato, dorso imo subcinerascenti; corpore infra albo maculatim notato; strigá utrinque a rictu per oculos ad nucham extendente latá, alteráque in medio verticis gracili albis; regione carpali flavescenti.*

Longitudo maris 8 unc. fœm.  $7\frac{1}{2}$ .

**AGLAÏA CHILENSIS.** *Agl. sericeo-ater; capite genisque flavo-  
viridibus, colore genarum in latera colli angulariter extendente; pectore abdomineque beryllinis; dorso medio imoque flammeo-coccineis.*

Statura *Tanagræ Tatao*, Linn.

This bird differs from the well-known *Paradise Tanager* only in the uniform flame-colour of the middle and lower parts of the back, and in the light green feathers of the cheeks extending more angularly into the black on each side than in the common species. The

great distance that separated these Chilian birds from those of Guiana and Cayenne in some measure authorized the specific separation here suggested. There were two specimens in Mr. Cuming's collection according with the above description; and Mr. Vigors stated that he had seen others of the same locality equally answering to it; while he had observed no specimen from the eastern coast which did not correspond with the *Paradise Tanager*, as figured by Edwards, Buffon, and Desmarest.

*PICUS AUROCAPILLUS.* *Pic. suprâ ater, albo fasciatus maculatusque; strigâ latâ super oculos ad humeros extendente, alterâque suboculari interruptâ, gulâque albis; pectore abdomineque sordidè albescentibus, strigis parvis fuscis notatis; capite atro, fronte aureo strigatim notato, vertice aureo.*

Longitudo,  $6\frac{1}{2}$  unc.

The two following apparently new species were also in Mr. Cuming's collection, but they had been obtained by him from Mexico.

*COCCOTHRAUSTES CHRYSOPEPLUS.* *Mas. Cocc. corpore aureo, dorso medio nigro notato; alis rectricibusque nigris, illis albo variegatis ad carpumque aureo notatis, horum, quatuor mediis exceptis, pogoniis internis ad apices albis.*

*Fœm. aut Mas jun. capite, collo, corporeque infrâ pallidè aureis, illis fusco striatis; dorso olivascenti-flavo, fusco notato; alis caudâque olivaceo-brunneis, illis albo parçè maculatis.*

Longitudo,  $9\frac{1}{2}$  unc.

The white markings on the wings of the male consist of five large spots extending in a line over the coverts and tertiary quill feathers; a narrow margin on the edge of the second to the fifth primary quill feather inclusive; and a spot on the outward webs of the tertiaries at the apex. The marks on the bird supposed to be the female or young male are small and few in number at the apices of the wing coverts.

*ORTYX SPILOGASTER.* *Ort. capite guttureque atris, illo strigis, hoc maculis, albis notatis; collo, pectore, nuchâ, dorso, alis, caudâque pallidè plumbeo-cinereis; capitis cristâ elongatâ recumbente, strigis colli superioris, scapularibus, abdominisque lateribus ferrugineis, his albo strigatis; pectore abdomineque medio albo oculatim guttatis; abdomine imo crissoque albescentibus, illo obscure fusco fasciato, hoc intensius brunneo notato.*

Longitudo, 12 unc.

As the most interesting of the *Fishes* exhibited, Mr. Bennett pointed out a new species of *Scombrosox*, LaCép., which differs by its less ample mouth, the number and direction of its teeth, and the smaller extent of the bony plate behind those of the upper jaw from the *Cyclopterus Dentex*, Pall. This he distinguished as the

*SCOMBROSOX LEMURIDENS.* *Scomb. ore capitis dimidium latitudine æquante; labiis crassis, inferiore utrinque latè lobato; den-*



*tibus incisoriibus maxillæ superioris verticalibus, inferioris horizontalibus, ponè illas osse scabro utrinque parvo.*

D. 8. A. 5. C. 8. P. 25.

*Hab.* in Oceano Pacifico, Chiliam alluente.

In maxillâ superiore dentes incisores approximati, elongati, subæquales, (externis longitudine parum decrescentibus,) utrinque tres; dein laniarius parvus discretus, quem sequitur alter minimus dimotus: in maxillâ inferiore dentes incisores utrinque tres, quorum primus major, secundus minor, tertius minimus, omnes approximati; dein laniarius parvus discretus, et ab hoc dimoti et inter se discreti laniarii minimi tres.

An *Agriopus*, Cuv. and Val., from the same locality with the preceding fish, was shown to agree generally with the description published by MM. Cuvier and Valenciennes of their *Agr. Peruvianus*; but a deviation occurred in the number of the fin-rays, those of the spinous portion of the dorsal fin being one less in number, while of the soft rays of the anal there were three more than in the species referred to; the rays in the specimen exhibited being D.  $\frac{17}{7}$ . A.  $\frac{15}{5}$ . It appears therefore probable that the seas of the western coast of South America, like those of the Cape of Good Hope, are inhabited by two species of *Agriopus*; but it was not deemed advisable to characterize a second until an opportunity should occur for a satisfactory comparison of specimens.

Various specimens of *Syngnathi*, obtained by Mr. Cuming in the Atlantic Ocean, were regarded by Mr. Bennett, notwithstanding some important differences in their proportions, as belonging to one species, which he described as new to science, although nearly allied to *Syng. Acus*, Linn. It may be thus characterized:

*SYNGNATHUS FUCICOLA.* *Syng. pinnis pectoralibus, dorsali, anali, caudalique præditus: rostro cylindrico, producto: scutis dorsalibus quatuordecim, præanalibus sedecim, caudalibus viginti sex: corpore heptagono caudâque tetragonâ transversim pinnâque dorsali obliquè nigrescenti fasciatis.* D. 28.

*Fœm. rostro truncoque brevioribus; hoc latiore; ventre (ovis exclusis) haud carinato; caudâ longiore.*

A *Syng. Acu* differt occipite minùs elevato; fronte subæqualiter declivi, orbitis parum elevatis; et præsertim scutis longè paucioribus.

Specimens were exhibited of several *Stomapodous Crustacea*, also from the collection of Mr. Cuming, a collection extremely rich in *Crustacea*, *Mollusca*, and other invertebrate animals inhabiting the sea. A considerable portion of it was formed during a voyage in the Southern Pacific Ocean undertaken by Mr. Cuming in a vessel freighted by him for the express purpose of obtaining objects of natural history. Among those now exhibited Mr. Owen pointed out two new species, one of which belongs to that section of the genus *Squilla*, Fabr., which is distinguished by the presence of moveable spines at the extremity of the caudal segment, and likewise, as was particularly shown, by the first pair of *pedipalpi* being

unarmed. Of this section but one species had been previously described, the *Squilla ciliata*, Fabr., (*Squilla stylifera*, Lam.), a figure of which has been engraved for the forthcoming Appendix containing the Zoology of Captain Beechey's late 'Voyage to the South Pacific,' &c. The second species was described under the name of *Squilla spinifrons*; and in illustration of the distinctions between it and the Fabrician species the following characters were read by Mr. Owen:

\* *Antennæ chelis breviores.*

SQUILLA CILIATA, Fabr. *Squil. pollice tridentato; corpore suprâ, præter segmentis natatoriis, lævi; rostro inermi; segmento ultimo supernè 5-carinato.*

Hab. Oahu.

\*\* *Antennæ chelis longiores.*

SQUILLA SPINIFRONS. *Squil. pollice tridentato; corpore suprâ, præter segmentis natatoriis, lævi; rostro 3-spinoso; segmento ultimo supernè 11-carinato.*

Hab. Valparaiso.

Mr. Cuming's note affixed to the latter states that it was "caught by dredging in deep water, and by the fishermen's lines."

The other new species is referable to *Gonodactylus*, Latr., and is nearly allied to *Gon. Chiragra*, Ejusd., for which the following amended character was proposed by Mr. Owen with the view of distinguishing it from *Gon. ensiger*.

GONODACTYLUS CHIRAGRA, Latr. *Gon. pollice edentato, basi extûs gibbo, intûs crenato; rostro 3-spinoso, spinâ intermediâ productâ.*

Long. 4 unc.

Hab. "in insulâ Erromanga Novarum Hebridum Oceani Pacifici, ubi in foraminibus rupium se celat," teste Dom. Georgio Bennett.

GONODACTYLUS ENSIGER. *Gon. pollice edentato, ensato, intûs acuto; rostro 3-spinoso, spinâ intermediâ obsoletâ.*

Long. 6 unc.

Hab. Valparaiso.

Color flavus; chelarum cœruleus.

Præcedenti valdè affinis, præsertim sculpturâ armaturâque segmentorum ultimorum; sed differt pollice ad basin non ventricoso, ad marginem internum non crenato; spinâ rostri mediâ non productâ; necnon magnitudine.

Mr. Cuming states that this is taken in the same manner as the *Squilla spinifrons*.

Specimens were exhibited of several *Humming Birds* from Poyayan, forming part of the collection of Mr. John Gould; and the following characters, by Mr. George Loddiges, of four new species were read.

TROCHILUS TYRIANTHINUS. *Troch. capite suprâ dorsoque aureo-viridibus; gulâ splendenti saturatè viridi; alis brunneo-fuscis; caudâ subrotundatâ, latissimâ, aureo-purpureâ: rostro gracili, brevissimo, recto.*

Long. corporis, 4 unc.; rostri, 4 lin.

This bird differs from all the known species by its small bill, which is much shorter than the head; and by the rich golden-purple tail composed of very broad feathers.

**TROCHILUS EURYPTERUS.** *Troch. suprâ fusco-viridis, subtùs cinereo viridique variegatus; caudâ rotundatâ, atro-aureo-viridî, reetricibus lateralibus apice cinereis; alis latissimis fusco-atris: rostro brevi, recurvato, mandibulâ inferiore albâ.*

Longitudo,  $4\frac{1}{4}$  unc.

**TROCHILUS FLAVESCENS.** *Troch. aureo-viridis; capite gulâque splendenti aureo-smaragdinis; caudâ subfurcatâ, albo-flavescenti, reetricibus lateralibus ad margines, mediisque totis aureo-olivaceis; alis atro-fuscis, subtùs pallidè rufescentibus: rostro mediocri, recto.*

A species resembling *Troch. rubineus*, Auct., in its size, and nearly allied to that bird. It differs, however, in the collar, which is golden green, and in the tail-feathers, which are (with the exception of the middle pair,) yellowish white.

**TROCHILUS GOULDII.** *Troch. viridis; jugulo pallidè smaragdino; caudâ longissimâ, forficatâ, reetricibus rotundatis, exterioribus  $4\frac{1}{2}$  uncialibus nigris, ad apices aureo-viridibus, mediis brevibus, cæteris gradatis aureo-viridî splendentibus; alis mediocribus rotundatis: rostro parvo, recto.*

Long. corporis, 2 unc. ; rostri,  $3\frac{1}{4}$  lin.

The most remarkable feature in this elegant little bird is its long and luminous green tail, in the form of which and in the arrangement of the feathers it approaches the *fire-tailed Humming-Bird*, *Trochilus sparganurus*, Shaw, and likewise the *Nouna Koali* of M. Lesson's 'Supplement,' pl. 35.

Preparations were exhibited of the stomach, and of the tongue, *larynx* and *trachea* of a *Jaguar*, *Felis Onça*, Linn. They were obtained from an individual which lately died at the Society's Gardens, respecting the dissection of which Mr. Martin read, at the request of the Chairman, the following notes.

"The *Jaguar* which died a few weeks since was a full grown female, and although in height less than the *Leopard*, appeared more muscular and strongly made. The length of the body, exclusive of the tail, was 3 feet 2 inches; the tail measured 2 feet.

"The small clavicles which are found in the feline tribe in general, were in the present instance barely 2 inches in length, simply imbedded in the muscles of the chest, and without any ligamentous attachment either to the *scapulæ* or *sternum*.

"The lungs consisted of three lobes on the left side, and four on the right, of which the posterior was furnished with an appendix or process, situated in a cavity or kind of inferior *mediastinum* having its walls (which were incomplete on the right but complete on the left side,) formed by a reflexion of the *pleura* passing from the heart, the diaphragm constituting its base. This structure is, I believe, to be found in most *Mammalia*.

"The immense volume of the chest, as contrasted with that of the

abdominal cavity, was very striking, a circumstance which might be considered as furnishing an index to the habits and vital energy of this tribe of active and ferocious quadrupeds. On measuring the length of the *vena cava* in the chest, it was found to be 4 inches. The heart was of large size and rather fat; the coronary veins were found to terminate in the right auricle to the left side of the posterior *cava* at its entrance.

“ The liver consisted of five lobes and a *lobulus Spigelii*. In the middle lobe, a deep fissure cut quite through its substance for the reception of the gall-bladder, the *fundus* of which appeared through the fissure on the anterior surface of the lobe. The gall-bladder was large and filled with green bile: the *ductus choledochus*, in length 3 inches, terminated an inch below the *pylorus*, and just below this again the duct of the *pancreas*.

“ The *pancreas* was of considerable length, beginning about 5 inches below the stomach; passing on to the termination of the *ductus choledochus*; then leaving the *duodenum* and taking its course over the posterior surface of the *cardium*, inclining backwards and terminating at the posterior edge of the spleen. For some distance before its termination it was found enveloped in *omentum*.

“ The kidneys were in length 3 inches, the *pelvis* of each large. The supra-renal glands were compressed, triangular, and hollow; their texture firm and white, not unlike condensed fibrine. The left emulgent vein received the spermatic of that side; but the right spermatic, which was much shorter, terminated in the *vena cava*.

“ The stomach in shape was found to be very prolonged, lessening gradually from the cardiac portion, but rather increasing again before ending in the *pylorus*. Its length following the large curvature was 2 feet, and the small intestines measured 13 feet 10 inches. The *cæcum* extended 3 inches from the termination of the small intestines, but was smaller in its circumference than the *colon*. The large intestines measured  $2\frac{1}{2}$  feet.

“ The tongue, flattened towards the tip and rounded there, exhibited on its surface, for a considerable distance, a groove of horny points arising from its *papillæ* and reflected backwards: these diminish in size and number as they proceed onwards, the base of the tongue becoming quite smooth.

“ The distance from the base of the tongue to the *rima glottidis* measured fully 3 inches; and, as in the *Lion*, the posterior *nares* were continued on by a canal which opened upon the *rima glottidis*, a construction adapted perhaps for allowing freedom of breathing during the gorging of food, and probably of use also in giving some modification to the tone or character of voice.

“ The *rugæ* of the *pharynx* were slight and transverse.

“ The *os hyoides* consisted of three portions, a body and two small bones; the body forming three sides of an oblong square, the angles being rather rounded, and to these angles the two separate portions of bone, of a semilunar shape, (having the indented edge external,) were attached. The thyroid and cricoid cartilages were strong and broad.



“The *rima glottidis* presented a construction very similar to that of the *Lion*, the slit being simple with its edges considerably produced; a form occasioned by the projection of the arytenoid cartilages, which in shape were found to be somewhat triangular, one angle of each cartilage being placed anteriorly.

“The thyroid gland consisted of two compressed disjoined lobes, one on each side of the *larynx*, extending from the top of the first ring as far down as the sixth or seventh.

“The *epiglottis* was broad and acuminate.

“The *trachea* consisted of thirty-four imperfect rings, and measured fully 3 inches in circumference; the cartilaginous portion making up but about two-thirds of the circle, and being very soft and elastic. At the division of the *trachea* two large indurated glands were situated.”

A preparation of the tongue, *larynx* and *trachea* of an *Ocelot*, *Felis Pardalis*, Linn., having been placed on the table for comparison with the preparation of the same parts in the *Jaguar*, Mr. Martin pointed out the difference between them. He showed that while in the *Jaguar* there intervenes between the base of the tongue and the *rima glottidis* a distance of 3 inches, in the *Ocelot* the *rima* and base of the tongue are in close proximity. In the *Ocelot* the *epiglottis* is larger in proportion than in the *Jaguar*, is not so acute, and has a slight indentation at the point: the rings of the *trachea* are also firmer and more perfect than in the *Jaguar*; and the edges of the *rima glottidis* do not protrude as in that animal and in the *Lion*. The thyroid gland is double both in the *Ocelot* and the *Jaguar*. At the commencement of the *œsophagus* the membrane is puckered up in the *Ocelot* into a number of irregular folds crossing the *striæ*, which are there very slight and longitudinal so as to form a kind of valve or obstruction: in the *Jaguar* on the contrary the *striæ* are transverse, and there are no valve-like foldings of the membrane between the *pharynx* and *œsophagus*.

The following note by A. P. Palmedo, Esq., H. M. Consul in Corsica, dated Bastia, Jan. 1832, was read. It was communicated to the Committee by Mr. Barnard.

“There had been hitherto no instance in Corsica of *Moufflons* breeding in a domesticated state, nor any of their coupling with *Sheep*, though the flocks of the latter not rarely approach the high regions of the *Moufflon*. General Merlin, the commanding officer of Corsica, has now, however, not only a young *Moufflon* born of two tame *Moufflons* in his possession, but also an offspring of the same *he-Moufflon* and of a *Ewe*.”

January 24, 1832.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of various *Mammalia* and *Birds*, collected in Nepál by B. H. Hodgson, Esq., Corr. Memb. Z. S., British Resident at Katmandoo. For this exhibition the Committee was indebted to the kindness of Dr. N. Wallich, to whom the skins had been transmitted by Mr. Hodgson.

The *Mammalia* included specimens of a new species of *Felis*, L.; of two *Antelopes*, one the *Chiru* and the other new to science; and of the wild *Dog* of Nepál. They were accompanied by coloured figures, and, except in the instance of the latter, by accounts of the several animals from the pen of Mr. Hodgson. These accounts were read.

The new species of *Felis* is described as the *Moormi Cat*, a name derived from that of the tribe which inhabits the part of the hills in which the animal was taken. It was entirely unknown to the natives, and had consequently no local name. It may be thus characterized:

*FELIS MOORMENSIS.* *Fel. cauda elongatá; suprâ saturatè badia, infrâ pallidior; auribus caudæque apice nigris; mento albo; faciei lateribus vittis flavescens nigrâ marginatis tribus notatis.*

In size it is nearly intermediate between the larger and the smaller *Cats*; but is more allied in its general form, proportions, and aspect, to the former than to the latter, having in fact little resemblance to the smaller species of *Felis*, except in the shortness of its nose and the agreeable expression of its countenance.

Its body is long and compressed; its legs short and not remarkably stout. The neck is short and thick. The head is of considerable breadth and depth; its crown flattened; the nose straight, short, and abrupt; the ears short, widely opened, and well lined within, erect, rounded, and without tuft at the tip. The tail is long, rounded, well and uniformly covered with hair, and slightly tapering at its extremity.

The hinder legs are considerably longer than the anterior, and are distinguished by the true pardine length of the femoral portion; indicating, like all other parts of the form of the animal, very great agility. The jaws are very powerful, but the teeth are not remarkable for superiority of size, and the front ones may even be said to be small; they are close-set and compressed laterally except near the extremities, where the lateral compression ceases and an oblique truncation is observed both from without and within. The *moustaches* are large and very stout; the bristles above the eyes are only four or five, and are small. The expression of the face is devoid of ferocity, and agreeable, approaching to that of the *domestic Cat*.

The whole of the upper parts of the animal (except the ears, the tip of the tail, and the marks on the face,) are of a uniform deep rich brown-red or bay; the ears and tip of the tail above are black; and the marking on the face pale buff, edged with black. The under surface is generally of the same colour with the upper, but considerably paler; the neck alone being nearly as dark below as above. The insides of the fore-limbs are paler than those of the hinder, being whitish buff, and are, moreover, marked with several transverse dusky bars: the paws are dusky, freckled with grey: the upper lip pale buff with three parallel rows of black dots: the *moustaches* black at the base and whitish buff at the tip: the lower lip and chin white, as is also the inferior surface of the tip of the tail: the insides of the ears are of the same colour with the under surface generally, but paler, or buff.

The markings on the face which form so conspicuous a characteristic of the animal were particularly described. There are three principal marks on each side of the head; one above the eye and two behind the gape. Their general form is linear, and their general direction longitudinal; but the lines are not regular, neither is their direction strictly lengthwise, the two proceeding from behind the gape almost to the angle of the jaw, though in general nearly parallel to each other, tending to approximate behind; and the one above either eye being rather arched above the middle of the orbit. From the latter lines, too, two shorter lines are given off obliquely as they approach the openings of the ears. The middle and larger portion of all these marks is whitish buff; the marginal portion surrounding them entirely is black.

The eyes are of a freckled greenish hue like those of the *domestic Cat*, and below them is a dash of whitish buff. The nose is fleshy white. The nails are black.

The dimensions are as follow:

	ft.	in.
Length of the body from the tip of the nose to the insertion of the tail.....	2	7 $\frac{1}{2}$
Length of the head.....	0	6 $\frac{1}{2}$
—— from the nape to the eyes.....	0	4 $\frac{1}{4}$
—— eyes to the snout.....	0	2 $\frac{3}{8}$
—— of the tail.....	1	7
—— fore-leg to the line of the belly....	0	11
—— hinder ditto ditto.....	1	1 $\frac{1}{2}$
Height at the shoulder.....	1	5
Length of the ears.....	0	2 $\frac{1}{2}$

The only specimen of this species which Mr. Hodgson has been able to procure was a fine mature male sent to him alive, about two years back, by the Prime Minister of Nepâl: it was accompanied by an intimation that the animal presented to him was the first of the kind ever taken, the people of the country having been by its capture first apprised of its existence in Nepâl. It was caught in a tree by some hunters in the midst of an exceedingly dense forest,

situated in about the latitude of the great valley: the *habitat* of the species may therefore be presumed to be the central part of these mountains, or that portion which lies equidistant from the snows of the Himalaya and the hot plains of Hindoostan. Though only just taken when it was brought to Mr. Hodgson, it bore confinement very tranquilly, and gave evident signs of a tractable disposition and cheerful unsuspecting temper; so much so as to convince that gentleman that a judicious attempt at taming it must succeed. None such, however, was made; and when the animal, after six months confinement, died of disease, it was still, of course, unreclaimed from its wild state of manners and temper; in which state it manifested considerable ferocity and high courage, the approach to its cage of the huge *Bhoteah Dog* exciting in it symptoms of wrath only—none of fear.

In a note appended to his description of this second new species of *Felis* from Nepál, Mr. Hodgson refers to that of the *Fel. Nepalensis* published by Messrs. Horsfield and Vigors in the 'Zoological Journal,' vol. iv. p. 383. The ground-colour of this latter animal is there described as "grey, with a very slight admixture of tawny;" whereas in five specimens possessed by Mr. Hodgson the tawny prevails over the grey to such an extent that the tawny should be regarded as the ground-colour in the mature animal of both sexes. One adult male is almost as brightly tinted as a *Leopard*: the females are paler than the males. He adds that the common species of *wild Cat* is frequently met with in Nepál of the fullest European size, and so like to the Occidental type as not even to constitute a variety.

The new species of *Antelope* is distinguished by Mr. Hodgson as the *Bubaline Antelope*.

ANTILOPE BUBALINA. *Ant. cervice jubatá; cornibus brevibus, conicis, recurvis, sulcatis, annulatisque; suprâ nigra, ad latera saturatè fulvo intermixta.*

"This remarkable species is entirely devoid of the characteristic elegance of the genus to which it belongs. It is a large, coarse, heavy animal, with bristly thin-set hair, not unlike that of the *Buffalo*. The body is short and thick; the chest deep; the neck, short and straight; the head coarse and spiritless, though not remarkably large; the eye, poor; the limbs (for an *Antelope*) thick and short; and the hoofs short and compact. The general form, proportions and attitudes, the style and character of the ears, the hoofs, the hair, and, more especially, of the *testes* and mane, belong rather to the *Goat*- than to the *Deer*-kind. So likewise do the manners of the animal, which dispose it to solitude and to mountainous situations. It is seldom found in herds, however small; and the grown males usually live entirely alone, except during the breeding season. Of all the *Deers* or *Antelopes* of these hills it is the most common. It tenants the central region equidistant from the snows on the one hand, and the plains of India on the other; and though it be found everywhere, within that central space, between the Sut-



lege on the west, and the Teesta on the east, it is more frequent in the eastern than in the western half of the tract so defined, or in Nepal Proper. The female is scarcely distinguishable from the male, by her somewhat inferior size, smaller horns, and rather paler colours; being, in every other respect, precisely like him.

“ The mature male measures, from the tip of the nose to the end of the tail, fully 5 feet; and stands upwards of 3 feet at the shoulder. In his ordinary quiescent attitude all the four legs are perfectly upright; the back horizontal; the neck slightly raised and straight: and we look in vain for the gracefully bowed neck of the *Antelope* and *Deer*, or the taper stooping hinder limbs with which they seem ever ready to bound from the earth, upon which they scarcely appear to tread at all.

“ The horns, in the fully grown male, are annulated more than two-thirds of their whole length from the base; and in such males the terminal third is perfectly smooth and polished. The rings are closely set, equally prominent all round, and blunt-edged; and their continuity is broken by a numerous series of irregular longitudinal grooves running from the base upwards as far as the annulations, which they cut, and even higher. In young animals the grooving extends almost to the tips of the horns; whereas the annulation is confined nearly to their bases. The core of the horns reaches almost to their extremities. The basal interval of the horns is from  $\frac{3}{4}$ ths of an inch to  $\frac{5}{8}$ ths: the divergency at the tips, very inconsiderable: the arcuation backwards, uniform and well defined. The horns are quite round, short, (as short almost as the ears,) and acute.

“ The ears are very large and coarse, erect, not much opened, the insides well lined with long soft hair, the tips rather sharp and not tufted.

“ The head is (as already noted) not inelegantly large, though coarse, and expressionless; its tapering is considerable and uniform to the muzzle: the eye (for an *Antelope*) is poor and mean; the suborbital *sinuses* are quite round, small, distinct and naked; the *testes* goat-like, large, pendent, and hairy; the hoofs short, firm, and thick; the teeth devoid of peculiar characters; the hair coarse, bristly, straight, sparsely set on, and closely applied to the skin; the entire dorsal surface of the neck, and half the shoulders, furnished with a semi-erect, straight mane, composed of bristles rather longer and stouter than those covering the rest of the body; in character goat- or rather hog-like; no mane on the pectoral surface of the neck, nor any semblance of beard on the chin; the tail short, narrow, and deer-like.

“ With regard to the colours, there is, in this species, some little variation independent of that caused by sex and age. The following is, however, an adequate description of the mature male in this respect.

“ The whole superior parts of the animal, and the neck, below as well as above, are pure black: the lateral parts are black, largely mixed with earthy brown red, but the latter colour prevails greatly

over the former on the limbs above the knees. The inferior parts, insides of the limbs, and entire legs below the knees, as well as the insides of the ears and the muzzle, are dirty white. The outsides of the ears are black, like the rest of the superior surface, but dotted with the brown-red of the flanks: the periophthalmic region nearly naked and of an earthy red mixed with grey; round the *sinuses* the same: *irides* brown-red: horns and hoofs black: naked skin of the nose, the same.

“In the female, the black of the superior parts is less full than in the male and sometimes mixed with grey. In her, too, and in the young male, the parts above described as white are sprinkled often with the red prevailing on the parts next to them: and, lastly, the belly is not immaculate white but has a black sprinkling.

“The female has four teats.

“The Nepalese call this animal the *Thár*. The chase of it is a favourite diversion with the Goroong tribes especially, who usually kill it with poisoned arrows. It is not speedy, as might be inferred from what has been said of its make. Its flesh is very coarse and bad: but there is plenty of it, and these mountaineers, who are apt to look to the quantity more than the quality of such flesh as a Hindoo Government deems licit food for them, prize the *Thár* very highly, and hunt him very eagerly.

“The following are the size and dimensions of a fine mature male.

	ft.	in.
Length of the body, from the setting on of the horns to the root of the tail .....	4	1 $\frac{1}{2}$
——— of the head .....	0	11 $\frac{1}{2}$
——— of the tail (flesh only).....	0	3 $\frac{1}{4}$
————— to the end of the hair.....	0	6 $\frac{1}{2}$
Height at the shoulder .....	3	1
Depth of the chest .....	1	3 $\frac{1}{2}$
Height of the fore-leg to the line of the chest .....	1	9 $\frac{1}{2}$
Utmost girth of the head .....	1	9
————— of the body.....	3	2
Length of the ears .....	0	7 $\frac{3}{4}$
——— of the horns (in a straight line).....	0	8
Basal diameter of ditto .....	0	1 $\frac{3}{4}$
Basal interval of ditto .....	0	0 $\frac{5}{8}$

Of Mr. Hodgson's account of the *Chiru Antelope*, *Antelope Hodgsonii*, Abel, a full abstract has already been published in the 'Proceedings,' Part I., p. 52. He has had opportunities of examining carefully three individuals. One of these, which he possessed alive, furnished materials for the description originally given. The second was a very old male, noticed at p. 54, in which the ruddy hue of the upper surface had merged almost into hoary grey on the neck, the back of the head, the ears, and the buttocks. In this individual the stripes extended down the whole of the legs as far as the hoofs. The third specimen, a young male or a female?, had the legs simi-

larly striped with the second; and its forehead and the fronts of its limbs were much less darkened than in either of the others.

It should be added that the fleshy tumour on the margin of the nostrils is covered with hair like the rest of the head; and that the suborbital *sinuses* appear, on closer examination, to be wanting.

In illustration of the history of the nomenclature of the species Dr. Wallich forwarded a note addressed to himself by the late Dr. Clarke Abel, in which that gentleman stated his intention of dedicating it to its discoverer, an intention which he subsequently carried into effect.

The skin of the *wild Dog* of Nepâl was compared by Col. Sykes with a specimen of the *Kolsun* of the Mahrattas, recently described by him in the 'Proceedings' (Part I., p. 100) under the name of *Canis Dukhunensis*. He stated his impression to be, that the animals are identical, differing only by the denser coat and more woolly feet of the Nepâl race, a difference readily accounted for by the greater cold of the elevated regions inhabited by it. He declined, however, pronouncing a decided opinion, which, he thought, could only be arrived at by more extensive comparison and by a full acquaintance with the habits of the *wild Dog* of Nepâl.

Among the *Birds* contained in Mr. Hodgson's collection was exhibited a specimen of the *Hæmatornis undulatus*, a species described in the First Part of the 'Proceedings' of the Committee, p. 170, and figured in Mr. Gould's 'Century of Birds.' The specimen agreed accurately with that which had been previously exhibited to the Committee except in size; the present specimen being about one third larger. From this difference in size it was conjectured to be a female. Specimens were also in the collection of the *Myophonus Temminckii*, the difference between which species and the *Myophonus flavirostris (metallicus, Temm.)* had been pointed out in the same Part of the 'Proceedings', p. 171. The separation of the two species was thus further justified by the accurate accordance of several specimens of the Nepâlèse bird, in those characters which separated them from the Archipelagan species. A specimen of *Zoothera monticola* was also included in the exhibition, which deviated in no respect from that already described in the 'Proceedings', p. 172, and figured by Mr. Gould.

An interesting species of *Hornbill*, which had been described by Mr. Hodgson in the 'Asiatic Researches', vol. xvii. p. 178, but which had never before been seen in Europe, accompanied the former birds. Its characters are as follows:

BUCEROS NEPÂLENSIS, Hodgson. *Buc. ater, dorso alisque viridissplendentibus; remigibus tertiâ ad septimam inclusam, rectricibusque ad apices albis; rostro albo, mandibulâ superiori strigis sex latis atris obliquè positis notatâ.*

*Jun. capite, collo, abdomineque rufo-brunneis; rostro albo haud notato.*

*Longitudo corporis, 39 unc.; rostri, 7¾; alæ a carpo ad apicem remigis 5tæ, 15¾; tarsi, 2¾; caudæ, 17¾.*

Among some drawings of this species which accompanied the collection, one was observed in which the tail was elevated in the same manner, although not to the same extent, as in the *Toucans* of South America when at rest. Mr. Vigors called the attention of the Committee to this peculiarity in the *Toucans*, which he had ascertained from a living bird in his own collection, and which he described in the 'Zoological Journal', vol. ii. p. 480, pl. xv. And he dwelt on the additional proof thus afforded of affinity between these two families of the Old and New World, which are equally allied by the most important characters of their structure.

A male and female *Pheasant* were also exhibited from the collection which appeared to be the species described by Dr. Latham under the name of *Phasianus leucomelanos*, (Ind. Orn. ii. 633.) Mr. Vigors pointed out the difference between this species and the *Phasianus albo-cristatus*, which he had described in the First Part of the 'Proceedings', p. 9. This difference consisted in the deep black colour of the crest in the *Phas. leucomelanos*; in the lanceolated feathers of the under part of the body extending no further than the breast; and in the plumes of the lower part of the back being doubly fasciated, by a slender violet-black band in the first instance near the apex, and secondly by a slender white apical band. In the *Phas. albo-cristatus*, on the contrary, the crest is white with a somewhat dusky base; the lanceolated feathers on the under body extend over the abdomen; and the feathers on the lower part of the back are fasciated with one rather broad white apical band, without any vestige of the black violet markings observed in the other species. Mr. Vigors added that these two species, together with the *Phas. lineatus* of Dr. Latham, exhibited to the Committee on the 11th Jan. of last year, and described in the 'Proceedings' of that date, p. 24, as well as the *fire-backed Pheasant*, *Phasianus ignitus*, Latl., formed a group among the *Pheasants*, which appeared intermediate between the typical birds of that family and the genus *Gallus*, or *Jungle Fowl*. This group, distinguished by their crests, and by the tail partaking equally of the elevated character of that of the *Jungle Fowl*, and the recumbent character of that of the *Pheasant*, had been set apart by MM. Temminck and Cuvier under the name of *Houppiferes*, and by the former naturalist under the scientific name of *Euplocamus*.

The only species apparently undescribed in the collection was the following *Pigeon*, which Mr. Vigors expressed his pleasure in having it in his power to dedicate to the enterprising and scientific discoverer.

COLUMBA HODGSONII. Col. capite colloque pallidè, dorso crissoque intensius vinaceo-griseis; alis, regione interscapulari, abdomineque vinaceo-brunneis, hoc albo variegato; scapularibus albo guttatis; nuchâ vinaceo-brunneo notatâ; remigibus reatricibusque, his intensius, fuscis; gulâ albescenti-griseâ; pedibus saturatè cæruleis, unguibus flavis.

Longitudo corporis, 15 unc.



A specimen was exhibited of the *Birgus Latro*, Leach, which had recently been presented to the Society by Mr. J. P. Vaughan; and Mr. Owen referred to the curious statement made by Herbst, that this *Crab* climbs trees for the purpose of stealing cocoa-nuts; a statement partially confirmed by the fact recorded by MM. Quoy and Gaimard, that individuals of this species were fed by them for many months on cocoa-nuts alone. A more ample confirmation, he remarked, was furnished by some observations communicated to him by Mr. Cuming, whose fine collection of *Crustacea* contained several specimens obtained in the islands of the South Pacific. "They climb," Mr. Cuming states, "a species of Palm, (*Pandanus odoratissimus*), and eat a small kind of cocoa-nut that grows thereon. They live at the roots of trees, and not in holes in the rocks; and are a favourite food of the natives."

Mr. Owen subsequently reported the morbid appearances observed on the *post mortem* examination of the *Mandrill*, *Cynocephalus Maimon*, which recently died at the Society's Gardens.

The animal was convulsed at different periods before death, and was in the act of acquiring its permanent teeth,—a critical period to the *Quadrumana*, and especially to those in which the laniary teeth are large. The following was the state of its dentition. In the upper jaw, the four permanent *incisors* were acquired, or had passed through the gum; the point of the left laniary had also appeared, but the right was still concealed, though it had protruded from the jaw: both the temporary *incisors* and laniaries in this jaw had been shed. In the lower jaw, the four permanent *incisors* had also been acquired, and close to them were the temporary laniaries, not yet shed: half an inch behind these were the permanent laniaries about one third advanced through the gums, and their points worn or broken.

There existed no inflammation or disease in the brain or its membranes.

In the *abdomen* there was a slight inflammation or congestion in the first part of the small intestines. The mesenteric glands were not diseased, but a small scrofulous cyst was found in the *omentum*.

In the chest, the right lung was healthy; the left gorged with bloody *serum*, partially hepatized, and having a large scrofulous *vomica* at the lower part. The whole of this lung was firmly adherent to the *parietes* of the chest, except at the upper part; where there was more recently effused lymph. The heart and *pericardium* were firmly adherent, and there was much recently effused lymph about the great vessels. Near the base of the right ventricle and on its external surface there was a small ulcer. The kidneys were not diseased, but appeared to be unusually loaded with blood, their tubular part being of a dark venous hue. It seemed therefore probable, that on account of the impeded respiration and the checked cutaneous exhalation the actions of these glands had increased. The bladder was much distended.

February 14, 1832.

Dr. Such in the Chair.

The *Monkey* described at p. 105 of the First Part of the 'Proceedings' of the Committee, under the name of *Semuopithecus? albogularis*, having died, it was placed upon the table; and Colonel Sykes remarked that notwithstanding its large facial angle, nearly equal incisors, very small callosities, mild disposition, and gravity of manner, which had induced him to class it provisionally with the *Semuopithecus*, its more essential anatomical characters were those of the genus *Cercopithecus*. The posterior molar tooth of the lower jaw has only the four tubercles characteristic of that genus, without any prolongation backwards; and the cheek-pouches, although not very large, are distinct and capable of moderate dilatation. For these reasons, and to avoid the inconvenience resulting from the too great multiplication of genera, he preferred considering it as a species of *Cercopithecus*. The peculiarities above noticed indicate, however, a remarkable transition between the African and Indian groups of *Monkeys* in an animal believed to have been brought from an intermediate locality, the island of Madagascar. To the *Lemurine* groups hitherto supposed to be the exclusive quadrumanous inhabitants of that island, it approaches in the great development of its canines, which form fangs of a large size, and have their posterior edge acutely angular, and as sharp as that of a knife.

Its admeasurements are as follows:

	ft.	in.
Length of the head and body taken in a straight line	1	9 $\frac{1}{2}$
——— the tail .....	2	7 $\frac{1}{2}$
——— the muzzle anterior to the eyes.....	0	1 $\frac{3}{4}$
——— the fore-leg from the axilla to the end of the longest finger.....	1	2
——— the hind-leg to ditto .....	1	6
——— the thumb of the anterior hands in its free portion .....	0	0 $\frac{3}{4}$
Diameter of callosities when exposed by the separa- tion of the hair.....	0	1 $\frac{1}{2}$

The general appearance of the animal is massive and thick-set, and the limbs, especially the anterior, are strong and muscular. On the body the hairs are close-set and measure generally from 2 to 3 inches in length; they are for the most part soft and adpressed; on the fore-limbs they are more rigid, and become gradually shorter as they approach the hands.

Mr. Owen read the following notes on the Anatomy of the *Cercopithecus albogularis*, Sykes.

“The anatomical examination of this new species did not bring to light any remarkable deviations from the ordinary structure of the *Cercopitheci*; in which, as in the *Baboons*, the most interesting circumstances are those which indicate the departure from the human type and the approximation to the carnivorous genera, e. g. the genus *Canis*. Among these may be noticed the extension of the superior or lesser *cornua* of the *os hyoides*, and the muscles which connect them to the greater; the projecting ridge on the thyroid cartilage for the attachment of the *thyreo-hyoidei*; the bone developed at the extremity of the *penis*; the uniform character of the lining membrane of the intestinal canal; the simple *cæcum*, and its loose mode of attachment to the abdominal *parietes*; the order of origin of the large arteries from the aortic arch; the great extent of the inferior *cava* in the *thorax*; the additional lobe to the right lung; the additional lobe to the liver; and the simple composition of the kidneys. It is less necessary to notice the remarkable development of the *laniarii* in some of these species, as this circumstance, together with their projecting orbits and receding forehead, has procured for them from the most remote periods of natural history an appellation characteristic of the relation above alluded to.

“The abdominal *viscera* of this *Monkey* were enveloped in a large *omentum*, extending to the *pubes*, and, as it were, tucked in at the iliac and lumbar regions; it was streaked with fat of a bright yellow colour; the line of adhesion was to the stomach and transverse *colon*, to the ascending portion of the *colon*, and as low down as the *cæcum*. The stomach had nothing of a sacculated appearance, as found by Dr. Otto in a species of *Semnopithecus*?, but the left blind extremity was more considerable than in the *Macaci* and *Cynocephali*, the *œsophagus* entering at an equal distance from the two extremities. I have observed the same circumstance in *Cercopithecus fuliginosus*. The pyloric end lay immediately below the gall-bladder, and had in consequence a deep circumscribed yellow stain. The *duodenum* has the same short course as in the *Mandrill*, and becomes a loose intestine as soon as it has crossed the spine. The *cæcum* and ascending arch of the *colon* have an entire investment of *peritoneum*, and are consequently more loosely attached to the *parietes* of the *abdomen* than in the human subject. At the commencement of the transverse arch the *colon* is connected with the *duodenum*; it terminates in a considerable sigmoid flexion on the left side of the *abdomen*. The *cæcum* is puckered up by four longitudinal muscular bands, of which one terminates at the entry of the *ilium*, and the other three are continued on to the *colon*. The interior of the *jejunum* presented a singular appearance from numerous minute black spots, not unlike the skin of a *Sepia*; when viewed through the microscope they were found to be situated at the extremities of the *villi*, which are very minute and disposed in delicate zig-zag lines; the black points disappeared on sponging the surface three or four times. In the *omentum* was found, what rarely occurs in *Quadrumana*, viz., a cyst containing the *Cysticercus tenuicollis* of Rudolphi; differing only in its smaller size from those of the sheep and other ruminants.

“ The liver was composed of four lobes ; the cystic lobe, or that containing the gall-bladder, being the third from the right. The gall-bladder was of an elongated form, and the cystic duct tortuous at the commencement, as in most *Quadrumana*. The spleen was 2 inches long and broadest at the lower part.

“ The viscera of the chest were as in the *Mandrill*.

“ The *larynx* was as usual in *Cercopithec*i and *Macac*i, viz with two wide lateral *sacculi*, and a middle pouch continued forwards between the *os hyoides* and thyroid cartilage, and extending about 3 inches under the skin of the neck. The aperture by which it communicated with the *larynx* was large enough to admit the little finger. The *epiglottis* was of a rhomboid form, with two small lateral processes, and an *apex* slightly notched.

“ The tongue was characterized by three fossulate *papillæ* placed in a triangle, the *apex* towards the *epiglottis*. In *Macac*i I have found four of these *papillæ* similarly disposed, the *apex* being formed by two placed close together.

“ No structural disorganization was met with in this dissection. Abundance of bright yellow-coloured fat was found in different parts of the body.”

A specimen was exhibited of a *Lemuridous* animal, recently presented to the Society by C. Telfair, Esq., Corr. Memb. Z. S. It was shown by Mr. Bennett to possess characters differing to so great an extent from those of the previously known genera of the family to which it belongs, as to require its separation from them as the type of a new group, to which he gave the name of

#### PROPITHECUS.

*Rostrum* mediocre.

*Scelides* antipedibus longiores.

*Index* abbreviatus.

*Cauda* longa, pilosa.

*Dentes primores* 4 : superiores coronidem versus lateraliter anticè expansi, ideoque ad coronidem approximati, subseriati; inferiores approximati, proclives, externo utrinque majore : *laniarii*, †, † : *molares* — ; superiorum priores 2 cuspidati, 3tius elongatus, externè 2-tuberculatus, 4tus præcedenti similis — ; inferiorum primus 1-cuspidatus, 2dus 3tiusque pluri-tuberculati — .

PROPITHECUS DIADEMA. *Prop. dorso cinerascenti ; artubus, prymnâ, caudd, fasciâque frontali albis, illis fulvo tinctis ; vertice, nuchâ, manibusque nigris.*

*Hab.* Madagascar.

The face is nearly naked, with short blackish hairs about the lips, and equally short yellowish white hairs in front of the eyes. Above the eyes the long, silky, waved, and thickly set hairs which cover the body commence by a band of yellowish white crossing the front and passing beneath the ears to the throat. This is succeeded by black extending over the back of the head and neck ; but becoming



freely intermingled with white on the shoulders and sides, the white gradually increasing backwards so as to render the loins only slightly grizzled with black. At the root of the tail the colour is fulvous, which gradually disappears until the extreme half of the tail is white with a slight tinge of yellow. The outer side of the anterior limbs is at the upper part of the slaty grey of the sides, below which it is pale fulvous; the hands are black, with the exception of tufts of long fulvous hairs at the extremities of the thumb and fingers, extending beyond and covering the nails. The outer sides of the hinder limbs, after receiving a tinge of fulvous from the colour surrounding the root of the tail, are of a paler fulvous than the anterior limbs: this becomes much deeper on the hands, which are fulvous except on the fingers, where there is a very considerable intermixture of black, the terminal tufts, equally long with those of the anterior hands, being, as in them, fulvous. The under-surface is white throughout, with the exception of the hinder part of the throat, where it is of the same colour with the sides of the body.

The hairs are generally long, silky, waved, erect, and glossy. On the crupper they are shorter and more dense, offering a sort of woolly resistance. On the tail they have the general character of those of the body, but are considerably shorter.

On the anterior hands the thumb is slender; it is placed far back, and is extremely free; its length is  $1\frac{1}{4}$  inch, the extremity of its penultimate *phalanx* ranging slightly beyond the end of the metacarpal bone of the *index*. The *index* is  $1\frac{1}{4}$  inch in length; its extremity ranges with the middle of the penultimate *phalanx* of the second finger: the length of the second finger is 3 inches: that of the third finger is  $3\frac{1}{4}$ . The length of the *carpus* and *metacarpus* is 2 inches.

On the hinder hands the thumb is very strong, placed forwards and ranging with the fingers: it is 2 inches long: the *index* is  $2\frac{1}{2}$  inches, the pointed nail extending  $\frac{1}{2}$  an inch beyond: the length of the 2d finger is  $3\frac{1}{4}$ : of the *tarsus* and *metatarsus* 3 inches.

The length of the body and head, measured in a straight line, is 1 foot 9 inches; of the tail, 1 foot 5 inches. The anterior limbs, exclusive of the hands, measure  $7\frac{1}{2}$  inches in length from the body; the posterior,  $15\frac{1}{2}$ .

The muzzle is shorter than in the *Lemurs* generally; the distance from the anterior angle of the orbit to the tip of the nose ( $1\frac{1}{4}$  inch) being equal to that between the eyes.

The ears are concealed within the fur. They are of a rounded form. Their length is 1 inch; their breadth  $1\frac{1}{2}$ .

From *Lemur*, the genus to which it most nearly approaches, *Propithecus* is essentially distinguished by the number and form of its teeth, and especially by the form of the incisors of the upper jaw, which constitute apparently a regular series, a structure unknown in any other *Lemuridous* animal. This difference, striking as it is, is however more of an apparent than a real deviation from the type of the family, inasmuch as a tendency to dilate laterally towards their cutting edges is observed in the upper incisors of *Lemur*, and it is

only the extreme development of this dilatation that gives to the teeth of *Propithecus* a peculiarity of character rather resembling at first sight that of the *Monkeys* than the *Lemurs*. The number of the incisors of the lower jaw differs from that of *Lemur*, but occurs in another genus, *Indri*: and it may be remarked, that in *Propithecus*, as in *Indri*, the canine teeth of the lower jaw close behind those of the upper,—a remark which tends to invalidate an opinion expressed by M. Geoffroy-Saint-Hilaire, that the outer of the six incisors of the lower jaw ought rather to be regarded as canine teeth, the usual position of the lower canines when the mouth is closed being anterior to the upper. The number of the false molars in *Propithecus* is one less in each jaw than in *Lemur*, and they are less smooth and not so acutely triangular; the second in the upper jaw being in fact somewhat tuberculate on its outer edge, and forming, as it were, a transition from the false to the true molars between which it is placed. The posterior molars were not examined.

The external characters by which it is distinguished from *Lemur* are its shorter muzzle, terminated by more approximate nostrils, the upper margin of which appears to be only slightly lobulated: its rounded ears: the marked disproportion in length between its hinder and anterior extremities: the greater length of its hands, especially of the anterior: the shortness of its anterior thumb, which is also placed much further back: the marked abbreviation of the anterior *index*: the development and power of the hinder thumb, which is nearly an equal opponent to the whole of the fingers: and the comparative shortness of the hairs by which the tail is covered.

Mr. Bennett concluded by expressing his regret that no particulars respecting the habits of this interesting addition to our catalogues of *Mammalia* were known to him. He trusted, however, that the zealous correspondent by whom it was presented to the Society, and to whose liberality the Society is so deeply indebted, would at an early period obtain the requisite information, by inquiries in the district of Madagascar in which it is found, and where it is stated to be rare.

Colonel Sykes took occasion to add the *Viverra Rasse*, Horsf., to his Catalogue of the *Mammalia* of Dukhun, the two specimens exhibited to the Committee, which he had hitherto regarded as varieties of the *Viv. Indica*, Geoff., having been pronounced by Dr. Horsfield to be the *Viv. Indica* and *Viv. Rasse*. The *habitat* of the former is in the woods of the western Ghauts; the latter is found in the table land eastward of the Ghauts.

Dr. Horsfield furnished the following account of the differences between the two animals. In *Viv. Rasse* the colour is grey, inclining to tawny or dark fulvous; the form is lengthened and slender; the ears are short and suddenly rounded, having somewhat the appearance of being artificially clipped off; the dorsal lines are eight in number, broad and distinct; and the lateral lines obscure, interrupted and consisting of separate spots. In *Viv. Indica* the colour is light grey inclining to yellow; the form is lengthened and slen-

der, but with the character of length of body and neck existing in a greater degree than in *Viv. Rasse*; the ears are of moderate length and suberect; the dorsal lines are narrow, the superior eight continuous; and the lateral lines resemble those on the back, and are tolerably distinct and subcontinuous. Dr. Horsfield added, that not having been acquainted with the *Viv. Indica* at the time when he wrote the account of the *Viv. Rasse* in his 'Zoological Researches in Java,' he now found it necessary to modify the specific character of the latter, which he contrasted with that of *Viv. Indica* in the following terms:

**VIVERRA RASSE.** *Viv. griseo fulvescens; auriculis approximatis rotundatis subabbreviatis; dorso lineis longitudinalibus octo latis nigricantibus saturatis; lateribus utrinque lineis tribus interruptis obscuris; pedibus concoloribus fuscis; pilis corporis caudæque attenuatæ rigidiusculis.*

**VIVERRA INDICA.** *Viv. isabellino-grisea; auriculis erectis subelongatis; dorso lineis longitudinalibus octo angustis nigricantibus; lateribus utrinque lineis tribus subcontinuis.*

In illustration of the confusion prevailing between the two species, Dr. Horsfield referred to a note at p. 210 of M. Desmarest's 'Mammalogie', where an animal preserved in the Paris Museum under the name of *petite Civette de Java* (in all probability the *Viv. Rasse*) is suspected to be the young of *Viv. Indica*; and to Fischer's 'Synopsis Mammalium', where the name of *Viv. Indica* is accompanied by the characters of *Viv. Rasse*, as given in the 'Zoological Researches in Java', the two animals being combined. The same union of the two species occurs in M. Lesson's 'Manuel de Mammalogie'.

Mr. Owen subsequently read the following notes on a malformation of the beak of *Psittacus Erithacus*, L.

"This bird was stated to have a double beak; but the malformation consists essentially in the separation of some of the upper horny *laminæ* from the remainder of the superior mandible, leaving an interval of about 2 lines between the separated portions. The vertical diameter of the detached *laminæ* is about 2 lines, that of the remainder of the mandible at the widest part, 6 lines, which is less by 2 lines than in the natural state, and shows that the detached horn-like process is not to be considered a superaddition. This is also manifested by the form of the upper surface of the inferior portion, which, instead of being rounded and convex as in the natural state, presents a groove corresponding to the size of the detached process above. The latter, on the contrary, has a smooth convex upper surface such as the upper mandible usually presents. A further argument in favour of the above view of the subject is to be derived from the situation of the nostrils, which, supposing the two portions to belong to one mandible, is the same as in the ordinary beaks of this species; for they are placed exactly in the interval of the separated portions, and consequently about 2 lines from the upper margin of the mandible that would result from the union;

whereas if the inferior portion had represented a perfect mandible and the superior projecting process a horny excrescence, we ought to have had the nostrils situated about 2 lines lower than they actually are in the malformed specimen.

“The detached process extends nearly to the extremity of the upper mandible, but is turned a little to the right side. It appears neither to be hurtful nor inconvenient to the bird, which uses its beak in the ordinary way.

“As this process is not liable to have its growth checked by attrition, I inquired if it ever attained inordinate growth, so as to require cutting, but was told that it had never grown beyond its present size.

“The bird which exhibits this singular *lusus nature* is in the possession of Captain Owen, who brought it from Africa. Mrs. Owen, to whose politeness Mr. Vigors and myself are indebted for an examination of the bird, informed us that the original vendor, a negro, on being questioned, denied that any artificial means had been employed to produce the appearance. It was at that time a young bird, and is now six years old. It possesses the usual good temper and tractability of its species, which renders it such a general favourite among the negroes and so much in request in Europe.

“Although this malformation is of a simple kind, being rather *per situm mutatum*, than *per excessum*, yet there are not wanting instances of a complete and well-formed upper mandible being superadded and situated above the ordinary one, of which there is an example in the head of a *Vulture* preserved in the Museum of the Royal College of Surgeons.”

At the request of the Chairman, Mr. William Daniell, R.A., exhibited numerous drawings of *Antelopes* made by his brother from living animals in his different journeys in Africa. He added, that he was induced to bring them before the Committee by his desire to publish engravings of twenty of the species under the patronage of the Society; and briefly explained the terms on which he proposed to submit them to the public, commencing the work as soon as two hundred copies shall have been subscribed for. Mr. Daniell also exhibited drawings of the male and female *fire-backed Pheasant*, (*Phasianus ignitus*, Lath.), which had been made by his brother in the native place of these birds. The male was observed to possess two elongated middle tail feathers, of a white colour with a black tip, which had never been observed in the specimens received in this country, nor noticed in the descriptions of the species, except by Dr. Latham, who referred to these drawings of Mr. Daniell. The Committee considered this fact worthy of being recorded, in order to draw the attention of the naturalists of India to the circumstance.



February 28, 1832.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of numerous *Mollusca* and *Conchifera* hitherto undescribed, which form part of the collection made by Mr. H. Cuming during a voyage undertaken in 1827, 1828, 1829, and 1830, for the purpose of obtaining subjects in natural history on the western coast of South America, its adjacent islands, and many of those which form the principal Archipelago of the South Pacific Ocean. The specimens exhibited on the present occasion constituted the first portion of the collection, which extends in these classes to upwards of four hundred new species; the whole of which Mr. Cuming proposes to bring before the Committee from time to time, as the descriptions of them are completed. The intention of publishing coloured figures of all the new species was announced.

The new species brought, on this evening, under the notice of the Committee were accompanied by characters and descriptions of them by Mr. Broderip and Mr. G. B. Sowerby, of which the following is an abstract.

Genus CHITON.

\* Ligamento marginis granoso.

CHITON GOODALLII. *Chit. testá ovali, olivaceo-fuscá; valvis terminalibus subradiatim granulosis, internè striatis; cæteris concentricè lineatis, internè medio serratis, arcis lateralibus subradiatim granulosis; limbo marginali granoso, olivaceo, cæruleo-viridi vario: long. 5, lat. 3 poll.*

*Hab.* ad insulas Gallapagos. (James's Island.)

This fine species differs from *Chit. olivaceus* principally in the absence of longitudinal *striæ* on the central areas of the valves, the coarser texture of the grains which stud the border, and in the colour of those grains, which in *Chit. olivaceus* is a uniform shining black, while in the specimens of *Chit. Goodallii* that are not aged the grains are of an olive brown dappled or even almost transversely banded with cærulean green, going off towards the border in some individuals into a more dusky hue. Some of the specimens of a moderate size are beautifully marked on each side of the *carina* of the seven posterior valves with short, transverse, closely zigzagged lines of a light blue colour, about six in number.

The older individuals were found in exposed situations; the younger under stones and ledges of rock at low water.—W. J. B.

CHITON STOKESII. *Chit. testá ovatá, viridi-fuscá, intùs viridicæruleá; valvâ anticâ posticæque parte posticâ granoso-rugosis, intermediarum arcis lateralibus granoso-radiatis: long. 2½, lat. 1½ poll.*

[No. XVI.] ZOOL. SOC. PROCEEDINGS OF THE COMM. OF SCIENCE.

*Hab.* ad oras Americæ Meridionalis. (Port St. Elena, west coast of Columbia and Panama.)

In boldness of sculpture this species comes nearest to *Chit. subsulcatus*.

It was found on stones at low water.—W. J. B.

**CHITON SUBFUSCUS.** *Chit. testá ovali, subfusca, pallidiore variá, valvis terminalibus lineis subinterruptis concinnis radiatis; valvarum intermediarum areis lateralibus radiatim centralibus longitudinaliter subsulcatis; limbo granoso, granis externis majoribus: long.  $2\frac{5}{8}$ , lat.  $1\frac{5}{8}$  poll.*

*Hab.* ad littora Americæ Meridionalis. (Island of Chiloe.)

Var. *areâ intermediâ valvarum lævi, parte centrali solùm longitudinaliter subsulcatâ.*

In its form and general appearance this species resembles *Chit. Goodallii*. One specimen is of a dark rusty colour with a tinge of lead gray; another is very dark chestnut brown.

It was found under stones at low water.—G. B. S.

\*\* Ligamento marginis subgranoso, quasi velutino.

**CHITON LYELLII.** *Chit. testá oblongá, nigro, viridi, roseoque variá; dorso elevatiusculo; valvâ anticâ radiatim subgranosâ; areis lateralibus valvarum intermediarum radiatim obsolete granosis; limbo minutissimè subgranoso, quasi velutino: long.  $1\frac{1}{4}$ , lat.  $\frac{3}{8}$  poll.*

*Hab.* in Polynesiâ. (Pitcairn's Island.)

It was found in small round hollows formed by *Echini* in exposed situations at low water mark.—G. B. S.

\*\*\* Ligamento marginis velutino.

**CHITON LURIDUS.** *Chit. testá oblongá, elevatiusculá, cinereá; valvâ anticâ, areis lateralibus valvarum intermediarum et valvâ posticâ scabroso-granulosis; areis centralibus valvarum intermediarum longitudinaliter sulcatis, interstitiis scabroso-granulosis: long.  $1\frac{2}{10}$ , lat.  $\frac{6}{10}$  poll.*

*Hab.* ad littora Stæ Elenæ.

This small species is remarkably scabrous all over; the scabrosity of the central area of the intermediate valves being arranged in longitudinal rows.

It was found on stones in five fathoms water.—G. B. S.

**CHITON LIMACIFORMIS.** *Chit. testá elongatá, limaciformi, variegatá; dorso rotundato; lateribus anterioribus valvarum intermediarum emarginatis; valvâ anticâ, areis lateralibus valvarum intermediarum et posticâ parte valvæ posticæ longitudinaliter granulosis; areis centralibus longitudinaliter sulcatis: long.  $1\frac{5}{10}$ , lat.  $\frac{6}{10}$  poll.*

*Hab.* ad oras Americæ Meridionalis. (Inner Lobos Island in Peru, and Guacomayo in Central America.)

The intermediate valves are nearly as long as they are wide, are deeply notched on each side in front, and when viewed on the under side appear much contracted: the lateral *areæ* do not meet in the centre of these valves.—G. B. S.

## \*\*\*\* Ligamento marginis coriaceo.

**CHITON BLAINVILLII.** *Chit. testá subrotundá, valvá anticá obscurè radiatá, posticá minimá, abruptá, cæteris concentricè lineatis, roseá, albo, fusco, viridique variá, internè albidá; limbo auran-tio-rubro posticè valdè angusto, anticè enormiter producto, sub-rotundo, processibus coriaceis brevibus hinc et hinc (præcipuè ad marginem anticum) lacinoso: long. 2, lat.  $1\frac{1}{2}$  poll.*

*Hab.* ad oras Peruvianas. (Inner Lobos Island.)

The enormous production of the anterior part of the border gives to this species a considerable resemblance to a waterman's cap, or to an English coal-heaver's hat.

Although sought for with great perseverance by Mr. Cuming, only a few specimens adhering to a stone were obtained while dredging in seventeen fathoms water.—W. J. B.

**CHITON ELENENSIS.** *Chit. testá oblongá, pallidá; dorso rotun-dato; valvá anticá radiatim sulcatá; areis lateralibus valvarum intermediarum turgidis, unisulcatis; valvá posticá retusá, posticè radiatim sulcatá; areis centralibus valvarum intermediarum irre-gulariter sulcato-scabrosis; margine lævi: long.  $\frac{6}{10}$ , lat.  $\frac{3}{10}$  poll.*

*Hab.* ad portum Stæ Elenæ et Panamæ.

This is the *Chiton Janeirensis*, var. ? Gray. It is unquestionably a distinct species, as Mr. Gray hints it may be, from his *Chit. Janeirensis*.

Found under stones at low water.—G. B. S.

**CHITON SWAINSONI.** *Chit. testá oblongo-ovali, dorso elevatius-culo, castaneá, albido-lineatá; valvis rotundatis; valvá anticá, areá posticá valvæ posticæ et areis lateralibus valvarum inter-mediarum leviter radiato-granulosis; areis medianis valvarum intermediarum longitudinaliter sulcatis: long.  $1\frac{1}{3}$ , lat. 1 poll.*

*Hab.* ad oras Peruvianas. (Iquiqui and Callao.)

This species resembles in colouring *Chit. lineolatus*, Frembl, but differs materially in its sculpture.

It was found on *Mytili* and *Pectines* in nine fathoms water.—G. B. S.

**CHITON CRENULATUS.** *Chit. testá oblongá, albido-roseá, lineis nigro-viridibus subconcentricis variá; valvá anticá subgranoso-radiatá, posticá retusá, cæteris granoso-subconcentricè lineatis, medio externè carinatis, internè nigro-rubris; areis lateralibus granoso-biradiatis: long.  $1\frac{7}{10}$ , lat. 1 poll.*

*Hab.* ad oras Americæ Meridionalis. (Panama.)

Found under stones below low water mark.—W. J. B.

## \*\*\*\*\* Ligamento marginis setoso.

**CHITON SETOSUS.** *Chit. testá oblongo-ovali, cinerco-virescente, scabrosi; valvá anticá, areis lateralibus valvarum intermediarum et valvá posticá radiatim sulcatis; setis marginis breviusculis, con-fertis: long.  $1\frac{3}{10}$ , lat.  $\frac{6}{10}$  poll.*

*Hab.* ad oras Americæ Centralis. (Guacomayo.)

This species is very distinct from *Chit. setiger*, King, (Zool. Journ. vol. v. p. 338,) which it in some degree resembles. The bristles around the edge are much shorter, thicker, and more closely set.

It was found in exposed situations.—G. B. S.

CHITON FREMBLEII. *Chit. testâ oblongâ, complanatâ, olivaceo-fuscâ, lineis albedo-viridibus variâ; valvæ anticæ radiis elevatis subgranosis; intermediarum marginibus angulosis, arcis lateralibus biradiatis, radiis subgranosis, interstitiis longitudinaliter subsulcatis; limbo setis brevibus frequentibus obsito: long.  $1\frac{1}{4}$ , lat. 1 poll.*

*Hab.* in Sinu Valparaiso.

This species differs from *Chit. setiger*, King, in being much flatter, in the more angular margins of its intermediate valves, and in its more numerous and much shorter bristles.

It was found only on one exposed rock covered by a small species of *Fucus*.—W. J. B.

\*\*\*\*\* Ligamento marginis piloso.

CHITON SCABRICULUS. *Chit. testâ ovali, planiusculâ, cinereâ, albedo-variegatâ; valvâ anticâ, arcis lateralibus valvarum intermediarum et parte posticâ valvæ posticæ radiatim scabro-lineatis; valvis intermediis et parte anticâ valvæ posticæ longitudinaliter sulcatis; limbo piloso, cinereo, rufo-articulato: long.  $1\frac{1}{3}$ , lat.  $\frac{7}{8}$  poll.*

*Hab.* ad littora Americæ Centralis. (Guacomayo and Puerto Portrero.)

Found under stones.—G. B. S.

\*\*\*\*\* Ligamento marginis fasciculato-piloso.

CHITON RETUSUS. *Chit. testâ oblongâ, posticè retusâ, pallescente; valvâ anticâ, arcis lateralibus valvarum intermediarum et valvæ posticæ areâ posticâ turgidis, radiato-sulcatis; arcis centralibus valvarum intermediarum et areâ anticâ valvæ posticæ sulcato-asperis; ligamento marginis fasciculis pilorum minimis plurimis: long.  $1\frac{1}{10}$ , lat.  $\frac{2}{10}$  poll.*

*Hab.* ad oras Americæ Centralis. (Guacomayo and Puerto Portrero.)—G. B. S.

#### Genus PLACUNANOMIA.

*Testa* adhærens, subæquivalvis, irregularis, complanata, marginem versus plicata, internè vitrea. *Cardo* internus, dentibus duobus elongatis, crassis, subcurvis, divaricatis, basi convergentibus in valvâ inferiore, sulcis duobus ligamentiferis in superiore. *Valva inferior* cardinem versus superficialiter irregulariter externè fissurata, organo adhæSIONIS subosseo inter testæ laminas inserto et externè fissuram implente. *Impressio muscularis* in utrâque valvâ subcentralis. In valvâ superiore organi adhæSIONIS impressio super-addita.

This interesting genus partakes of the characters of the genera *Ostrea*, *Plicatula*, *Placuna*, and *Anomia*. It may be regarded as the connecting link between the two latter. With an arrangement of the hinge approaching very nearly to that of *Placuna*, it has the distinguishing organization of *Anomia*, while the external appearance of the shell, especially if viewed *in situ*, bears the strongest resemblance to a *Plicatula* or some of the plicated *Oysters*. The organ of adhesion, which in its bony character (for it is more bony



than shelly) resembles that of *Anomia*, does not perforate the lower valve directly, but is inserted between the *laminæ* of the internal surface of the lower valve above the muscular impression and below the hinge, and passes out into an external irregular somewhat longitudinal superficial fissure or *cicatrix*, which is narrowest at the hinge margin, and which it entirely fills to a level with the surrounding surface of the shell.

**PLACUNANOMIA CUMINGII.** *Plac. testá subrotundatá, obscurè argenteo-albidá, complanatá; margine plicato, plicis maximis: long.  $2\frac{1}{2}$ , lat.  $\frac{7}{10}$ ; alt.  $2\frac{3}{4}$  poll.*

*Hab. ad oras Americæ Centralis. (Gulf of Dulce, Province of Costa Rico.)*

Dredged from a muddy bottom, at a depth of eleven fathoms, attached to dead bivalve shells and dead coral.—W. J. B.

#### Genus DENTALIUM.

**DENTALIUM SPLENDIDUM.** *Dent. testá tenui, politá, basi carnéa, apice majori lacteá; aperturá posticá fissuris duabus, alterá dorsali, alterá ventrali: long.  $1\frac{8}{10}$ , lat.  $\frac{3}{10}$  poll.*

*Hab. ad oras Americæ Meridionalis. (Xipixapi, West Columbia.)*

Dredged in from ten to sixteen fathoms water, on a sandy muddy bottom.—G. B. S.

**DENTALIUM TESSERAGONUM.** *Dent. testá tenui, lacteá, lævi, primùm tetragoná, ob angulos evanescentes dein cylindricá; lineis incrementi tenuissimis annulos subhyalinos efformantibus: long.  $\frac{8}{10}$ , lat.  $\frac{1}{10}$  poll.*

*Hab. ad oras Americæ Centralis. (Gulf of Nocoioy and Puerto Portrero; also Xipixapi.)*

Var. angulis indistinctis; lineis incrementi annulos efformantibus. Obtained in the same manner as the preceding species.—G. B. S.

**DENTALIUM QUADRANGULARE.** *Dent. testá parvulá, albá, quadrangulari, angulis acutiusculis, interstitiis striatis; aperturá tetragoná: long.  $\frac{8}{10}$ , lat.  $\frac{3}{10}$  poll.*

*Hab. ad oras Americæ Meridionalis. (Xipixapi.)*

The colour of this shell is variable, being either milk-white, yellowish, or reddish; the angles are less acute at the larger end; and at the smaller end there is sometimes formed a tubular appendage.—G. B. S.

**DENTALIUM PERPUSILLUM.** *Dent. testá minimá, tenui, angustá, curvâ, politá, albá; apice acuto; aperturá coarctatá, obliquâ: long.  $\frac{3}{10}$ , lat.  $\frac{1}{10}$  poll.*

*Hab. ad oras Americæ Meridionalis. (Puerto Salango, West Columbia.)*

This is related to *Dent. Gadus*, but is much more slender, and the aperture is obliquely truncated from the dorsal to the ventral margin.—G. B. S.

#### Genus HELIX.

**HELIX MONILE.** *Hel. testá globosá, turgido-planá, translucidá, corneá, supernè maculis strigisque angulatis moniliformibus ornata; spirâ excavatâ; umbilico magno: long.  $\frac{1}{10}$ , lat. 1 poll.*

*Hab.* in Columbiâ. (Salango.)

This pretty species belongs to that group of *Helices* which so much resemble *Planorbis*.—W. J. B.

#### Genus CAROCOLLA.

**CAROCOLLA GLOBOSA.** *Car. testâ orbiculatâ, subcastaneâ, infrâ turgidâ, anfractu basali subangulato, scabriusculo; labro unidentato, reflexo, albo, dente magno; aperturâ fusco-castaneâ, umbilico mediocri: long.  $\frac{7}{8}$ , lat.  $2\frac{1}{8}$  poll.*

*Hab.* in sylvis Insulæ Tumaco, Columbiæ Occidentalis.

An obscure band runs round the angle of the basal whorl. Exposure to the weather causes the chestnut colour of the shell to acquire somewhat of a blueish cast.—W. J. B.

**CAROCOLLA QUADRIDENTATA.** *Car. testâ orbiculatâ, fuscâ, anfractu basali turgido, angulato, scabro; labro subreflexo, albo, intus tridentato; aperturâ fuscâ, dente albo falcato armatâ; umbilico magno: long.  $\frac{7}{8}$ , lat.  $\frac{5}{8}$  poll.*

*Hab.* in sylvis Americæ Centralis. (Woods near the Gulf of Dulce.)

This species approaches nearly to *Car. Labyrinthus*: the white elevated tridentated lip is continued round the aperture: the single white falcated tooth is not attached to the lip, but rises within it from the lower surface of the basal whorl.—W. J. B.

#### Genus BULINUS.

\* Labio externo tenui, acuto.

**BULINUS BRODERIPII.** *Bul. testâ ovato-pyramidali, tenui, albicante, nigro fulvoque elegantissimè maculatâ et variegatâ; anfractibus quinque, rapidè crescentibus, paullulùm ventricosis; suturâ subconfluenti; superficie granulis minimis, longitudinaliter seriatim dispositis: long.  $1\frac{1}{8}$ , lat.  $1\frac{1}{8}$  poll.*

*Hab.* in fissuris rupium prope Copiapo Chilensium.

Var. testâ nanâ, albicante-rosaceâ, læviore, maculis nigris majoribus et seriatim dispositis.

*Hab.* in fissuris rupium prope Iquiqui, in Peruviâ.

The dwarf variety was found at an elevation of 2500 feet above the level of the sea.—G. B. S.

**BULINUS COTURNIX.** *Bul. testâ globoso-pyramidali, anfractibus quatuor ad quinque, ventricosis, albicantibus, fusco maculatis et variegatis; suturâ distinctâ; superficie tenuissimè transversim striatâ; umbilico parvo: long.  $1\frac{1}{4}$ , lat.  $\frac{7}{8}$  poll.*

*Hab.* sub lapides in aridis apud Huasco Chilensium.

From the preceding species the present is easily distinguished by its more globular form and the possession of an *umbilicus*.—G. B. S.

**BULINUS COQUIMBENSIS.** *Bul. testâ levi, ovato-fusiformi, fragili, subdiaphanâ, albido-fuscâ, maculis strigisque nigro-fuscis sparsâ; anfractibus sex, longitudinaliter striatis, ultimo maximo; labro acuto: long.  $1\frac{2}{10}$ , lat.  $\frac{1}{10}$  poll.*

*Hab.* ad Coquimbo in montibus.

The body whorl is more than twice as long as all the rest together.—W. J. B.

**BULINUS GRANULOSUS.** *Bul. testá ovato-pyramidalí, subpellucidá, fuscá, strigis fasciisque interruptis castaneo-nigris variá; anfractibus sex granulosis; labro acuto: long.  $1\frac{7}{10}$ , lat.  $\frac{3}{10}$  poll.*

*Hab.* subterraneus ad Valparaiso et in montibus Conceptionis.—W. J. B.

**BULINUS CACTIVORUS.** *Bul. testá fusiformi-pyramidalí, albidá, subpellucidá, opalescente; anfractibus sex, subventricosis, longitudinaliter creberrimè elevato-striatis; spiræ apice subnigro: long.  $\frac{7}{8}$ , lat.  $\frac{2}{8}$  poll.*

*Hab.* ad montem Christe in Columbiâ.—W. J. B.

**BULINUS NITIDUS.** *Bul. testá fusiformi, subpellucidá, nitidè albidá, strigis frequentibus longitudinalibus castaneo-fuscis variá; anfractibus sex, longitudinaliter striatis; apice subnigro; labro acuto: long.  $1\frac{1}{2}$ , lat.  $\frac{2}{3}$  poll.*

*Hab.* in Peruviâ. (Tumbez.)

This species has somewhat of the opalescent character of the preceding. In some of the old specimens there is a small blunt tooth on the inner surface of the body whorl within the aperture and just above the *columella*; but this is by no means a constant character.—W. J. B.

**BULINUS TRANSLUCENS.** *Bul. testá oblongo-pyramidalí, levissimè transversim striatá, pallidè flavá, valdè pellucidá; anfractibus quinque, subventricosis: long.  $\frac{7}{8}$ , lat.  $\frac{3}{8}$  poll.*

*Hab.* in Americâ Meridionali, arboribus adhærens. (King's and Saboga Islands, Bay of Panama.)

This elegant *Bulinus*, when in fine preservation, is so translucent that the internal pillar and structure of the shell may be plainly viewed through its glassy surface. Like many other transparent shells, this species, when it has been long weathered or dead, becomes of a white hue and much more opaque.—W. J. B.

**BULINUS GUTTATUS.** *Bul. testá fusiformi, pellucidè fuscá, guttis lineisque longitudinalibus albis variá; anfractibus sex; apice papillari et quasi elephantino: long.  $\frac{7}{8}$ , lat.  $\frac{3}{8}$  poll.*

*Hab.* in Peruviâ. (Cobija or Puerto De la Mar.)

The termination of the spire in this pretty and transparent species is somewhat abrupt, and the ivory-looking apex is almost as papillary, and appears almost as opaque, as that of a *Turbinella*.—W. J. B.

**BULINUS VITTATUS.** *Bul. testá pyramidalí, albidá, subdiaphaná, vittis latis fuscis circumdatá, anfractibus septem, turgidis, longitudinaliter levissimè striatis; labro acuto; umbilico mediocri; aperiturá carneá: long.  $1\frac{1}{10}$ , lat.  $\frac{7}{10}$  poll.*

*Hab.* in Peruviâ. (Ilo.)—W. J. B.

**BULINUS SCALARIFORMIS.** *Bul. testá pyramidalí, subfuscá, anfractibus quinque, subturgidis, creberrimè longitudinaliter costatis; labro acuto; umbilico magno: long.  $\frac{5}{10}$ , lat.  $\frac{3}{10}$  poll.*

*Hab.* in Peruviâ. (Ancon.)

Var. testâ fuscá, fasciis et lineis transversis albis.—W. J. B.

## Genus PARTULA.

**PARTULA HYALINA.** *Part. testá oblongá, hyalind, anfractibus sex, longitudinaliter levissimè striatis et transversim minutissimè creberrimèque lineatis; labro albo: long.  $\frac{1}{10}$ , lat.  $\frac{3}{10}$  poll.*

*Hab.* in Polynesiâ. (Oheataroa.)

The sculpture of this elegant species is most minutely delicate.—W. J. B.

## Genus ACHATINA.

**ACHATINA DACTYLUS.** *Ach. testá fusiformi, subpellucidá, flavescente, strigis rubro-castaneis longitudinalibus raris; anfractibus septem, striis longitudinalibus minutissimè crenulatis crebris, et suturam versus crenulatam lineis circiter sex transversis: long.  $2\frac{2}{10}$ , lat.  $\frac{7}{10}$  poll.*

*Hab.* in Insulâ Tumaco.

The body whorl is large and long, and the upper whorls decrease rapidly. The sculpture, especially when viewed through a microscope, is most elaborate.—W. J. B.

## Genus CYCLOSTOMA.

**CYCLOSTOMA CUMINGII.** *Cycl. testá orbiculari, subdepressá, albicante, epidermide fuscá; spirá elevatiusculá, carneá; anfractibus quinque vel sex, rotundatis, spiraliter sulcatis; suturá subdecurrente; aperturá ferè circulari, obliquá, albá, supernè subacuminatá, peritremate simplici subincrassato; umbilico maximo; operculo corneo, tenui, spirali, anfractibus plurimis, margine fimbriato: long.  $1\frac{1}{10}$ , lat. 2 poll.*

*Hab.* in Americâ Meridionali. (Island of Tumaco.)

The epidermis appears to be very deciduous, and is much thinner on the lower parts of the shell than on the upper, its remains forming a broad, dark, fuscous band just below the suture.—G. B. S.

**CYCLOSTOMA SUCCINEUM.** *Cycl. testá parvâ, orbiculato-pyramidalí, lævi, succineá; anfractibus quinque, rotundatis; suturá distinctá; aperturá rotundatá, margine basali interná angulatá; peritremate tenui, acuto; umbilico parvo, margine carinato: long.  $\frac{1}{10}$ , lat.  $\frac{3}{10}$  poll.*

*Hab.* in Polynesiâ. (Opara.)—G. B. S.

**CYCLOSTOMA MINUTISSIMUM.** *Cycl. testá globoso-pyramidalí, fulvâ, apice nigro; anfractibus tribus rotundatis; suturá profundá; aperturá circulari; peritremate acuto; umbilico nullo; operculo corneo.*

*Hab.* in Insulâ Pitcairni.

This is the smallest species of the genus.

## Genus FASCIOLARIA.

**FASCIOLARIA GRANOSA.** *Fasc. testá fusiformi, tuberculiferá, luteo-albidá, transversim striatá; anfractibus suturam versus subangulatis, duobus ultimis præcipuè tuberculiferis, tuberculis magnis, distantibus; columellá luteá triplicatá; aperturá transversim*



*striatá, albidá, marginem versus subluteá; labro denticulato; epidermide fusca, granosá: long.  $4\frac{1}{8}$ , lat.  $1\frac{7}{8}$  poll.*

*Hab.* ad Panamam.

The shell at first sight resembles *Pyruia Vespertilio*, but differs from it in many other points (such as the mamillary termination of the spire) besides the generic character of plaits on the pillar.

It was found on mud banks.—W. J. B.

#### Genus VOLUTA.

**VOLUTA CUMINGII.** *Vol. testá ovato-pyramidalí, albidá, cæruleo-spadiceo nebulosá, suturas versus nigro-spadiceo vittatá; spirá elongatá, apice acuto; anfractibus nodosis, ultimo subcostato, costis tumidis, fasciá subcentrali pallidá latá cincto; labro tumido subcontracto subreflexo, acuto, varice interno obliquo, submedio; columellá obscurè multiplicatá, plicis tribus ultimis maximis: long.  $1\frac{1}{8}$ , lat.  $\frac{5}{8}$  poll.*

*Hab.* in Americá Centrali. (Gulf of Fonseca, province of San Salvador.)

This pretty species is one of the group which approaches so closely to the *Mitres*. In some, as in *Vol. lyriformis*, we have a general likeness; in others similitude of particular parts of the shell; and in *Vol. Cumingii* we have general similarity combined with the strictly acuminate spire of a *Mitra* joined to the arrangement of plaits on the pillar by which *Voluta* is distinguished from that genus.

A single specimen was dredged in nine fathoms water.—W. J. B.

A paper was read by Mr. Cox, in which he entered at some length into the consideration of atmospheric causes as influencing the health of exotic animals kept in confinement in this climate.

He commenced by reminding the Committee of the power possessed by man of supporting extreme vicissitudes of temperature even to the extent of from  $-40^{\circ}$  to  $270^{\circ}$  or  $280^{\circ}$  Fahr., and by observing that no other animal can bear such a range with impunity. Thus a *Leopard* has been killed by exposure to a degree of cold but little below  $32^{\circ}$ ; while on the other hand the *Esquimaux Dog* is incapable of bearing, without great inconvenience, the heat of our climate in summer.

The cause of the generation of heat in animals remains still to be ascertained. The chemical theory ingeniously propounded by Crawford is now perhaps generally regarded as unsatisfactory; and indeed the later experiments of Dulong seem almost conclusive of its inadequacy to explain the phænomena. The experiments of Mr. Brodie have fully proved that the nervous influence is necessary for the preservation of the animal temperature: and Dr. Wilson Philip, regarding the nervous influence as identical with galvanism, has shown that galvanism and electricity are both capable of sustaining for some time the temperature of a cup of blood. This, however, as Mr. Cox remarks, only proves that the stimulus employed by Dr. Philip will for a short time produce phænomena similar to vital action, but by no means

proves the identity of that stimulus with the one which forms so important a part of the animal economy; an observation further illustrated by the fact that a purely mechanical stimulus, such as the application of a needle, will excite muscular action after life has ceased. If moreover temperature, arterialization, digestion, &c., were all produced by electric agency, this would surely be manifested by delicate instruments; but no such manifestation is obtained. Still further, it is worthy of observation that in those animals (such as the *Gymnotus electricus* and the *Torpedos*) which are endowed with electric power, a peculiar apparatus exists for the development of such power. On the whole, indeed, it appears that modern physiologists have scarcely advanced in the explanation of the causes of animal temperature beyond that given by John Hunter, who says, "It is most probable that it arises from some other principle; a principle so connected with life, that it can, and does, act independently of sensation, circulation, and volition; and is that power which preserves and regulates the internal machine. This power of generating heat is in the highest perfection when the body is in health;" and the energy of the vital principle is, in fact, the scale by which we can estimate the power of the body to sustain its temperature.

There are many circumstances which modify the effects of temperature upon animals and render them more susceptible of a low temperature. Such are want of exercise, inappropriate food, impure atmosphere, exhaustion whether from fatigue or hunger, immature age, season, and the quality of the air as to humidity or dryness. These were severally considered.

The excitement produced by exercise, the activity imparted by it to the circulation, and the glow which it gives to the system, all tend to render an animal less susceptible to the effect of a low temperature. Dens therefore in which animals are kept should be of sufficient size to allow of the taking of free exercise. Its importance is strongly illustrated by the fact that in very cold or elevated situations cessation of motion is destruction, well known instances of which are the cases of Sir Joseph Banks and Dr. Solander, and of Dr. Richardson.

The quality of the food is of the greatest importance, and should be regulated as nearly as possible in accordance with the habits of the animals in a state of nature. This subject requires therefore extensive inquiry and observation. There is, however, one part of it which is deserving of particular notice as connected with climate. In the quality of his nourishment man is guided by the climate in which he lives. The Esquimaux adopts a food entirely animal. The Hindoo uses a diet solely vegetable, employing condiments only to counteract the flatulency which such food is likely to produce. The inhabitants of northern countries take, and without material injury, stimulating liquors;—the use of such beverages is borne very badly by the natives of India. In cold and elevated regions stimulating diet appears therefore to be indicated, and it seems consequently advisable to furnish such, including even spirits or fermented liquors, to tropical animals kept in our climate during the cold season.

Air vitiated by respiration is deprived of the requisite stimulus to

support the due arterialization of the blood; and hence animals confined in such air are in a state peculiarly liable to be affected by any great or unusual depression of temperature. It is probably on account of their breathing air much contaminated by carbonic acid gas that persons sleeping near limekilns are so frequently frost-bitten. In repositories for animals which are much frequented the air is vitiated by the respiration of the visitors also, who, moreover, impart a heat to the rooms which is indicated by the thermometer, but is not beneficial but noxious to the animals. The air should be continually renewed, and when its temperature is to be raised it should be heated, where practicable, by a furnace placed in a lower apartment previously to being admitted into the repository, from which ample exit should be allowed at the top: in this manner an effective ventilation on just and scientific principles would be established.

Exhaustion from fatigue is one of the causes which render persons ascending heights more susceptible to the impression of cold: exhaustion from hunger produces the same effect: Mr. Hunter has shown that an animal which had fasted for some time was more affected by cold than one that was well fed, the reduction of temperature in the latter being  $16^{\circ}$  and  $18^{\circ}$ , in the former  $18^{\circ}$  and  $21^{\circ}$ . The means of counteracting these effects in menageries are obvious; but it is particularly necessary to attend to them in the importation of tropical animals, so many of which perish in beating up Channel, the effect of the low temperature being increased by the exhaustion from the fatigue of the voyage. Hence in the Channel not only should cold be particularly guarded against, but additional food should be supplied.

Young animals are generally very susceptible of the effects of cold, as has been shown by the experiments of M. Edwards. Thus, young birds removed from the nest become quickly of the same temperature as the surrounding atmosphere. The young of those *Mammalia* which are born blind are equally obnoxious to cold, their blood being imperfectly arterialized, owing to the *foramen ovale* remaining open for some time; the young of the other *Mammalia* retain the temperature of the adult animal. This makes it very important that if any of the *feline* or similar races of animals breed in European menageries, their dens should be peculiarly warm: the probability of preserving them will also of course be considerably increased if the young are produced in summer, or even in spring.

Season, as has been shown by the experiments of M. Edwards, exercises a considerable influence on the susceptibility of animals for cold; a much greater degree being borne with impunity in winter than in summer. This is apparently analogous to what occurs in the vegetable kingdom: a tree which will bear in winter a temperature of  $-20^{\circ}$  without injury will be scathed as if by lightning, and perhaps die, if in summer it be exposed to  $32^{\circ}$  or  $30^{\circ}$ . Many animals, in captivity especially (the *Sylviadæ* as a familiar instance,) are as susceptible of cold as these trees; a draft of cold air or a frosty night will frequently produce on them effects from which they never recover. As this susceptibility is so considerably increased during summer, especial care should be

taken to guard against the vicissitudes which frequently occur at that season. Animals brought from warm climates to those which are colder suffer under the same evils as animals exposed in summer to a considerable reduction of temperature. Tropical animals should therefore on their first importation be placed in apartments of higher temperature, which may be gradually reduced to that usually maintained in the part of the menagerie appropriated to similar animals.

The state of the atmosphere as regards humidity and dryness is of the highest importance to health. A very humid atmosphere does not exist at a temperature much below  $40^{\circ}$ , for when there is any great degree of frost the moisture is precipitated; but a temperature of  $40^{\circ}$  when the air is saturated with damp is highly injurious, producing catarrhs and coughs, which are frequently cured by a sharp frost. Our insular situation may expose us especially to humidity, which has a bad effect, on vegetation at least, by intercepting light. The degree of luminousness in the atmosphere is probably of more importance in climate than is generally imagined. Between Havre de Grace and Portsmouth it is but eleven hours sail, yet there is evidently the difference of a complete climate in the productions of the soil and in animal life; the pomegranate and the vine growing in the former place with luxuriance and fertility, and many insects which are here scarce, occurring there in the utmost profusion. The cold and humid atmosphere prevalent during our winters, and commonly called raw cold, is highly prejudicial to animals; and its evil effects are so much the more rapidly produced, as by the deposition of the moisture on the covering of the animal, the wetted fur or wool (as occurred in an experiment made by John Hunter on the freezing of a *Dormouse*) is changed from the state of a bad to that of a good conductor of heat. During the continuance of such a state of atmosphere the apartments of the animals should be kept closed, and only so far opened as may be necessary for ventilation. Much of the humidity might be abstracted from the air by means of lime, or perhaps still more effectually, as suggested by Leslie, by dry vegetable mould.

Extreme dryness of the atmosphere combined with cold is equally prejudicial, as was proved by M. Edwards, with the combination of cold and moisture; the latter causing mischief by the degree of cold it produced, and the former by the increased transpiration which it excited from the mucous surfaces. During March and April especially this dry and cold state of the atmosphere prevails in England with winds from the N. and N.E.; and Mr. Daniell states that he has seen the dew point of his hygrometer at  $20^{\circ}$  to  $30^{\circ}$  below the temperature of the atmosphere, evidencing a degree of dryness scarcely surpassed by that of the Harmattan. This state of atmosphere is almost diametrically opposed to that of tropical climates generally; a remarkable instance of which is afforded by the observations of Captain Sabine in Africa, where the dew point was almost at full saturation. It must consequently, though highly injurious to all animals, be more particularly so to those brought from tropical regions. Its effect is to produce inflammation of the mucous surfaces,



croup, bronchitis, &c. ; and it is well worthy of consideration whether inflammatory affections of the respiratory organs arising from such a cause would not be materially benefited by saturating with moisture the air of the apartments inhabited. Evaporation should during its continuance be promoted in menageries, either by placing wet cloths over the pipes employed for heating them, or by means of a fountain, or by exposing in different parts of the rooms vessels containing water.

In the preceding observations the preservation of animals brought from tropical climates has been chiefly considered ; but the keeping of those which are obtained from the northern or more elevated regions is apparently even more difficult.

The *Rein-deer* and the *Chamois* scarcely ever continue to live during even a moderate period in our climate, the differences between which and that of the countries of extreme cold are worthy of especial consideration. One of these is the heaviness of our atmosphere, as compared with the highly rarefied state in which it exists in elevated regions ; a difference so great as to increase the pressure of the air on the human body to the extent of 5500 lbs. beyond that which it sustains at an elevation of 1200 toises. To obviate this, no suggestion can be advanced. Another marked distinction is the extreme humidity of England during the winter months, a state highly detrimental to life in beings adapted to a dry atmosphere ; for a frosty atmosphere is (as has been before remarked) necessarily a dry one, and at a temperature of  $-20^{\circ}$  it is absolutely dry. The effect on animals of so great a contrast may receive some illustration from the evils resulting from moisture to the plants of cold regions : *Auriculas* die unless the moisture is drained from the pots in which they are kept ; and the *Saxifraga oppositifolia*, and *Rubus arcticus*, plants which inhabit the extreme north, rot from the dampness of our atmosphere. Its effects upon arctic animals may, however, be guarded against by the precautions already suggested as adapted to preserve tropical animals from the influence of the raw cold of our climate.

The greater part of the animals of northern regions, excepting those which hibernate, migrate to more southern latitudes, where food is more abundant and the cold less severe. Those which remain are generally predaceous, and being reduced to the greatest necessity, are voracious in the extreme. It is therefore a question whether in our attempts to keep such animals they should not be placed on a very low diet. This is also indicated by the fact that animals of cold countries are less acted upon by cold than those of warmer climates ; they approach apparently somewhat to the state of the cold-blooded classes, and it is therefore probable that it would be improper to exhaust their irritability by stimulating them at a period when nature has provided that they should be in a state of subaction. Hibernation is the extreme of this state. It is a great resource established by nature to obviate the evils of low temperature and privation. In this condition the quadruped sinks to a state resembling that of a reptile, its temperature scarcely exceeding that of the immediately surrounding air, a state of existence which has been beautifully con-

trasted by M. Edwards with the summer condition of the same animal. Mr. Cox adverted particularly to the more remarkable phenomena of hibernation, which, he stated, were now undergoing the investigation of Dr. Marshall Hall, who was about to lay the result of his experiments on this subject before the Royal Society.

Mr. Cox then proceeded to recapitulate the practical remarks which had resulted from his previous observations, and which in the present abstract have been embodied with them. He afterwards entered into the consideration of temperature, and dwelt particularly on the importance of maintaining it at a sufficiently high degree in all collections of tropical animals. On the question as to the degree which might safely be regarded as sufficient, he remarked that if analogies drawn from the vegetable kingdom could be depended on, reference might be made to a temperature of from  $50^{\circ}$  to  $90^{\circ}$ , being that of the noble Palm-house of Messrs. Loddiges, in which those natives of tropical climates flourish admirably. But it is evident from experience that  $50^{\circ}$  will be sufficient to keep tropical animals alive in this climate, and a temperature of from  $50^{\circ}$  to  $55^{\circ}$  will preserve them in health and activity. To induce them to breed with us, that temperature will not be high enough, for an emasculating effect, as has been observed by Mr. Yarrell in the *Peccary* and other animals, is produced by a cold climate: the few instances in which some of the *Felis* tribe have been fruitful in this country, being only to be regarded as exceptions. To develop the organs of reproduction in plants, a higher degree of temperature than that suited for their mere preservation is required; this rule may be equally applicable to animals, and the temperature of repositories for those of tropical climates should therefore probably be allowed to alternate between  $55^{\circ}$  and  $70^{\circ}$ . Mr. Cox repeated his opinion that sufficient humidity should at the same time be provided.

Mr. Cox concluded by stating that he had long been of opinion that the best test for the proper state of the atmosphere in a menagerie is vegetation. If the plants of a tropical or warm latitude thrive, he conceives that the temperature and state of atmosphere (for it is not temperature alone which we have to regard, but the other qualities of the atmosphere also, moisture, elasticity, &c.) cannot be far removed from those required for animals of the same latitudes. He assumes that a perfect *Vivarium* should include within its area a conservatory containing plants, natives of countries of a character similar to that of the animals inclosed. No apprehension need, he thinks, be entertained of plants contaminating the air to any injurious degree, if proper ventilation were established, and abundance of fresh unrespired air were supplied: the contrary would in fact be frequently the case during the day-time, the experiments of Priestley having shown that the purity of air vitiated by the breathing of animals is restored by the growth of living and healthy vegetables freely exposed to the solar light.

March 13, 1832.

Richard Owen, Esq., in the Chair.

Mr. Gray described three new animals, brought from New Holland by Mr. Cunningham. Of these, one was a *Quadruped*, forming a new genus of the Order *Rodentia*; the two others *Reptiles* of the family of *Lizards*. The *quadruped* was characterized as follows:

PSEUDOMYS.

*Dentes primores*  $\frac{2}{3}$ , superiores anticè rotundati læves, inferiores subulati: *molares*  $\frac{3}{4}$ ,  $\frac{3}{4}$  radicati; superiores oblongi, primus major elongatus extùs uni-plicatus; inferiorum primus compressiusculus secundo duplò longior, postremus parvus oblongus extùs plicatus.

*Caput* magnum. *Aures* majusculæ nudiusculæ. *Artus* sub-æquales, digitis 5, 5, longis liberis compressis, unguibus parvis curvatis. *Cauda* filiformis subannulata pilis brevibus setosis vestita.

The general appearance of this animal agrees with that of the *Water-Rats*; but the teeth are simple, and approach in character, as they correspond in number with, those of the true *Rats*. They differ, however, in the adult animal (the only state in which Mr. Gray had an opportunity of observing them,) in the front grinders of the lower jaw being much more compressed and elongated; and in the front grinder of the upper jaw and the hinder one of the lower having each a fold on the outer edge, and a corresponding ridge across the outer surface of the crown. The skull appears, judging from its remains, which were exhibited to the Committee, to bear a close resemblance in shape to that of the *Rat*. On the fore feet the thumb is short, almost rudimentary, and furnished with a claw; the second and third toes are nearly equal, and longer than the first and fourth, of which the latter is rather the shortest. On the hind feet the thumb is short and slender, the second, third, and fourth toes are nearly equal, and the fifth is shorter, and placed higher. The following is the specific character of the animal:

PSEUDOMYS AUSTRALIS. *Pseud. nigrescenti-brunneus cinerascens interstinctus, infrà cinereo-rufescens; collo pectoreque cinerascens.*

*Hab.* in Novâ Hollandiâ Orientali extratropicâ.

The fur is soft, close, thick, blackish brown, and slightly grizzled at the tips of the hairs; beneath, it is of a reddish ash; and on the throat and breast grayish ash. The whiskers are slender, weak, and reach beyond the ears. The head and body measure  $5\frac{1}{2}$  inches; the tail  $3\frac{1}{2}$ ; the fore foot  $5\frac{1}{2}$  lines; and the hind foot 1 inch.

Mr. Cunningham states that the animal inhabits holes in swampy sandy grounds on the south-west or lower side of Liverpool Plains in New Holland.

One of the *Lizards* was also regarded by Mr. Gray as forming a new genus in the family of *Geckos*, which he characterized as follows, under the name of

DIPLODACTYLUS.

*Squamæ* subconformes, minutæ, læves, abdominales paulò majores, caudales majores annulatæ, labiales mediocres distinctæ, tribus anterioribus utrinque multò majoribus, gulares nullæ. *Cauda* cylindrica, ventricosa. *Digiti* 5, 5, simplices, subæquales, subcylindrici, apicibus subdilatis, subtùs bifidis, discis duobus carnosis lævibus ovalibus obliquis; unguibus 5, 5, parvis, maximè retractilibus. *Pori femorales* nulli.

This genus differs from *Phyllodactylus*, Gray, in the under sides of the tips of the toes being furnished with two rather large oblong tubercles, which are truncated at the tip, and form two oval disks placed obliquely, one on each side of the claw, instead of having, as in *Phyllodactylus*, two membranaceous scales. The scales of the body are also uniform, while in that genus there is a series of larger scales extending along the back. The species, a drawing of which was exhibited, was named

DIPLODACTYLUS VITTATUS. *Dipl. fuscus, vittâ dorsali longitudinali latâ saturatiore; lateribus testaceis, artibus, caudâque maculis seriatis flavis marginatis.*

*Hab.* in Novâ Hollandiâ.

The length of the head and body is 2 inches; that of the tail  $1\frac{1}{4}$  inch. On each side of the body there are two rows of rather distant small spots, which become larger on the upper surface of the tail; they are scattered on the limbs.

The other *Reptile* described was a species of *Tiliqua*, the

TILIQUA CUNNINGHAMI. *Til. squamis superioribus carinatospinosis, carinis seriatis.*

*Hab.* in Novâ Hollandiâ Orientali extratropicâ.

This species is very distinct from all the rest of its genus, and even of its family, on account of its carinated scales, which are sufficiently prominent on the back and sides, but become more so on the limbs, and still larger in size, although their series decrease in number, as they approach the extremity of the tail. The colour is pale brown, dotted with yellow above, and paler beneath, with obscure darker spots. The head and body measure 8, and the tail 7, making a total length of 15 inches.

Mr. Cunningham found this *Lizard* in a torpid state in a barren sandy part of the scrubby country in lat. 29°, while prosecuting his overland journey from Port Jackson towards Moreton Bay in the winter of 1827.

Mr. Gray stated that the comparison of a young specimen of *Mus giganteus*, Hardw., with a specimen of *Mus setifer*, Horsf., presented to the British Museum by their respective describers, had enabled him to correct an opinion expressed by M. Temminck in the 'Tableau Méthodique,' appended to his 'Monographies de Mam-



malogie', that the latter species is only the young of the former. The differences between the two animals were stated to be as follows. In *Mus giganteus* the head is short and rounded; the eyes are large; the fur is rather short, pale brown, varied with yellowish and black on the back, and ashy beneath; the feet are of moderate size; and the claws moderate and blunt. The specimen being young is about the size of *Mus setifer*, the head and body measuring 8 inches, and the tail  $5\frac{1}{2}$ ; but the length of the hinder foot to the end of the heel does not exceed  $1\frac{1}{4}$  inch. In *Mus setifer*, on the contrary, the muzzle is long and compressed; the eyes are small; the fur is long, loose, mixed on the rump with abundance of long, flat-tipt, bristly hairs, of a dark brown above, and darker with much longer scattered hairs beneath; and the hinder feet are very large and strongly clawed. The length of the body is  $7\frac{3}{4}$  inches; the tip of the tail is wanting in the specimen; the ears are 13 lines in length; and the hinder feet  $1\frac{3}{4}$  inch, being half an inch longer than those of the young *Mus giganteus*. The geographical range of the latter appears to be very extensive, Mr. Charles Hardwick having transmitted to the British Museum a specimen from Van Diemen's Land.

Mr. Gray further observed that the comparative length of the hinder feet, and the relative distances of the tubercles of the sole from the end of the toes and from the heel, appear to furnish very good distinctive characters for the species of this difficult genus. Thus in the *Wood Mouse*, *Mus sylvaticus*, L., the hinder tubercle of the sole is about a line nearer to the heel than to the end of the toes, while in the *common Mouse*, *Mus Musculus*, L., which has a shorter hind foot, the hinder tubercle is nearly equidistant between the heel and the tip of the toes.

Mr. Gray also stated, that in examining a specimen of *Antipathes* sent to the British Museum by the Rev. R. T. Lowe from Madeira, and which he believed to be identical with the *Ant. dichotoma*, Pall., he had discovered the animals of this remarkable *Coral*, and thus ascertained (what had previously been only presumed from the close resemblance of their horny *axes*) its near relation to the genus *Gorgonia*. He regarded this confirmation of the generally received opinion as the more important in consequence of the apparent similarity between some of the species of *Antipathes* and some strong fibrous *Sponges*, which are now generally believed not to be the habitations of *Polypes*. The minute branches of the specimen examined bore on their surface at irregular intervals a number of red, dry, pellucid tubercles; and portions of a similar substance were observed hanging from their sides. These on being immersed for some time in proof spirits, and afterwards placed for examination in water, exhibited under the microscope, in each tubercle, a *polype* exactly similar to those of *Gorgonia* and *Corallium*, except that it had only six *tentacula*, while the *polypes* of the two last-named genera have eight. It is necessary to observe that when examined in spirit the *polypes* and the thin bark by which they are connected to

each other and to the stem assumed a uniform waxy appearance, and broke down beneath the needle without exhibiting any traces of organization. This circumstance had nearly induced Mr. Gray to abandon his search, had he not discovered that by macerating in water, and thus removing the spirit, the *polype* was restored to its natural gelatinous consistence, in which state it was readily expanded and observed. Minute, pellucid, oval bodies, which are perhaps similar to the irregular papillary *spiculae* found in the bark of *Gorgonia*, are scattered through the bark of this species of *Antipathes*, and the *axes* of its smaller branches are minutely tubular.

In Ellis's 'History of Zoophytes' is given a figure of what the author regarded as the *polype* of *Ant. spiralis*, which he found scattered over the stem of that species in the shape of small distant warts. These when soaked in water he describes as having six *tentacula* surrounding a small cup. The *tentacula*, he observes, in a letter to Linnæus, published in the 'Correspondence' of that naturalist, are shaped like a bull's horns, with wrinkles across, and full of gelatinous matter; and the cup is of a most elegant figure. In the figure this part appears to be concave, with a crenated edge, and placed on an urn-shaped pedicel. Should this account of the *polype* of *Ant. spiralis* prove to be correct, it would be necessary to remove that species from the neighbourhood of the *Gorgoniae* and other barked *Corals*, from all of which it would differ so remarkably in its cup-shaped appendage, and the want of ciliation on the surface of its *tentacula*. Mr. Gray added that he had repeatedly examined the stem of the species in question, but had never been able to discover on it anything resembling a *polype*. The earlier observations of Rumphius, Marsigli, and Pallas, the former on *Ant. spiralis* and the two latter on *Ant. dichotoma*, were of too vague a character to furnish any idea of the real structure of the *polype*.

Mr. Owen read the following account of the anatomy of the *Ariel Toucan*, *Ramphastos Ariel*, Vig.

"Independently of the beauty of the plumage and singularity of the form of the *Toucans*, the peculiarity of some of their habits and actions renders them extremely interesting to the naturalist while in the living state, and not less desirable in connexion with the doubts respecting their natural food, as objects of anatomical investigation after death. These doubts, however, have already been in a great measure dispelled by the observations on the living *Toucan*, which we owe to Mr. Broderip (*Zoological Journal*, vol. i. p. 484.), and by the subsequent remarks of Mr. Vigers (*Ibid.*, vol. ii. p. 466.) on the present individual, which for some time formed a principal ornament of his choice collection.

"The alimentary canal of the *Toucan* is short and simple, but has a general character of capacity which accords with the peculiar form of beak at its commencement. The *oesophagus* is 7 inches in length; it is at first 1 inch in width, and becomes slightly narrower to its termination. It is unprovided with a crop, and not to be distinguished very readily from the *proventriculus*, as that cavity

is continued in the same line with it without any dilatation, and its limits are only recognisable when its internal surface is seen. The lining membrane of the *oesophagus* exhibits at its commencement (or *pharynx*) the usual assemblage of retroverted *papillæ*, after which it is smooth, and then rendered irregular by *rugæ*, which towards the termination of the tube fell into distinct narrow longitudinal folds, evidently the consequence of a temporary state of contraction at that part. As it passes into the *proventriculus* it assumes the character of a mucous membrane, and also becomes finely reticulate; the orifices of the gastric glands being in the interstices of the meshes. These glands are simple cylindrical follicles dispersed over the whole cavity, but more closely aggregated near the gizzard. The length of the *proventriculus* is 1 inch.

“The gizzard is a spheroidal cavity, about  $1\frac{1}{2}$  inch in diameter. The muscular coat does not exceed half a line in thickness; the lateral tendons are small but distinct. The horny lining membrane is tough and hard; it was stained of a deep yellow colour, and not so readily separable from the muscular coat as I have observed in other birds. The entrance to the gizzard is by an ample orifice, and this, in connexion with the structure of the previously described parts, perfectly accords with the regurgitating actions witnessed by Mr. Broderip in *Ramphastos erythrorhynchus*, and which, being followed by a repetition of the process of mastication, he aptly compares to the act of rumination. The thin *parietes* of the gizzard, corresponding to the omnivorous character of this bird, may render in some cases additional mastication necessary; and the powers of the extraordinarily developed beak may in this way compensate for the absence of the grinding structures so peculiar in the stomachs of the true vegetable feeders. The pyloric orifice of the gizzard is situated about a quarter of an inch from the cardiac entry, and is only 3 lines in diameter. The stomach, if we include in this term both *proventriculus* and gizzard, derives its nutrient fluid, as in man, from two sources; the one a vessel analogous to the coronary artery, which comes off from the descending *aorta*; the other an artery from the hepatic, analogous to the gastro-epiploic; but in this instance the former vessel is remarkable for its superior size, in consequence of having to supply materials for the extensive secretion which takes place in the *proventriculus*.

“The intestinal canal is 2 feet 1 inch in length; it is  $1\frac{1}{2}$  inch in circumference at the commencement, 2 inches at the termination, and 1 inch at the middle, from which part it gradually widens to both extremities. It is simple, being without cæcal appendages, corresponding in this respect to some carnivorous birds, as the *Vulture*, *King-fisher*, and *Cormorant*; to some insectivorous birds, as the *Nightingale*, *Woodpecker*, and *Hoopoe*; and to some frugivorous and granivorous birds, as *Glaucopis*, the *Psittacidæ*, *Columba coronata*, and some other species of *Pigeon*. The mucous membrane of the intestines presents extremely delicate *villi*, between 1 and 2 lines in length, and repeats in a striking manner the peculiar downy character of the external integument. These *villi* become in a very

gradual manner shorter and thicker, disappearing at length within a few lines of the verge of the *cloaca*. The *duodenum* forms a loose fold about 3 inches in length: the remainder of the alimentary canal is attached by a wide mesentery to the middle of the posterior *parietes* of the *abdomen*.

“The liver is composed of two lobes of unequal size, joined by a small band: the margins of the lobes are more rounded than usual. There is no gall-bladder; a small hepatic duct enters the *duodenum* very near its commencement; a second duct of about 2 lines in width terminates near the pancreatic duct at a distance of 4 inches from the *pylorus*. This dilated duct might serve in some measure in place of a gall-bladder; and a more complete receptacle for retaining and increasing the active powers of the biliary secretion may be unnecessary where the alimentary canal is so simple, short, and capacious, as in the *Toucan*. It is, however, interesting to observe that the *Psittacidae*, to which the *Toucan* manifests its affinity in other parts of its structure, exhibit a corresponding deficiency both of *cæca* and gall-bladder. The *Pigeons* also which are without a gall-bladder either want the *cæca* altogether, or have them, as in the *Insessorial* birds, of very small size. This corresponding deficiency must, however, be considered rather as simple coincidence than in the relation of cause and effect; for in the *Vulture* and *Nightingale* the gall-bladder exists without the *cæca*, while in the *Cuckoo* the *cæca* exist without the gall-bladder: the similar examples in the other classes of *Vertebrata* are too well known to require notice.

“The kidneys are composed of three lobes, of which the middle one is the smallest; their length is  $1\frac{1}{2}$  inch; their surface is convoluted, though in a less marked degree than in *Reptiles*. Between the anterior extremities of these glands was situated the ovary, of a triangular shape, and apparently healthy in structure. The *ova* were like minute granules, and disposed in a convoluted manner. The supra-renal glands were imbedded in the posterior part of the ovary. The oviduct was as large as a crow-quill; it commenced by the usual fimbriated and wide aperture, was slightly tortuous at the commencement, and then continued straight to the *cloaca*.

“Among the varied forms of tongue which birds present, that of the *Toucan* is one of the most remarkable. Its length from the aperture of the *glottis* is  $2\frac{1}{2}$  inches. The posterior ridge or backward-projecting process, is broad, and finely notched; it is situated about 4 lines from the *glottis*. Anterior to this process the tongue is soft and minutely papillose for the extent of 4 lines, and here, most probably, the sense of taste resides: the rest of the organ consists of a transparent horny *lamina*, flattened horizontally and supported by the anterior process of the *os hyoides*, which forms a ridge along the middle of its inferior surface. At about  $1\frac{1}{2}$  inch from the extremity of the horny *lamina* the margins become obliquely notched, and these notches becoming deeper and closer together towards the extremity occasion the bristled appearance on each side of the tongue. These bristles, Mr. Vigors observes, were



generally applied to the morsels of food whilst held between the mandibles previously to being swallowed.

“The *cornua* of the *os hyoides* are  $1\frac{1}{2}$  inch in length. The *trachea* is 5 inches in length, the rings somewhat flattened and decreasing in diameter towards the inferior extremity, from which a single pair of muscles pass off to the *sternum*. The length of the lower fourth of the tube, and the state of tension in the *bronchia*, are regulated by a pair of small muscles, which, arising from the sides of the tracheal cartilages, are inserted into the bone of divarication at the extremity of the *trachea*: and that this part of the tube is subjected to variations in length is indicated by the tortuous character of the recurrent nerves attached to the sides of the *trachea* at this part. The lungs are small in proportion to the size of the bird, but of the usual form and structure. The abdominal air-cells were of small size. The heart is of a more oblong form than in general; its *apex*, as it were, truncate; its length 1 inch.

“The pectoral muscles, as in the *Psittacidae*, are but feebly developed, and the keel of the *sternum* is of moderate size, not projecting more than half an inch from the plane of the bone. The *sternum* has four notches at its posterior margin. The clavicles, or lateral halves of the *furcula*, are here, as in the *Psittacidae* and *Struthionida*, separate; they are 1 inch in length, slender, pointed at their lower ends, and joined to each other and to the *sternum* by ligament only.

“The peculiar motions of the tail called for a particular examination of that part. It is difficult to state the precise number of the caudal *vertebræ* in consequence of the terminal ones being ankylosed, requiring for this purpose the examination of a young specimen at a period before the *ankylosis* takes place. In the skeleton of a *black-billed Toucan* which I have examined, it would appear that three *vertebræ* are thus ankylosed, making the entire number of coccygeal *vertebræ* nine. The *Woodpecker* has also nine caudal *vertebræ*, and this seems to be the greatest number found in *Birds*. The first six of these *vertebræ* in the *Toucan* are articulated by ball-and-socket joints, the ball and the socket being most distinct in the two last joints. That between the sixth and the ankylosed *vertebræ* is provided with a capsule and synovial fluid; the others have a yielding ligamentous mode of connexion. The spinous processes of these *vertebræ*, both superior and inferior, are of moderate size, but smallest in the sixth, where the greatest degree of motion takes place. The transverse processes on the contrary are large and broad so as almost wholly to prevent lateral motion. The first of the ankylosed *vertebræ* is broad and flat and of a rounded form, supporting the two coccygeal glands: the last of these processes is compressed laterally, and of the ordinary plough-share form. The caudal *vertebræ* can be inflected dorsad till their superior spines are brought in contact with the *sacrum*; in the opposite direction they can scarcely be bent beyond a straight line: and it is to this structure of the bones and joints that is to be attributed the capability in the *Toucan* of turning its tail upon its

back (as represented in the Zoological Journal, vol. ii. pl. xv.), the muscles presenting comparatively few peculiarities, since the motion alluded to is remarkable rather for its extent, than the vigour with which it is performed.

“The principal *elevators* of the tail are the *sacro-coccygei-superiores* (*sacro-sus-caudiens* of Vicq d’Azyr). They arise from two longitudinal ridges on the inferior and convex part of the *sacrum*, and are inserted into the superior spines of the first six *vertebræ* by detached tendons, terminating broadly in the anchylosed *vertebræ*. The principal antagonists of these muscles, *sacro-coccygei-inferiores* (*sacro-sous-caudiens* of Vicq d’Azyr), pass over the first five *vertebræ* and terminate in the sixth and anchylosed *vertebræ*: their origins are wider apart than in the preceding pair of muscles, coming off from the margins of the sacro-sciatic notches. In the interval are situated small muscles passing from the transverse processes to the inferior spines of the first six *vertebræ*.

“From the limited nature of the lateral motions of the tail the muscles appropriate to these movements are feeble, especially in comparison with those which are observed in the birds that spread their tail-feathers in flight, and in that way regulate their course during that vigorous species of locomotion. These muscles are in number two on each side, arising from the posterior extremities of the *ischia* and inserted into the expanded anchylosed *vertebræ*. From the disposition of these muscles it is obvious that after the proper *elevators* have raised the tail to a certain height, they also become dorsad of the centre of motion, combine their forces with the *elevators*, and by this addition of power terminate the act of throwing up the tail by a jerk: so Mr. Vigors in his observations on the living animal observes, that ‘in these movements the tail seemed to turn as if on a hinge that was operated on by a spring.’

“The morbid appearances observed in this dissection were confined to the alimentary canal, which exhibited in four places tracts of inflammation of one and two inches in extent.”

The stuffed skin and skull of a *Rodent Quadruped*, brought from Chili by Mr. H. Cuming, were laid upon the table, and characterized by Mr. Bennett as forming a new genus,

#### OCTODON.

*Dentes primores*  $\frac{3}{2}$  acutati anticè læves; *molares* utrinque  $\frac{4}{2}$  eradicati complicati subæquales; *superiores* subtransversi, facie anticâ latâ, posticâ ob incisuram externam profundam duplò angustiore, internâ medio uniplicatâ, plicis a primo ad postremum sensim minoribus; *inferiores* obliqui, singulo plicâ externâ internâque suboppositis coronidem in areas duas obliquè transversales, figuram 8 vel clepsydrum quodammodo referentes, dispartientibus, plicâ externâ in postremo vix conspicuâ.

*Artus* subæquales omnes pentadactyli, digitis liberis, unguibus fâcularibus acutis. *Cauda* mediocris subannulata pilosa apice floccosa.

The teeth of this animal are remarkably different from those of

any known genus. Their nearest approach is to those of *Helamys*: the latter however want the narrowing of the posterior face of the molars in the upper jaw, and the external fold in those of the lower, as well as the oblique position of the latter, which so strikingly characterize the present genus. From *Arvicola*, which it much more closely resembles in habit, it is at once distinguished by the number of its teeth, and by their much smaller degree of complication. Its specific characters, should the discovery of other species render it necessary so to distinguish it, will probably be found in the following phrase: . . . . .

*OCTODON CUMINGII.* Oct. *suprà fusco-griseus nigrescenti intermixtus, infrà et ad pedes pallidior; caudà suprà et ad apicem floccosam concolore nigrescente.*

In size and shape the animal very closely resembles the *common Rat*; but its head is much broader and less elongated, and its tail is uniformly covered with short adpressed rigid hairs, which become longer and more lax as they approach the extremity, where they form a slight floccose tuft. The facial line is regularly and strongly arched, and the muzzle obtusely truncate; the eyes are small, and seated nearly midway between the base of the ears and the nostrils; and the ears are of moderate size, thinly covered both within and without with short adpressed hairs, and rounded at the tips. The whiskers are numerous and rigid, and the longest exceed the head in length. On the body, which is well-proportioned, the fur consists almost entirely of straight hairs, lying flat, and varying from half an inch to an inch in length: they become shorter on the head and beneath the body, and still more so on the tail and limbs. Of the limbs the hinder are somewhat longer, but the disproportion is by no means so great as might be inferred from the saltatory habits of the animal. All the feet have five toes, but the innermost both before and behind is very short, and separated by a wide interval from the rest. Except the thumb of the fore feet, which has a short obtuse claw, all the toes are armed with rather long, slightly curved, sharp-pointed claws, partially concealed by long bristly hairs. Of the four outer toes anteriorly the two intermediate are nearly equal, and the two lateral somewhat shorter; posteriorly the three intermediate toes are of nearly equal length, and considerably exceed the outer. The tail, though covered rather thickly with short stiff hairs, is distinctly annulated.

The general colour of the upper surface and sides is of a brownish gray, intermixed with frequent spots and patches of dusky black. It becomes slightly darker towards the rump; and the upper surface of the entire tail, together with its under surface for one-third of its length from the tip, is dusky brown approaching to black. The under surface is dusky gray mixed with a shade of brown, lighter beneath the base of the tail, and deeper on the breast and neck, where it is nearly of the same general hue with the upper surface and head. The ears are dusky, with a few stiff gray hairs at their base anteriorly, and some whitish hairs on their inner surface. The shorter whiskers are for the most part white, and the longer black.

The legs are grayish mixed with brown, becoming of a paler gray towards the feet, and the claws are deep black.

The following measurements were taken from the stuffed specimen.

	inches.	lines.
Length of the head and body.....	6	8
———— tail .....	4	0
———— head .....	1	8
———— muzzle, anterior to eyes .....	0	8
———— longest whisker .....	2	0
Height of the ears .....	0	9
Breadth of ditto .....	0	7
Length of <i>carpus</i> to the end of the longest toe....	0	9
———— <i>tarsus</i> to ditto .....	1	3

The bones having been removed, no reliance could be placed on the remaining measurements, for which reason they were not given.

Two living specimens of this interesting little *Rodent*, for which the Society is also indebted to Mr. Cuming, have been exhibited during the winter among the smaller animals at the Garden, where they retain all their liveliness and activity. They appear rather shy and have but little playfulness, but readily leap, with great agility and without any appearance of exertion, from the floor of their cage to a narrow perch placed at the height of nearly a foot, on which they remain seated quite at their ease. Their food, as might be inferred from the structure of their teeth, is entirely vegetable. Mr. Cuming states that, in their native country "these animals burrow in the ground, but always under brush-wood fences or in low thickets. They are so abundant in the neighbourhood of Valparaiso, that in the high-road between that place and St. Jago, more than a hundred may frequently be seen at one time in search of food. Sometimes, but not often, they are observed on the lower branches of the shrubs and on those which form the fences. They fly at the least alarm, and in running carry their tufted tails bent like a bow. A species of *horned-Owl*, of which I had the pleasure of presenting a specimen to the Society, feeds principally on these pretty little creatures."



March 27, 1832.

John Edward Gray, Esq., in the Chair.

A Report from Devereux Fuller, the Head Keeper, was read. It was communicated to the Committee by the President.

It referred to the experiments on the feeding of carnivorous *Mammalia* recommended by the Committee on Dec. 13, 1831, (Part I., p. 164,) and subsequently ordered by the Council to be tried. The animals subjected to the experiment were two *Leopards* and two *Hyænas*: the whole of them were males.

On Jan. 11 the *Leopards* were weighed. No. 1 weighed 91lbs. : it was fed in the usual manner with 4lbs. of beef daily in one meal given in the evening. No. 2 weighed 100½lbs. : it was supplied with 2lbs. of beef at eight o'clock in the morning, and with a like quantity at the same hour in the evening daily. On Feb. 16, (after an interval of five weeks,) they were again weighed. No. 1 had gained in weight 11lb. : No. 2 had diminished in weight ½lb. No alteration was observed in the latter animal as regarded his daily exercise ; but he became more ferocious than he had previously been, and was particularly violent.

On Dec. 23 the *Hyænas* were weighed. No. 1 weighed 86lbs. : it was fed as usual with 3lbs. of beef daily at one meal in the evening. No. 2 weighed 93lbs. : it was supplied with the same quantity of beef daily, divided into two equal portions, one of which was given in the morning and the other in the evening. On Feb. 16, (after an interval of eight weeks,) they were again weighed ; and No. 1 was found to have increased in weight 11lb., while No. 2 had diminished in weight 11lb. The latter animal was observed to take less exercise than he had previously been accustomed to, and slept more than usual : his temper was not affected, and he did not exhibit unusual signs of hunger.

During the continuance of the experiment all the animals were fasted one day in each week in common with the other carnivorous species kept in the Menagerie.

From these experiments it appears that carnivorous *Mammalia* fed with two meals daily, do not continue in equally good condition with those which have the same quantity of flesh daily in one meal only. It further appears that in one instance (that of the *Leopard*,) the temper changed for the worse, and thus animals of the genus *Felis* might become more dangerous in a Menagerie from the ferocity they would acquire under such treatment ; and that in another instance the habits were altered as regarded exercise, a diminution of which, in confined

animals, must be injurious to health. The inference deduced in the Report is consequently in favour of the continuance of the accustomed mode of feeding the purely carnivorous animals with one meal daily.

The Report further stated that an experiment had been tried at the same time on the feeding of two animals less completely carnivorous than the preceding. They were weighed on Jan. 11. No. 1, a *Paradoxure Gennet*, weighed  $4\frac{1}{2}$  lbs.: it was fed as usual with bread and milk in the morning, and with meat in the evening. No. 2, a *spotted Gennet*, weighed 7 lbs.: it was fed with equal portions of bread and milk on the morning and evening of one day; and with equal portions of flesh on the morning and evening of the next day; the quantity of food at each meal being the same as usual. On Feb. 16, (after an interval of five weeks,) the animals were again weighed. No. 1 weighed as before, and was in perfect health. No. 2 had lost in weight 1 lb.: it had been during the alteration in its feeding much duller than usual.

The result of this experiment is in favour of the continuance of the plan hitherto pursued of feeding partially carnivorous animals with each kind of food on each day, and not on alternate days.

The exhibition of the new species of *Mollusca* and *Conchifera* collected by Mr. Cuming, which had been commenced Feb. 28, was resumed. The several shells exhibited were accompanied, as on the former occasion, by characters and descriptions from the pens of Mr. Broderip and Mr. G. B. Sowerby.

#### Genus CANCELLARIA.

**CANCELLARIA PULCHRA.** *Canc. testâ subovatâ, albicante, brunneo-fasciatâ; spirâ breviusculâ, acuminatâ; anfractibus 6, ventricosis, costatis; costis muricato-aculeatis, lineis elevatis spiralibus decussatis; aperturâ ovatâ; labio intus sulcato; peritremate crenato; columellâ triplicatâ, plicâ intermediâ minore; labio interno ruguloso; umbilico mediocri, margine elevatâ; canali recurvo: long.  $1\frac{1}{10}$ , lat.  $\frac{1}{10}$  poll.*

*Hab.* ad littora Sanctæ Elenæ.

This species, which approaches in its characters more nearly to *Canc. cancellata*, Lam., than to any other, may nevertheless be distinguished at once by its strongly spinous ribs.

It was dredged from a sandy bottom in from eight to ten fathoms water.—G. B. S.

**CANCELLARIA SOLIDA.** *Canc. testâ subovatâ, crassâ, fulvâ, lavi; spirâ brevi, mucronatâ, supernè costato-decussatâ; anfractibus 6, ventricosis, ultimo maximo, supernè rotundato-subanguloso; aperturâ oblongâ, spirâ duplè longiore, intus transversim sulcatâ; peritremate acuto, infrâ subemarginato; columellâ triplicatâ, plicâ inferiore exigud; labio interno expanso, infrâ ruguloso; canali brevissimo, subrecurvo: long.  $1\frac{1}{10}$ , lat.  $1\frac{2}{10}$  poll.*

*Hab.* ad littora Americæ Centralis. (Real Llejoes and St. Elena.)

A species remarkable for its deviation from the character of the genus, in being very smooth.

It was found in dredging in from eight to ten fathoms, with a sandy bottom.—G. B. S.

**CANCELLARIA TUBERCULOSA.** *Canc. testá subglobosá, albicante; spirá breviusculá, subacuminatá; anfractibus 5, bullatis, supernè obtusè angulatis, spiraliter sulcatis et tuberculatis, tuberculorum triplici serie; suturá latè canaliculatá; aperturá obtusè subtrigonalí, infrá integrá; peritremate acuto; columellá buplicatá, plicis parvis, obliquis; umbilico magno: long.  $1\frac{1}{10}$ , lat.  $1\frac{1}{10}$  poll.*

*Hab.* ad littora Americæ Meridionalis. (Iquiqui.)

Remarkable for its dull, calcareous, tuberculated surface, its wide expanded aperture, and its widely channelled or contabulated spire.

Dredged in seven fathoms water with a sandy muddy bottom.—G. B. S.

**CANCELLARIA BULLATA.** *Canc. testá subglobosá, cinereo-fuscescente; spirá mediocri, acuminatá; anfractibus 5, bullatis, spiraliter striatis, ultimo tuberculorum triplici serie ornato; suturá canaliculatá, subcrenatá; aperturá obtusè subtrigonalí, infrá integrá; peritremate acuto; columellá buplicatá, plicis parvis, obliquis; umbilico magno: long.  $1\frac{2}{10}$ , lat. 1 poll.*

*Hab.* ad littora Americæ Meridionalis et Centralis. (Payta and Gulf of Nocoíya.)

Very like the last; it differs, however, in colour, in being more acuminated, and in its tubercles being less prominent; it is, moreover, a thinner shell.

Found in twelve fathoms water with a muddy bottom.—G. B. S.

**CANCELLARIA MITRIFORMIS.** *Canc. testá oblongá, brunneá; spirá elongatá, acuminatá; anfractibus 7, cancellatis, prope suturam unicarinatis; aperturá oblongá, in canalem longiusculam recurvam desinente; peritremate infrá sinuato, margine externá fimbriato-laceratá; columellá buplicatá, plicá superiore magná, alterá parvâ et basi columellæ rugulosá: long.  $1\frac{9}{10}$ , lat.  $\frac{7}{10}$  poll.*

*Hab.* ad Panamam.

A single specimen of this interesting shell was dredged in sandy mud. It is the most elongated species hitherto seen by Mr. Sowerby, and in appearance approaches to the *Mitres*.—G. B. S.

**CANCELLARIA GONIOSTOMA.** *Canc. testá oblongá, fuscá; spirá acuminatá, gradatá; anfractibus 6, supernè contabulatis, spiraliter striatis, longitudinaliter tuberculato-costatis; aperturá trigonalí, albicante; peritremate reflexo, crenato; columellá buplicatá, plicis obsoletiusculis, obliquis; umbilico maximo: long.  $1\frac{1}{10}$ , lat.  $\frac{9}{10}$  poll.*

*Hab.* ad littora Americæ Centralis. (Conchagua, San Salvador.)

A very fine and interesting species, of which a single specimen alone was brought up from a sandy bottom in eight fathoms water.

It is an approximation to the shell named *Delphinula trigonostoma* by Lamarck, which would be properly placed in the genus *Cancellaria* next to this species.—G. B. S.

**CANCELLARIA TESSELLATA.** *Canc. testá oblongá, ovulatá, albicante, brunneo-tessellatá; spirá brevi, obtusiusculá; anfractibus 4, decussatis, ultimo maximo; aperturá oblongá, ad basin integrá; labio*

*externo intus sulcato; labio interno supra anfractum ultimum extenso; columellâ bicipitatâ, plicâ superiore majore: long.  $1\frac{3}{8}$ , lat.  $\frac{1}{8}$  poll.*

*Hab.* in Americâ Meridionali. (Bay of Caraccas, St. Elena, and Xipixapi.)

A very elegant, small species, of a white colour, with three rows of squarish brown marks; like that of *Canc. nodulifera* (Sowerby in Tankerville Catalogue, Appendix), the inner lip is spread over part of the last volution, giving the full-grown shell somewhat of the appearance of a *Cassis*.

Dredged in a sandy muddy bottom in from seven to ten fathoms.—G. B. S.

**CANCELLARIA CLAVATULA.** *Canc. testâ turritâ, brunnea, albicante bivittatâ, varicosâ; spirâ attenuatâ, acuminatâ; anfractibus 7, rotundatis, spiraliter striatis, longitudinaliter costatis et varicosis, varicibus sparsis; aperturâ subovali, in canalem desinente; labio externo intus sulcato; columellâ bicipitatâ; peritremate reflexo: long.  $1\frac{3}{8}$ , lat.  $\frac{1}{8}$  poll.*

*Hab.* ad Panamam et Paytam.

A turritid, fusiform, varicose species, which very nearly resembles one of the Italian fossils.

It was taken up from a sandy muddy bottom in seven fathoms water.—G. B. S.

**CANCELLARIA OBESA.** *Canc. testâ ovatâ, acuminatâ, lævi, ponderosa, pallidâ; spirâ brevi, attenuatâ, decussatim striatâ; anfractibus 6—8 ventricosis, spiraliter leviter striatis, ultimo maximo, lævigato; aperturâ oblongâ, utraq̃ue extremitate acuminatâ, infrâ in canalem brevem desinente; labio externo intus sulcato; peritremate tenuiore, infrâ subsinuato; columellâ triplicatâ, plicâ superiore maximâ, bilobatâ, inferiore minimâ: long.  $2\frac{5}{8}$ , lat.  $1\frac{1}{2}$  poll.*

*Hab.* ad oras Americæ Centralis. (Gulf of Dulce.)

When young, this shell is prettily decussated with rather prominent though very narrow ribs; but with age it becomes nearly smooth, with obsolete *stricæ*.

Two young ones were brought from Puerto Portrero, and an aged specimen was dredged in fifteen fathoms in the Gulf of Dulce.—G. B. S.

**CANCELLARIA BREVIS.** *Canc. testâ subglobosâ, albâ, brunneo-varidâ; spirâ brevi, contabulatâ; anfractibus 4—5, supernè angulatis, crenatis, spiraliter sulcatis, et longitudinaliter costatis; aperturâ obtusè trigonâ; labio externo intus sulcato; peritremate obtusiusculo, crenulato; columellâ bicipitatâ; umbilico magno, margine crenatâ: long.  $\frac{9}{16}$ , lat.  $\frac{1}{16}$  poll.*

*Hab.* ad oras Americæ Meridionalis et Centralis.

Another of those interesting species which form as it were the passage from the typical *Cancellariæ* to the species which Lamarck has placed among the *Delphinulæ* under the name of *Delph. trigonostoma*.

Two specimens were found, one at Puerto Portrero, the other at St. Elena.—G. B. S.



**CANCELLARIA RIGIDA.** *Canc. testâ ovata, rigida, pallida vel brunnea concolore; spirâ brevi, acuminata, contabulata; anfractibus 5, supernè angulatis, spiraliter striatis, et longitudinaliter costatis, costis rariusculis, sublamellosis, acutis; apertura subtrigonalis, infra in canalem brevissimam desinente; labio externo intus sulcato; peritremate acuto; columellâ triplicatâ, plicâ inferiore minimâ; labio interno corrugato; umbilico mediocri, margine elevatiusculâ: long.  $\frac{1}{10}$  poll., lat.  $\frac{1}{10}$  poll.*

*Hab.* ad Puerto Portrero, Americæ Centralis.

A single specimen was dredged in thirteen fathoms with a sandy bottom. Mr. Sowerby has several much larger specimens, with whose locality he is unacquainted.—G. B. S.

**CANCELLARIA CASSIDIFORMIS.** *Canc. testâ ovali, fulvâ; spirâ brevi, apice acuminatâ; anfractibus 6, spiraliter sulcatis, superioribus angulato-nodulosis, ultimo maximo, prope suturam serie unica tuberculorum, infra fasciâ pallidâ, instructo; suturâ distinctâ, infra subcanaliculatâ; apertura oblongâ, infra in canalem brevem desinente; peritremate obtuso; labio interno expanso; columellâ triplicatâ, plicâ superiore majore: long.  $\frac{1}{10}$  poll., lat. 1 poll.*

*Hab.* ad Panamam.

The young shells of this species resemble those of the *Canc. nodulifera*, in the Appendix to the Tankerville Catalogue, p. xv. The full-grown shell is here described from a specimen in Mr. Sowerby's collection, all those obtained by Mr. Cuming being young.

Dredged from a sandy muddy bottom in sixteen fathoms water.—G. B. S.

**CANCELLARIA OVATA.** *Canc. testâ ovali, lævigatâ, brunnea, epidermide tenui fuscâ indutâ; spirâ brevi, subacuminatâ; anfractibus 7, spiraliter sulcatis, ultimo maximo, ventricosiusculo; suturâ distinctâ; apertura elongatâ, supernè angustiore, acuminatâ, infra emarginatâ, canalem brevissimam efformante; peritremate acuto, prope basin sinuato, labio externo intus sulcato; columellâ plicis duabus, validis, tertiâ inferiore obsoletâ; umbilico minimo vel nullo: long.  $\frac{1}{10}$  poll., lat.  $\frac{1}{10}$  poll.*

*Hab.* ad Sanctam Elenam, Columbiae occidentalis.

This species resembles *Canc. reticulata* more nearly than any other; its proportions are however very different, and it is a much smoother shell: the smaller volutions are somewhat cancellated.

Found in from eight to ten fathoms water with a sandy bottom.—G. B. S.

**CANCELLARIA ACUMINATA.** *Canc. testâ ovato-oblongâ, lævigatâ, fulvescente, pallidiorè subfasciatâ; spirâ mediocri, subulato-acuminatâ; anfractibus 6—7, spiraliter sulcatis et longitudinaliter obsoletè costatis, ultimo magno; apertura mediocri, supernè acuminatâ, infra emarginatâ, canalem brevem efformante; peritremate acuto, crenulato, prope basin sinuato; labio intus sulcato; columellâ plicis duabus validis, tertiâ obsoletâ inferiore; umbilico minimo vel nullo: long.  $\frac{1}{10}$  poll., lat.  $\frac{1}{10}$  poll.*

*Hab.* ad Guacamayo, Americæ Centralis.

Found in a sandy muddy bottom at a depth of about twelve fathoms. It may easily be distinguished from the last by its proportions as well as by the form of the spire.—G. B. S.

**CANCELLARIA BUCCINOIDES.** *Canc. testá oblongá, corrugatá; spirá mediocri, acuminatá; anfractibus 7, subventricosis, longitudinaliter granoso-costatis, et spiraliter sulcatis, (nonnunquam ex ætate varicosis); aperturá ovato-oblongá, obliquá, ad basin emarginatá, brevissimè canaliferá; peritremate obtusiusculo, prope basin subsinuato; labio externo intùs levi, nonnunquam leviter denticulato; columellá buplicatá, plicis parvis: long.  $1\frac{5}{8}$ , lat.  $\frac{1}{8}$  poll.*

*Hab.* ad oras Americæ Meridionalis et Centralis. (Real Llejos, Iquiqui, Callao, and Puerto Portrero.)

This species has very much of the appearance of a *Buccinum*, from which genus it is only distinguished by the two folds on the *columella*; it varies in colour, some specimens being of a very pale, others of a darker fawn colour; some again are of a dark brown colour all over, while others are of a dark brown with a light band perceptible within the aperture.

Found in from seven to fifteen fathoms with a sandy muddy bottom.—G. B. S.

**CANCELLARIA INDENTATA.** *Canc. testá oblongá, clathratá, fusca; spirá mediocri, acuminatá; anfractibus 6, decussatim costatis, costis noduliferis; aperturá ovato-oblongá, obliquá, ad basin subcanaliferá; peritremate indentato; columellá triplicatá, plicá inferiore minimá; umbilico parvo, margine distinctá: long.  $1\frac{1}{8}$ , lat.  $\frac{1}{8}$  poll.*

*Hab.* ad Panamam.

Nearly like the last in shape, but not having a distinct canal;—its having three folds on the *columella*, and an *umbilicus* with a strongly raised border, also distinguish it.—G. B. S.

**CANCELLARIA HEMASTOMA.** *Canc. testá ovato-pyramidali, albicante, fusco-fasciatá, ore aurantiaco; spirá pyramidali; anfractibus 6, rotundatis, supernè obtusè angulosis, spiraliter striatis, longitudinaliter costatis, costis paucis, obtusis, prope suturam elevatis; aperturá subrotundá, in canalem brevem desinente; peritremate acutiusculo, crenulato; labio externo intùs sulcato, interno corrugato; columellá triplicatá; umbilico mediocri, margine elevatá: long.  $1\frac{1}{8}$ , lat.  $\frac{1}{8}$  poll.*

*Hab.* ad insulas Gallapagos.

A very beautiful species; nearly white, with a broad dark-brown band surrounding the upper part of the volutions: its brilliant orange-coloured mouth is also remarkable.

Taken in from ten to sixteen fathoms with a sandy bottom.—G. B. S.

**CANCELLARIA CHRYSOSTOMA.** *Canc. testá globoso-pyramidali, albicante, fusco-fasciatá, ore aurantiaco; spirá brevi, acuminatusculá; anfractibus 6, rotundatis, spiraliter sulcatis, longitudinaliter costatis, costis plurimis, obtusis, prope suturam elevatis; aperturá subrotundatá, supernè subacuminatá, infrá in canalem brevem reflexam, desinente; peritremate crenato; labio externo intùs sulcato, interno*

*corrugato; columellâ triplicatâ; umbilico mediocri, margine elevatâ: long.  $1\frac{1}{10}$ , lat.  $\frac{1}{5}$  poll.*

*Hab.* ad Panamam et Sanctam Elenam.

This species somewhat resembles the last, it may however be distinguished by its more globose form, its more numerous longitudinal ribs, and its more distinct recurved canal: there are other minor differences.

Dredged in from eight to ten fathoms with a sandy bottom.—G. B. S.

**CANCELLARIA GEMMULATA.** *Canc. testâ ovato-ventricosâ, albâ; spirâ brevi, obtusiusculâ; anfractibus 5—6, longitudinaliter granoso-plicatis et spirâliter sulcatis; suturâ distinctâ, crenatâ; aperturâ oblongâ, supernè acuminatâ, infrâ in canalem brevem desinente; peritremate indentato; labio intûs sulcato; columellâ triplicatâ, plicâ inferiore minimâ; umbilico minimo, margine elevatâ: long. 1, lat.  $\frac{1}{5}$  poll.*

*Hab.* in Sinu Nocoïya, Americæ Centralis.

A very elegant species, of which a few specimens were dredged from a sandy muddy bottom.—G. B. S.

**CANCELLARIA DECUSSATA.** *Canc. testâ ovato-acuminatâ, brunnescente; anfractibus 6, decussatim costellatis, costellis granulosis; suturâ crenulatâ; aperturâ oblongâ, supernè acuminatâ, infrâ in canalem brevem, acuminatam desinente; peritremate acutiusculo; labio intûs leviter sulcato; columellâ triplicatâ, plicâ inferiore minimâ; umbilico minimo, margine elevatâ: long.  $1\frac{5}{10}$ , lat.  $\frac{3}{10}$  poll.*

*Hab.* ad oras Americæ Meridionalis et Centralis. (Panama and Puerto Portrero.)

Found at various depths from ten to thirteen fathoms, with a sandy muddy bottom.—G. B. S.

**CANCELLARIA BULBULUS.** *Canc. testâ oblongâ, medio ventricosâ, apice acuminatâ; anfractibus 6—7, superioribus carinato-decussatis, ultimo ventricosâ, lævi, infrâ sulcato; aperturâ oblongâ, infrâ in canalem brevem decurrente; peritremate acuto; columellâ triplicatâ, plicâ superiore majore, infimâ subobsoletâ; labio interno supernè incrassato, subtûs subgranoso: long.  $1\frac{2}{10}$ , lat.  $\frac{1}{5}$  poll.*

*Hab.* ad littorâ Americæ Centralis.

Two young specimens of this species were found in company with *Canc. solida* at Real Llejos.—G. B. S.

#### Genus SCALARIA.

**SCALARIA DIADEMA.** *Scal. testâ oblongâ, subcylindrâ, albâ; anfractibus 7, lævibus, superioribus longitudinaliter costatis, supernè anguliferis, angulo crenulato; ultimo costis obsoletis, carinâ obtusâ prope basin: long.  $\frac{3}{10}$ , lat.  $\frac{2}{10}$  poll.*

*Hab.* ad insulas Gallapagos. (James's Island.)

A very neat and curious small species, of which Mr. Sowerby had seen but one individual until Mr. Cuming's arrival. A fluid secreted by the animal produces a bright purple dye.—G. B. S.

#### Genus CARDITA.

**CARDITA CUVIERI.** *Card. testâ subcordatâ, albâ, rufo-variâ;*

*costis radiantibus latis, valdè elevatis, complanatis, geniculato-nodosis; intùs albà; epidermide fusca: long.  $2\frac{8}{10}$ , lat.  $2\frac{2}{10}$ , alt.  $2\frac{7}{10}$  poll.*

*Hab.* in Sinu Fonseca, Americæ Centralis.

This fine species, far exceeding in size and beauty any *Cardita* hitherto discovered, was dredged from sandy mud in eleven fathoms water, about seven miles from the shore. After its capture the dredge was kept at work for some hours, but no other specimen could be procured. The ribs are broad, flattened on their superior surface, but very elevated and strongly geniculated, the geniculations being, for the most part, three-tenths of an inch from each other. The shell is a very striking object, and has almost the appearance of a carved work.—W. J. B.

*CARDITA TUMIDA.* *Card. testâ subtrigonâ, tumidâ, costis radiantibus latis, subdepressis; carnea vel fulvâ, maculis purpureo-spadi-ceis et flavis varid; umbonibus recurvis, subacuminatis; lunulâ depressâ; epidermide fusca: long. 2, lat.  $1\frac{5}{8}$ , alt.  $2\frac{3}{8}$  poll.*

*Hab.* ad Americæ Centralis et Meridionalis oras.

Found in a young state at Puerto Portrero, at a depth of eleven fathoms, in fine sand and gravel; and in a full-grown state at the Isle of Plata, in coral sand, at the depth of seventeen fathoms.—W. J. B.

*CARDITA VARIA.* *Card. testâ subtrigonâ, costis radiantibus depressis; violaceo-spadi-ced, maculis albis varid: long.  $1\frac{1}{2}$ , lat.  $\frac{1}{2}$ , alt.  $1\frac{2}{3}$  poll.*

*Hab.* ad insulas Gallapagos.

Dredged in fine sand at the depth of six fathoms.—W. J. B.

This resembles *Venericardia flammea*, (tab. 6 in Guerin's 'Magazin de Conchyliologie,') but is undoubtedly distinct.

#### GENUS CRASSATELLA.

*CRASSATELLA UNDULATA.* *Crass. testâ ovali, brunneâ, fusco-maculatâ, epidermide fusca induta; intùs brunneâ, prope marginem anticam albicante; umbonibus undulatis; latere antico inclinato rotundato, postico longiore, acuminato, angulifero: long.  $2\frac{7}{10}$ , lat. 1, alt.  $1\frac{9}{10}$  poll.*

*Hab.* ad Puerto Portrero, Americæ Centralis.

Dredged from sandy mud in eleven fathoms water. The young shell is of a lighter colour than that which is fully grown; the undulations, moreover, extend over its entire surface.—G. B. S.

*CRASSATELLA GIBBOSA.* *Crass. testâ subovali, gibbosâ, pallescente, epidermide fusca induta; intùs albicante, latere postico brunneo; umbonibus undulatis, compressis; latere antico inclinato, rotundato, sulcis nonnullis brevibus; postico arcuato, elongato, acuminato: long.  $1\frac{8}{10}$ , lat. 1, alt.  $1\frac{2}{10}$  poll.*

*Hab.* ad oras Americæ Meridionalis. (St. Elena and Xipixapi.)

Dredged from sandy mud in eleven fathoms water. This is the most ventricose species known to Mr. Sowerby; its young is nevertheless exceedingly compressed, and is, moreover, covered with undulations.—G. B. S.



## Genus AMPHIDESMA.

AMPHIDESMA PULCHRUM. *Amph. testâ ovali, pallidâ, superficie concentricè striatâ; intûs albidd, purpureo-variâ; latere postico breviorè; margine anticâ inclinâtâ, striis nonnullis radiantibus, striâ incrementi decussantibus: long.  $1\frac{3}{10}$ , lat.  $\frac{1}{10}$ , alt. 1 poll.*

*Hab.* in Sinu Caraccensi, Americæ Meridionalis.

This species resembles *Amph. variegatum*, Lam., in form; it is white within, very prettily mottled with purple.—G. B. S.

## Genus MARGINELLA.

MARGINELLA CYPRÆOLA. *Marg. testâ ovali, asperâ, purpureo-nigricante; spirâ brevissimâ, obtusâ; anfractu ultimo supernè ventricoso, lined dorsali lævi; labio externo incrassato, involuto, intûs denticulato; labio columellari transversim plicato: long.  $\frac{2}{5}$ , lat.  $\frac{1}{10}$  poll.*

*Hab.* sub lapidibus et in locis arenosis ad littora Acapulcæ et Sanctæ Elenæ.

A most interesting species, inasmuch as it appears to be the link connecting *Marginella* with *Cypræa*: though covered nearly all over with a fine asperity, it has nevertheless a polished surface; the spire is very small, and the mantle of the animal must have been almost equal on both sides, since there is a nearly central dorsal line which is quite smooth and free from the asperity which covers the remainder of the last volution.—G. B. S.

MARGINELLA FRUMENTUM. *Marg. testâ ovali, politâ, pallescente, lineis undulatis per series tres dispositis pictâ; spirâ retusâ, aperturâ longitudine testæ; peritremate acuto, lævi; columellâ infrâ plicis nonnullis: long.  $\frac{1}{10}$ , lat.  $\frac{1}{10}$ , paulò minùs, poll.*

*Hab.* ad oras Americæ Meridionalis. (St. Elena and Salango.)

A very pretty little species, dredged in from eight to ten fathoms with a sandy bottom.—G. B. S.

## Genus CHITON.

## \* Ligamento marginis lævi.

CHITON PUSILLUS. *Chit. testâ minimâ, obovatâ, albicante; dorso elevato; valvis intermediis angustis, minutissimè punctulatis, arcis lateralibus subdistinctis; valvâ posticâ majori, vertice centrali, posticè inclinâtâ: long.  $\frac{3}{10}$ , lat.  $\frac{1}{10}$  poll.*

*Hab.* ad littora Peruvæ. (Pacasmayo.)

Distinguished from all the other *Chitons* by the comparative height and proportions of the posterior valve, which has a central vertex inclined backwards.

Found on a coral reef in seventeen fathoms water nine miles from land.—G. B. S.

CHITON GRAYII. *Chit. testâ oblongâ, pallidâ, rufescente fuscoque variâ; valvâ anticâ, valvarum intermediarum arcis lateralibus et valvâ posticâ areâ posticâ radiatim granoso-striatis; arearum lateralium marginibus anticis elevatis, posticis conulatis; valvarum intermediarum arcis centralibus et valvâ posticâ areâ anticâ ob-*

liquè longitudinaliter granuloso-striatis; valvæ 3tæ, 4tæ, 5tæ, 6tæ et 7mæ medio longitudinaliter bisulcatæ: long.  $1\frac{2}{10}$ , lat.  $\frac{7}{10}$  poll.

Hab. in Insulâ S<sup>ti</sup> Laurentii in Sinu Callao, Peruvix.

This species resembles *Chit. crenulatus*, but may be distinguished by attention to the above characters.

Two specimens only were found on shells in seven fathoms water.—G. B. S.

CHITON CHILOENSIS. *Chit. testâ oblongâ, lævi, coloribus luridis variâ; valvâ anticâ, valvarum intermediarum areis lateralibus et valvæ posticæ areâ posticâ radiatim punctato-striatis; valvarum intermediarum areis centralibus et valvæ posticæ areâ anticâ longitudinaliter punctato-striatis: valvis sex posticis prope medium longitudinaliter sulcatis: long.  $2\frac{5}{10}$ , lat.  $1\frac{9}{10}$  poll.*

Hab. sub lapidibus ad littora Insulæ Chiloe.

Somewhat similar to, but very distinct from *Chit. Chilensis*, Frembl.—G. B. S.

CHITON ROSEUS. *Chit. testâ ovato-oblongâ, lævi, rosed; dorso rotundato; valvâ anticâ, et valvarum intermediarum areis lateralibus longitudinaliter, areis centralibus transversim sulcatis; valvæ posticæ vertice centrali, sulcis concentricis: long.  $\frac{7}{10}$ , lat.  $\frac{3}{10}$  poll.*

Hab. ad Insulam Platæ, Columbiæ occidentalis.

Found on dead shells in seventeen fathoms water.—G. B. S.

\*\* Ligamento marginis granoso.

CHITON DISPAR. *Chit. testâ ovali, lævigatâ, cinereâ, albido nigroque variâ; valvarum areis centralibus lævibus, posticè longitudinaliter subsulcatis; valvâ anticâ, valvarum intermediarum areis lateralibus et valvæ posticæ areâ posticâ granulosis: long. 1, lat.  $\frac{5}{10}$ , poll.*

Hab. sub lapidibus ad littora Insulæ Sabogæ in Sinu Panamæ.

The name has been suggested by the circumstance of the central areæ being quite smooth, while the lateral areæ are covered with granules.—G. B. S.

CHITON RUGULATUS. *Chit. testâ oblongâ, lævigatiusculâ, olivaceâ, albicante variâ; valvâ anticâ, valvarum intermediarum areis lateralibus et valvæ posticæ parte posticâ concentricè undulato-rugulosis; areis centralibus lævibus, marginibus rugulosis: long.  $\frac{9}{10}$ , lat.  $\frac{4}{10}$  poll.*

Hab. ad oras Americæ Centralis. (Puerto Portrero and Inner Lobos Island.)

Found under stones at low water.—G. B. S.

CHITON COLUMBIENSIS. *Chit. testâ ovatâ, depressiusculâ, cinerascente; valvâ anticâ, valvarum intermediarum areis lateralibus et valvæ posticæ areâ posticâ sparsim granulosis; intermediarum areis centralibus et posticæ areâ anticâ longitudinaliter granuloso-lineatis: long.  $1\frac{5}{10}$ , lat.  $\frac{1}{10}$  poll.*

Hab. in Sinu Panamæ.

Found under stones at low water.—G. B. S.

CHITON PUNCTULATISSIMUS. *Chit. testâ ovato-oblongâ, lævi, colo-*

*ribus variis picta; valvis omnibus omninè minutissimè punctulatis, squamulis marginalibus perexiguis: long.  $\frac{7}{10}$ , lat.  $\frac{4}{10}$  poll.*

*Hab.* ad oras Americæ Meridionalis. (Bays of Mexillones, Iquiqui, and Arica.)

Found on dead shells in from six to ten fathoms water. A white variety with a black border and somewhat varied with black has been very rarely found.—G. B. S.

\*\*\* Ligamento marginis velutino et fasciculato.

CHITON HIRUDINIFORMIS. *Chit. testâ oblongâ, planiusculâ, nigrescente-viridi; valvis rotundatis, granulosis; valvarum areis centralibus elongatis, posticè acuminatis, læviusculis; margine densissimè pilosâ, quasi velutinâ, fasciculis pilorum 9, concoloribus: long. 1, lat.  $\frac{3}{10}$  poll.*

*Hab.* ad littora Peruvæ (Ancon, Lobos Island, and Payta), et ad insulis Gallapagos. (Chatham Island.)

Found under stones at low water.—G. B. S.

\*\*\*\* Ligamento marginis squamoso.

CHITON LÆVIGATUS. *Chit. testâ ovato-oblongâ, planiusculâ, lævigatâ, subfuscâ, nigro rufoque longitudinaliter variegatâ; carinâ marginali obtusâ, elevatiusculâ inter areas laterales et centrales valvarum intermediarum: long.  $1\frac{6}{10}$ , lat.  $\frac{1}{10}$ , poll.*

*Hab.* sub lapidibus in Sinu Californiensi.

Found under stones at low water, by Mr. Ealing of H. M. S. Sapphire, at Guaymas.—G. B. S.

CHITON ARTICULATUS. *Chit. testâ ovatâ, lævigatâ, viridescentscâ, pallescente longitudinaliter variegatâ; dorso elevatiusculo, rotundato, carinâ marginali inter areas laterales et centrales valvarum intermediarum ferè oblitteratâ; limbo olivaceo pallidè articulato: long.  $2\frac{4}{10}$ , lat.  $1\frac{2}{10}$  poll.*

*Hab.* sub lapidibus in Sinu Californiensi. (St. Blas.)

Found under stones at low water. In many characters it resembles *Chit. lævigatus*, but differs in its proportions as well as in the particular form of each valve.—G. B. S.

#### Genus CYCLOSTOMA.

CYCLOSTOMA FLAVUM. *Cycl. testâ subglobosâ, flavâ, crassiusculâ, anfractibus 5, creberrimè fasciato-striatis; striis elevatis; umbilico parvo; operculo corneo: long.  $\frac{3}{10}$ , lat.  $\frac{3}{10}$  poll.*

*Hab.* in Annaa.

This, at first sight, has all the aspect of a marine shell, and even when examined more accurately bears a close resemblance to *Littorina*, especially in its *operculum*. But it was found alive, by Mr. Cuming, buried in the earth under the roots of a palm-tree, which was surrounded with vegetation, and at a considerable distance from high water mark. May it not be one of the links which connect the marine with the terrestrial *Mollusca*? I have placed it with the *Cyclostomata*, to which genus among the land shells it seems to be most nearly related.—W. J. B.

GENUS *STILIFER*. (Brod.)

*Testa* hyalina, turbinata, apice spiræ stilum mentiente. *Apertura* subovata, supernè acuminata. *Labrum* acutum, sinuatum.

*Pallium* crassum, carnosum, cyathiforme, testæ anfractus ultimos obtegens. *Proboscis* longissima, retractilis. *Tentacula* rotunda, crassa, subacuminata, ad basin proboscidis posita. *Oculi* ad basin tentaculorum, sessiles, minimi. *Branchiæ* stirps solitaria.

Animal marinum.

*STILIFER ASTERICOLA*. *Stil. testd subglobosd, diaphand, lactescente; anfractibus ventricosis, longitudinaliter leviter striatis, ultimo maximo; apicis anfractibus duobus: long.  $\frac{2}{10}$ , lat.  $\frac{1}{10}$  poll.*

*Hab.* ad Insulas Gallapagos, *Asteriæ solaris* cutem penetrans. (Lord Hood's Island.)

The arrival in this country of the shell above recorded, with the soft parts, has afforded data for a generic character indicating a distinct family among the *Pectinibranchiata*, the form and disposition of whose mantle differs from that of any other genus in the order. This mantle (which in *Stil. Astericola* is of a green hue,) is thick, fleshy and cup-shaped, with a small aperture at its base and a free posterior margin, enveloping the soft parts and the last whorls of the shell, which has thus somewhat the appearance of a small acorn set in its cup. On the ventral aspect of this mantle is the rudiment of a foot; and from the small basal aperture a retractile *proboscis* (which when exerted is as long as the whole animal) is protruded. At the base of this *proboscis* are two thick, round, somewhat pointed *tentacula*; and at the base of them are the eyes or rather ocular specks without pedicles. The *branchia* is placed on a single stem. At the base of the *proboscis* is a spherical muscular stomach, and the intestine ascends into the spire of the shell, where it becomes attached to the liver, which, in the present species, is of an orange colour.

Mr. Cuming found this elegant parasite burrowed in different parts of the rays of the oral disk of *Asterias solaris*, Gray, where it is almost hidden from sight, so deeply does the animal penetrate into the substance of the *Starfish*, in which it makes a comfortable cyst for itself, wherein it most probably turns by the aid of its rudimentary foot. All the specimens infested with *Stiliferi* appeared to be in the best health, though there is reason to believe that these *Mollusca* feed upon the juices of the *Starfish*. With that instinct of self-preservation imparted to all parasites whose existence depends upon that of their nidus, the *Stilifer*, like the *Ichneumon* among insects, appears to avoid the vital parts; for, in no instance did Mr. Cuming find it imbedded anywhere save in the rays, though some had penetrated at their base and very near the *pelvis*. When extracted, the older shells have much the appearance of a milky-clouded glass bubble; the younger shells are of an unclouded transparency.

Dr. Turton, in the second volume of the 'Zoological Journal' (p. 367, pl. xl.), described and figured a shell under the name of *Phasianella stylifera*, adding that he found a dozen attached to the spines of *Echinus esculentus* dredged up in Torbay. It is clear that Dr. Tur-



ton's shell is not a *Phasianella*, for it is described as having no *operculum*; and the similarity of the shell leaves no doubt, when joined to the parasitic habits of the animal, that it is one of the congeners of *Stilifer Astericola*: I, therefore, propose to name it *Stilifer Turtoni*.

Mr. Sowerby possesses a third species, which, although its habits are unknown, may be referred to this genus with the name of

*STILIFER SUBULATUS.* *Stil. testâ turritâ, subulatâ, attenuatâ, diaphand, anfractibus numerosis, subrotundatis; apice longissimo: long.  $\frac{3}{10}$ , lat.  $\frac{3}{17}$  poll.*

*Hab.* in Indis Occidentalibus.

This shell is so beautifully transparent that the *columella* in fine specimens can be as distinctly seen as if there were no intervening medium. The long *apex*, which consists of many close-set whorls, is generally out of the perpendicular.--W. J. B.

Mr. Owen, to whom Mr. Broderip acknowledged himself indebted for the anatomical particulars which he had recorded of *Stilifer Astericola*, subsequently exhibited a series of drawings of the animal and of its various parts, so far as he had been enabled to observe them in the specimens brought home by Mr. Cuming. He also read a more detailed description of the peculiarities remarked by him during the dissection of the individuals which had been entrusted to him for that purpose.

April 10, 1832.

Joseph Cox Cox, Esq., in the Chair.

A Report from Devereux Fuller, the Head Keeper, was read. It was communicated to the Committee by the President.

It stated that the period of gestation of the *Puma*, *Felis concolor*, L., had been ascertained to be 96 or 97 days, the female in the Society's Menagerie having admitted the male on Dec. 28, and brought forth on the night of April 2 two young. The ground-colour of these is of a paler fawn than that of either of the parents, and they are deeply spotted, as was noticed on the former occasion (Part I. p. 158). The eyelids of one of them were partially unclosed on April 9. The mother, whose temper was always mild, has since become remarkably gentle, purring when the keeper goes into her den, and allowing her young ones to be handled and carried about without appearing to be annoyed by such treatment. The young, on the contrary, were when first born extremely fierce, hissing and scratching with all their might; they have, however, since become better tempered, though they are still spiteful. The manners of both the mother and the young are similar to those of the *domestic Cat* and her kittens, the former carrying the latter about from place to place in her mouth. For a day or two previously to her littering she pulled the straw in her inner den into pieces and thus formed a nest.

On the former occasion the period of gestation could not be determined, the female having admitted the male several times; the last of which was 97 days prior to her parturition; a month after this latter occurrence (her single young one having been born dead,) she admitted the male once only, and became pregnant with her present litter.

A Note was read from Mr. Henry Tripp, of Orchard Wyndham, Somersetshire, respecting the provision made by a male *Hawk*, after the destruction of its female, for the nourishment of their young. On the morning after the first night of her absence five small birds were found placed on the side of the nest. These having been taken away, nine others were found on the second morning; among them were a *Blackbird* and a *Thrush*. All of them were picked but not in the least broken. On the third night the male bird was caught in a gin set in the nest for that purpose. He had previously been so shy as to evade all attempts at shooting him, while the female, on the contrary,

was got at so readily as to induce the keeper to destroy her, notwithstanding his wishes first to destroy her mate.

Specimens and drawings of numerous animals referable to the genus *Paradoxurus* were laid upon the table; and Mr. Gray entered into a detailed account of the distinguishing characters of the group, which he prefaced by some observations on the family of *Viverridæ* in general, and concluded by the description of several new species. He observed that the family may be divided, independently of the characters furnished by the teeth, into three sections, distinguished by the baldness or hairiness of the soles of their hinder feet, and by concurrent differences in the structure of their odorous glands. The first of these is limited to the true *Civets*, the genus *Viverra*, in which the under part of the hind-feet is entirely covered with hair, except on the tips of the toes and the large tubercles at their base; and the pouch secreting the civet forms a deep cavity on each side near the anus. The species of this group are: 1, the *African Civet*, *Viverra Civetta*, L.;—2, the *Zibet* of Buffon, Hist. Nat. tom. ix. t. 34, *Viv. Zibetha*, L., which is the *Viv. undulata*, Gray, Spic. Zool. p. 9, t. 8;—3, the *spotted Civet*, *Viv. Tangalunga*, Gray, which is the *Viv. Zibetha* of M. F. Cuvier, Dr. Horsfield, and Sir Stamford Raffles, and is readily distinguished from the last-mentioned species by a continuous longitudinal band occupying the upper surface of the tail, the numerous irregular rings being separated only on its inferior half;—4, the *Gunda Civet*, *Viv. Rasse*, Horsf., *Viv. Gunda*, Ham. MSS., which Dr. Horsfield believes to be distinct from *Viv. Indica*, Geoffr.;—5, the *pale Civet*, *Viv. pallida*, Gray;—and 6, the *Delundung*, *Viv. Linsang*, Hardw., *Felis gracilis*, Horsf. Of these the last three have the slender form of the *Gennets*; and one, the last, has been formed into a separate genus by Dr. Horsfield; the teeth however, according to the figure of that naturalist, agree exactly with those of the *Civets*, except in the deficiency of the last upper molar.

The second section is likewise limited to a single genus, *Genetta*, in which the soles of the hinder feet have a narrow bald line extending from the heel and bifurcating, so as to inclose a small triangular hairy pad near the toes, the basal tubercle of which, and the tips of the toes themselves, are bald. In this section also the anal pouches exist, and the animals belonging to it, as well as to the former, when in confinement, frequently retrovert their tails, in order to press out, by rubbing against any hard substance within their reach, the odorous secretion contained in the pouches. The species are: 1, the *Fossane*, *Viv. Fossa*, Erxl.;—2, the *Senegal Gennet*, *Viv. Senegalensis*, Fisch., from M. F. Cuvier's 'Mammifères Lithographiés';—3, the *feline Gennet*, *Viv. felina*, Thunb., which has certainly no affinity with the *Civette de Malacca* of Sonnerat, doubtfully referred to it by M. Fischer;—and 4, the *common Gennet*, *Viv. Genetta*, L.

In the third section, which includes two very distinct subdivisions, the entire sole is bald from the toes to the heel. One of the subdivisions has long, slender, and nearly free toes; anal pouches of greater or less depth; and hair of a peculiarly harsh character and grizzled

appearance: this includes the genera *Herpestes* and *Ryzana*, and probably also *Crossarchus* and *Ailax*; but as Mr. Gray had not seen the two latter, he could not speak confidently with respect to them. *Crossarchus* and *Ryzana* differ in having one false molar tooth less than the other genera. The remaining subdivision has the toes short, and united by a membrane as far as the base of the claws; it has no anal pouch, but in place of that organ a bald secreting fold over the sheath of the *penis*; and its fur is rather rigid with a woolly undercoat. In most cases the tail has the faculty of rolling itself up spirally from the tip, from which circumstance M. F. Cuvier deduced the generic name of *Paradoxurus* applied by him to the animals of this subdivision. One species, the *Benturong* of Major Farquhar, has since been separated by M. Valenciennes under the generic name of *Ictides*.

All the animals of this subdivision which Mr. Gray has seen living, agree in having a very narrow linear perpendicular pupil, but this character he considered as only of secondary importance; the *Foxes* having linear, while all the other *Dogs* have round pupils, and the *common Cat*, and some others of the genus *Felis*, having them perpendicular, while the *Lion*, *Tiger*, *Leopard*, *Jaguar*, *Puma*, and *hunting Leopard*, have them circular. The naked space extending the whole length of the *frænum* of the *penis* from the *anus* to the tip of the sheath, and secreting a brown odorous substance, appears to have been first noticed by Pallas in his description of the *Viv. hermaphrodita*, to which, by a not unapt comparison, it gave a name. It appears to have been entirely overlooked by M. F. Cuvier, but is readily seen even in the dried skin, and most probably exists in the genus *Ictides* also. In this latter, according to Major Farquhar, the tail is truly prehensile, and is used by the animal in climbing trees, but, like that of the *Kinkajou*, it has no bald portion near the tip. The degree indeed in which the convolutive peculiarity of this organ manifests itself, appears to vary greatly in the different species. When not twisted up, the tail is generally trailed along the ground with a slight turning over at the tip, which occasions the hair, especially on the older specimens, to be more or less worn away on either surface.

The teeth of the genus *Paradoxurus* agree in number and structure with those of *Viverra*, *Genetta*, and *Herpestes*, but differ in the form of the cheek-tooth and tubercular molars, which in both jaws are shorter, broader and more bluntly tubercular, indicating more frugivorous habits. In their examination, not only in this genus but in the whole order, it is necessary to observe the change that takes place both in their distribution and form on the shedding of the milk-teeth, which are widely different from those by which they are succeeded. In the young of *Paradoxurus* there are in the upper jaw only four molars on each side, viz. two false molars, one cheek-tooth, and one tubercular; while the adult animal has one additional false molar, and a second tubercular, the third false molar taking the place of the cheek-tooth, and the cheek-tooth that occupied by the tubercular, of the young animal. The teeth of the adult are also much stronger and larger, the anterior ones becoming less, and the poste-



rior more, lobed and tubercular. In the first set, the false molars are thin and compressed, and the second is distinctly three-lobed; this last is replaced by a strong thick conical tooth with a slight raised margin behind, and the third or new false molar is nearly similar, but furnished with a very small tubercle in the middle of the inner side of the base of its crown. The cheek-tooth of the first set is also compressed and has a small lobe in the middle of the inner side; while in the second set this tooth is triangular, broad in front and narrow behind, with a large distinct lobe on the front of its inner margin. It is much larger than the tubercular tooth of the first set which it replaces, and which is little different in form from the first tubercular of the second set, although the latter is also larger and has more prominent and distinct tubercles.

Mr. Gray observed that it was on this discrepancy between the milk and second teeth that the generic character of *Paguma*, described by him in the 'Proceedings' of the Committee, Part i. p. 95, was founded, he not having at that period noticed the change that takes place on the shedding of the former set. The description there given was taken from a skull belonging to a young animal about to part with its milk-teeth, which still however remained perfect, while the jaw had elongated sufficiently to allow of the partial development of the two tubercular teeth of the new set, which were rendered visible by scraping. In this state the true number of teeth belonging to the family was present, the tubercular tooth of the first set still retaining the place of the cheek-tooth of the second, for which it was described. Subsequently, however, Mr. Gray has been enabled, by cutting away the bone below this tooth, to lay bare the true cheek-tooth, which resembles that of the other species of *Paradoxurus*, to which genus the animal in question must therefore revert. The explanation of this change is the more interesting inasmuch as the Civets in general appear to attain nearly their full size previous to its occurrence, and consequently do not offer the usual indications of immature age.

Mr. Gray then proceeded to enumerate the following species of the genus *Paradoxurus*, all of them, as far as their *habitat* has been ascertained, natives of India and the Indian Islands.

1. *Paradoxurus Typus*. F. Cuv., Mamm. Lith.

Genette de France. Buff., *Hist. Nat. Suppl.* iii. t. 47.

*Viverra nigra*. Desm., *Mamm.* p. 208.

This species appears to be the *Musk* and *Musky Weasel* of Pennant's Quadrupeds, both taken from Sir Elijah Impey's drawings, but not the *Piloselle Weasel* of the same author, which has hairy soles. There is a variety now living in the Gardens of the Society, which may be called *fuliginosus*, it being nearly black in consequence of the length and number of the black hairs, which only show the fulvous under-fur between their roots. It has a very distinct pale spot above, and another beneath, the eye.

The three following species are only known by the drawings of Dr. Hamilton and Gen. Hardwicke, the former of which were liberally lent to Mr. Gray by Dr. Wilkin and Dr. Horsfield, in order to enable

him to determine by actual comparison the species described from them by M. de Blainville. The first two appear to agree with *Par. Typus* in having nearly naked ears, and may possibly be only varieties of that species; the third approaches more nearly to *Par. Musangas*.

2. *PARADOXURUS PENNANTII*. *Par. pallidè cinerascenti-brunneus, fasciis obscuris saturatioribus lateralibus; auriculis nudiusculis; orbitis albidis; artubus caudæque dimidio apicali nigrescentibus.*

This animal is stated by Gen. Hardwicke, from whose drawings the character is taken, to be found in the upper provinces of Bengal, and to be very destructive to poultry and game. Its head and body measure 21, its tail 23,—making a total length of 44 inches. The ears and sides of the nose are pale flesh-coloured.

3. *Paradoxurus Bondar*.

*Ichneumon Bondar. Ham., MSS.*

*Viverra Bondar. Blainv., in Desm. Mamm. p. 210.*

This species inhabits Bengal, where it is called the *Musk-Cat*. Its head and body measure 25, its tail 24,—making a total length of 49 inches. Dr. Hamilton's reduced figure, from which this animal was described by M. de Blainville, agrees with Gen. Hardwicke's drawing in almost every particular, except that in the former the nose is rather sharper, and the tail not quite so bushy, as in the latter.

4. *Paradoxurus prehensilis*.

*Ichneumon prehensilis. Ham., MSS.*

*Viverra prehensilis. Blainv., in Desm. Mamm. p. 208.*

This species is only known from Dr. Hamilton's drawing; it appears distinct from any of the others, more especially in the bands of the sides of the back being formed of oblong nearly confluent spots, and in the length of the tail, which has a long white tip. The central dorsal streak is not very distinctly marked, and the dark line in the drawing may perhaps be intended for the shadow.

5. *Paradoxurus Musanga*.

*Viverra Musangu. Horsf., Zool. Res. t. 5.*

*Viverra fasciata. Desm., Mamm. p. 209?*

The very young animal is pale ash-coloured with three distinct black dorsal bands, and the sides spotted. Its fur is very close and soft, mixed with scattered very rigid rather longer black hairs.

6. *PARADOXURUS DUBIUS*. *Par. pallidè flavescenti-cinereus, pilis dorsi longioribus apice brunneis, subtus flavescenti-albidus; dorso fasciis centralibus tribus, lateribusque maculis brunneis inconspicuis; capite, auriculis pilosis, pedibusque castaneis; caudâ præter imam basin nigro-brunneâ; maculæ utrinque ad nasum, alterius supra genas, fasciæque interauricularis transverse pilis albo-apiculatis.*

This species is described from a young specimen sent to the British Museum by Dr. Horsfield: it may be only a variety of *Par. Musanga*, but cannot be the general state of the young of that species,

which is described above. It is probably the Javanese variety of the *Musang* described and figured by Dr. Horsfield.

7. *Paradoxurus hermaphroditus*.

*Viverra hermaphrodita*. Pallas, in Schreb. *Säugeth.* p. 426.

The description of the glandular fold between the *anus* and *penis* proves this species, which is only known by Pallas's description, to be a *Paradoxurus*. It appears to resemble the preceding, but differs in having the entire throat black, and in its black dorsal bands.

8. *PARADOXURUS PALLASII*. *Par. nigrescenti-griseus, nigro alboque intermixtus, infra pallidior; dorso fasciâ latiusculâ maculisque parvis utrinque biserialibus nigris; artubus, lateribus infernè, caudâque nigrescentibus; facie nigrâ, maculâ utrinque ad nasum, alterâ sub oculos, fasciâque transversâ per frontem pone genas ad gulam usque ductâ, albis; auriculis nudiusculis; gulâ anticè nigrescenti-cinereâ, posticè cinereo-albidâ; caudâ corpore longiore.*

*Par. albifrons*. *List in Report of Council Zool. Soc. 1831, haud F. Cuv., Mém. Mus. ix.*

This species is described from a living specimen in the Gardens of the Society, brought from India, and presented by Mr. Buchanan.

9. *PARADOXURUS CROSSII*. *Par. suprâ nigrescens, pilis plumbeis nigro-apiculatis, infra flavescens, pilis albo-apiculatis; auriculis apice nudiusculis; facie, auriculis externè ad basin, pedibus, caudâque dodrante apicali nigro-brunneis; maculâ rotundâ pallidâ ad nasum utrinque, alterâque minore sub oculos; fronte flavescente.*

The length of the head and body is 21 inches, of the nose to the front of the ear  $3\frac{1}{2}$ , of the tail 16, of the fore-foot to the elbow-joint  $4\frac{1}{2}$ , and the distance from the back of the fore-foot to the front of the hind-, 8 inches. The species is described from a specimen lately living in the Surrey Zoological Gardens, and since presented by Mr. Cross to the British Museum, where both the skin and skeleton are preserved.

10. *Paradoxurus leucopus*. Ogilby, in *Zool. Journ.* iv. p. 304.

11. *PARADOXURUS HAMILTONII*. *Par. auriculis pilosis; dorso griseo-cinerascente, pilis nigro-apiculatis intermixtis, seriebus sex vel septem macularum rotundarum nigrarum; facie dorso concolore, strigâ angustâ nigrâ inter, alterâque utrinque supra, oculos; fasciâ nuchali mediâ nigrâ, laterali utrinque breviorè pallidè brunneâ; pedibus dorso concoloribus; caudâ corpore sesquialongiore, rufescenti-brunneâ, annulis angustis subæqualibus nigris versus apicem remotioribus.*

This species is described from a living specimen in the Surrey Zoological Gardens, which has been in Mr. Cross's possession about two years.

12. *Paradoxurus larvatus*.

*Gulo larvatus*. Ham. Smith, in *Griff. An. Kingd.* ii. p. 281.

*Viverra larvata*. Gray, *Spic. Zool.* p. 9.

*Paguma larvata*. Gray, *Proc. Comm. Zool. Soc.* i. p. 96.

13. *PARADOXURUS TRIVIRGATUS*. *Par. nigrescenti-griseus, infra griseus; capite saturatiore; dorso fasciis tribus longitudinalibus mediis nigrescentibus; pedibus caudaque corpore longiore nigris; facie immaculata.*

*Viverra trivirgata*. Reinw., *Mus. Leyd.*

This species is described from a specimen in the Leyden Museum, sent from the Moluccas. The teeth agree with those of the genus in every particular, except that the cheek-teeth are rather shorter.

14. *Paradoxurus? binotatus*.

*Viverra binotata*. Reinw., Gray, *Spic. Zool.* p. 9.

Mr. Gray referred this animal to the genus *Paradoxurus* with some doubt, he not having seen the teeth. Its walk, however, is truly plantigrade. The *habitat* of Ashantee, given to it in the Leyden Museum, may be questioned: it was obtained from an old Dutch collection, in which it is possible that the localities were not strictly preserved.

To this enumeration Mr. Gray added the indication of an animal known only by a rough sketch brought by Mr. Finlayson from Siam, and deposited in the Library of the East India Company. This he proposed to call *Paradoxurus Finlaysonii*, and described as being pale brown; with a band across the middle of the muzzle, and another across the orbits (including the eyes and expanding on the back of the cheek), the ears, and three continuous narrow lines along the middle of the back, blackish brown; the feet blackish; and the tail cylindrical. He also considered it probable that the *Civette de Malacca* of Sonnerat, *Voy.* t. 91, the *Viverra Malaccensis* of Gmelin, belonged to this genus, with which it agreed in several particulars of its mode of colouring, although it differed in having a black streak along the middle line of its belly, a character confined to few among the *Mammalia*.

With respect to the *Paradoxurus aureus* of M. F. Cuvier, he stated that he was inclined to believe that it really belonged to the genus on account of its naked soles, but was certainly not, as had been imagined, the young of *Par. Typus*.

Mr. Gray added, that figures of the *Parr. Pennantii*, *Bondar, prehensilis*, *Pallasii*, and *Hamiltonii*, are engraved for the forthcoming No. of the 'Illustrations of Indian Zoology'.

Preparations were exhibited of the stomach and *cæcum* of a *Capromys* which had recently died at the Society's Gardens, and Mr. Owen read his notes of the dissection of the animal. He commenced by remarking that its external characters agreed with those described by M. Desmarest as existing in his *Capromys Fournieri*; while its admeasurements, especially those taken from the osseous system, corresponded closely with those given by Mr. Say in the Journal of the Academy of Natural Sciences of Philadelphia, when describing his



*Isodon pilorides*, the species on which the generic characters were first pointed out. He further observed that the affinity of this genus to *Cavia*, indicated by Mr. Say from the comparison of *crania*, received corroboration from various particulars of the anatomy of the animal; an affinity, he conceived, not to be denied on account of the existence in *Capromys* of perfect clavicles, and their absence in *Cavia*; for an anatomical character, he observed, is not the less artificial if taken without reference to the rest of the organization.

“The individual examined was a fully grown male, and measured 1 foot 6 inches from the end of the nose to the setting on of the tail, the length of the tail being  $7\frac{1}{2}$  inches.

“On the *abdomen* being laid open the *viscera* were found covered, as in the *Agouti*, with an extensive *omentum*, which was loaded with lardaceous fat. The sternal layers of the *omentum* extended along the stomach and spleen across the whole of the *abdomen*; but the dorsal layers, which were continued from a fold of the *colon*, extended from the right side only to the mesial line, where they terminated by a free edge without adhering to the sternal layer, and consequently left at that part a large orifice by which the fingers could be introduced into the omental bag. The liver, stomach, and spleen, occupied as usual the hypochondriac and epigastric regions, and the gall-bladder was also distinctly visible lying between two separate lobes and not in a partial fissure at the under surface of the liver. The *cæcum*, a capacious, elongated and sacculated bag, extended, as in the *Cavies*, from below the stomach down the left side and across the lower part of the *abdomen*, terminating in the right iliac region with its *apex* directed towards the diaphragm. A long and loose fold of the *colon* extended obliquely across the *abdomen* from the right hypochondriac to the left iliac region, and the remaining space above the *cæcum* was occupied by convolutions of small intestine. In the *regio pubis* the *testes* were situated, of the large size which seems peculiar to this fertile order of *Mammalia*, with the *globus major* of the *epididymis* only projecting through the abdominal ring: these projecting portions were about the size of kidney-beans and appear to have been mistaken by M. Desmarest for the *testes* themselves, which, however, are rather larger than olives. The abdominal ring is large enough to permit the whole of the gland to be protruded, and from the attachment of the inferior fibres of the internal oblique and *transversalis* muscles to the *globus major*, and their capability of forming a cremasteric bag for the *testes* when these are pushed out of the *abdomen*, it is most probable that they are so protruded, as in other *Rodentia*, during the rutting season.

“The stomach is of an oblong shape, pretty equally rounded at both extremities. The *œsophagus* is narrow, and after a short course in the *abdomen* terminates at 2 inches 2 lines from the left extremity of the stomach; a pouch of the same extent is continued from the right of the *pylorus*, which is situated only  $1\frac{1}{2}$  inch to the right of the *cardia*. The length of the stomach when distended is 6 inches,

the circumference at the widest part 8 inches, at the narrowest part 6 inches.

“The *duodenum* is wide at its commencement, as in *Ancæma* and *Dasyprocta*, but has not a capacity so considerable as in *Cælogenus*, where, according to Sir E. Home, it projects like a *cæcum* above the *pylorus*: its circumference at this part is 2 inches; but where it receives the biliary secretion, viz. at a distance of 1 inch from the *pylorus*, its circumference is diminished to one half that size. It is a loose intestine, having a mesentery through the whole of its course. It rises at first towards the liver, then descends in a curved form behind the *colon* and in front of the right kidney, a process of *peritoneum* passing off from the lowest part of the curvature and attaching the intestine to the right *psaos* muscle; it then ascends again as high as the liver and is continued without crossing the spine into the *jejunum*; the mesentery which attaches it to the spine is narrowest at the commencement and at the termination of this intestine, and between its layers is situated the *pancreas*, beautifully ramified, much flattened, and of a minutely granular structure. The circumference of the small intestines is nearly uniform throughout, being about 1 inch; but the *ileum*, after becoming gradually and slightly contracted, widens just at its termination: the expanded orifice is applied, as it were, to the side of the *cæcum* over a much smaller orifice in that gut; the *parietes* of the *cæcum* so included forming a semilunar valve. The length of the small intestines was 17 feet 10 inches; that of the *cæcum* 13 inches; and its circumference at the widest part 6 inches.

“The *parietes* of the *cæcum* are puckered up by two longitudinal muscular bands, one of which is continued along the *colon* for a short distance. The extent of the *cæcum* above the orifice of the *ileum* is very clearly indicated by two lateral dilatations or *sacculi*, which are separated from the *colon* by a valvular structure similar to that at the termination of the *ileum*; the two orifices of the blind intestine being analogous to the *cardia* and *pylorus* of the stomach. This structure I have had occasion also to observe very distinctly in the *Beaver*, the *Cavies*, and in some *Monkeys*, as *Macacus Cynomolgus*. The *colon* is widest at its commencement, but not sacculated; its circumference here is 3 inches 4 lines; but it soon diminishes to less than half that extent. It ascends obliquely from the left lumbar to the right hypochondriac regions, then makes the long and loose fold before described, and, after having thus returned upon itself, performs many small convolutions along the middle line and back part of the *abdomen*, to which it is attached by a broad *meso-colon*, and is thus continued into the *rectum*. The *fæces* begin to be separated at the commencement of the long fold, and there also the *colon* is connected, by continuity of *peritoneum*, with the *duodenum*.

“The liver presents a singular structure, being subdivided into almost innumerable angular lobules, varying in size from 3 to 5 lines: nevertheless these lobules are so compacted, that the *viscus* presents

a uniform smooth convex surface towards the diaphragm; and they are so grouped together that the usual larger divisions or lobes are distinctly recognisable. The number of these may be reckoned five; the first on the right side is the smallest, and projects in the situation of the *lobulus Spigelii*. The gall-bladder is situated as above described between the third and fourth lobes, having an entire investment of *peritoneum*. The coronary ligament is attached to the fourth lobe; it does not extend to the sternal margin of the lobe, nor does it dip down into a deep cleft, but the lobules closely adhere to it as soon as it reaches the surface of the *viscus*: the trace of the obliterated umbilical vein was very slight. The lobules, though closely in contact, are quite detached from each other, being appended, as it were, by their *apices* to the larger branches of the *vena portæ* and hepatic arteries and veins. Each of the lobules is partially subdivided into still smaller lobules, the whole structure approximating to a complete natural unravelling of this conglomerate gland to its component *acini*.

“The gall-bladder is about the size of a pigeon’s egg; its contents were limpid and of a greyish green colour, and had not stained the surrounding parts. This departure from the usual colour and consistency of the bile might have led to the idea that it was connected in some way with the peculiar structure of the secretory organ just described; but I had previously noted a limpid and almost colourless state of the bile in some other *Glires*, viz. the *Guinea Pig*, the *Acouchy*, and the *crested Porcupine*, which had a small gall-bladder, and in none of which did the liver deviate from the ordinary configuration. Mr. Say, who described and very correctly figured the peculiar liver of *Capromys*, makes no observation on the bile. The cystic duct in the present instance was joined by the hepatic duct at an acute angle after the course of an inch; the *ductus choledochus* terminated distinctly from the pancreatic at the upper part of the *duodenum* lying upon the gut, and becoming a little larger and making a bend at a right angle near its termination.

“The *pancreas* consists of two parts, one more compacted extending behind the stomach from the spleen; the other thin and ramified in the duodenal mesentery.

“The spleen is loosely attached to the left end of the stomach, of an elongated trihedral form,  $2\frac{1}{2}$  inches in length, and 8 lines across at the lower extremity, which is the broadest part.

“The kidneys are of a simple form and structure, having a single *papilla* in each, which is broad and projecting: the *pelvis* is small. On injecting them with size and vermilion, the former substance passed through the *tubuli uriniferi* into the *pelvis*, the colouring matter stopping at a line’s distance from the termination of the tubes. Their shape being more globular than in Man, they were more prominently situated in the lumbar regions, and had a greater investment of *peritoneum*. The right kidney was higher than the left by its whole length; in the *Acouchy*, *Agouti*, and *Rat*, there is less difference in the relative height of these glands. The supra-renal glands are of

an oblong rounded form, nearly as large as hazel-nuts. The right, as usual, was closely attached to the *vena cava inferior*, and both were situated mesiad of the upper extremities of the kidneys. The above structure of kidney and large size of the supra-renal glands appear to be common to all the *Glires* that have been hitherto examined.

“The lungs were divided into three lobes on the left side and four on the right, the additional lobe or *lobulus impar* occupying the usual situation between the *pericardium* and diaphragm; having the *oesophagus* behind and the *vena cava inferior* in front of it.

“The heart was more pointed at the *apex* than in the *Acouchy*, and the great vessels were given off from the arch of the *aorta* in a different manner; the left subclavian arising separately, the right subclavian and carotids by a common trunk: in the *Rat* these vessels arise as in Man. Nothing unusual was observed in the structure of the heart, but the coagulated fibrine in the cavities was firmer, and adhered more strongly to the *parietes* than ordinary. This organ had evidently been in a state of inflammation, for the *pericardium* had contracted an adhesion to the base of the right ventricle, and the serous covering of that cavity was thickened and opaque. The contour of both auricles was rounded and entire; there being a great similarity between them, as in the *Cavies*. The blood returned from the head and anterior extremities, was emptied into the right auricle by a single vein. In the *Rat*, *Porcupine*, *Elephant*, and in all the *Marsupiata* that I have examined, viz. *Macropus*, *Phalangista*, *Phascalomys*, *Phascolarctos*, and *Perameles*, there are two distinct *superior cavæ* entering the auricle, as in *Birds* and *Reptiles*. In the *Hog* the left *azygos* vein enters the auricle near the inferior *cava*; being previously joined by the coronary vein.

“The *thymus* gland is about the size of a pea, of a red colour, and of a firm fleshy texture.

“The transverse section of the *trachea* is somewhat triangular, the cartilages forming the two anterior sides, and a small part of the posterior; but gradually encroaching upon that side towards the termination of the tube, where their extremities are occasionally bifid. The *bronchiæ* quickly lose their cartilaginous structure after having entered the lungs: they had been in a state of acute inflammation at the time of death.

“The thyroid gland is proportionally larger in this than in any other quadruped I have dissected; it is composed of two lateral lobes, each 10 lines in length, from 3 to 4 lines in breadth, and from 2 to 3 in thickness: these lobes are joined by a distinct band, 2 lines in breadth, passing obliquely between their lower extremities across the third, fourth, and fifth rings of the *trachea*. When these dimensions are compared with those of the animal itself, it will be seen that this gland, in proportional magnitude, is even greater than in the human subject. Its structure was lobulated, and apparently healthy.

“The thyroid cartilage is of a rounded form, bulging out at the lower part, and is larger in proportion to the cricoid than in the *Acouchy*.



The arytenoid cartilages present the same peculiarity as in the above-named animal, being continuous with each other at their *apices*. This adhesion does not of course prevent their being drawn apart at their bases where the *chordæ vocales* are attached; the *crico-* and *thyreo-arytenoidei* being strongly developed for that purpose. The *chordæ vocales* are distinct shining ligamentous threads; the *crico-thyroidei*, which render these chords tense, were largely developed, covering the whole of the anterior space between the two cartilages to which they are attached. They are no doubt materially concerned in producing the sharp cry of this animal. The *sacculi laryngis* are narrow but deep. The *epiglottis* is broad and of a rounded form; it has a linear depression at its base, and a longitudinal ridge along the middle of its posterior or laryngeal surface, which fits into the *rima glottidis* when the cartilage is depressed. The margin of the soft palate was in close contact with the tongue anterior to the *epiglottis*, which, together with the *apices* of the arytenoid cartilages, rose into the posterior *nares*; the structure, indeed, seemed to forbid the *epiglottis* passing under the soft palate, although we must suppose it to do so when the shrill cry is produced; but the grunting noise appears to be emitted by the nose.

“The tongue corresponds in form to the space between the two rows of inferior *molares*; is compressed laterally, and deeper than it is broad. It grows gradually narrower to the *apex*, which is neatly rounded and is impressed with small follicular apertures. Half an inch of the extremity only is free. The *papillæ* on the surface are extremely minute; towards the *dorsum* they are conical and retroverted, and numerous delicate lines converge towards the root of the tongue. Like the *Acouchy*, it wants the elevated or super-imposed portion observable in the *Beaver* and *Guinea-pig*.

“The *parietes* of the *pharynx* are extremely thick; the *isthmus faucium* is long, narrow, and conical, diminishing backwards, as in the *Beaver*; the sides are not produced into folds, but the whole of this structure is evidently adapted to the same end, as was first pointed out by Mr. Morgan in the structure of the *fauces* of the *Capybara*. The inner membrane of the *œsophagus* is disposed in longitudinal *rugæ*.

“The eye is stated by M. Desmarest to be moderately large, but the largest diameter of the globe does not exceed 5 lines; the apparent magnitude is owing to the great proportion in the *cornea*, the diameter of its base being only one line less than that of the globe itself. This large size of the *cornea* is found in most of the *Rodentia*, especially in those whose habits are nocturnal. It prevails also in the *Lemuridæ*; and is evidently for the purpose of admitting as much light as possible into the globe. The loss of refractive power is in most of these cases compensated by a greater convexity in the *lens*; which in *Capromys* is 3 lines in the long and 2 in the short diameter. The conjunctive membrane has a brown stain round the margins of the *cornea*; the rest is white and of a firm texture. The sclerotic is so thin as to be discoloured by the *pigmentum nigrum* beneath, so that the anterior half is nearly black; which, when seen through the white

conjunctive, gives the grey appearance to the *white* of the eye. The *membrana nictitans* is extremely small, being about a line in length and breadth. At the back part of the cavity of the eye there is a little light-coloured pigment.

“ The black skin covering the end of the nose is remarkably lax, and the muscles going to it are well developed : its motions are said to be very free.

“ Among the peculiarities of the muscular system the most remarkable is a blending together of the *obliqui externi* and *recti abdominis* muscles, so that the origin of the latter partook of the character of the insertion of the mesial pillars of the abdominal rings ; the left *rectus* arising thick and fleshy from the right *os pubis*, and passing through a large slit in the origin of the right, which arose in a corresponding manner from the *os pubis* of the left side : as there was no tendon covering these fleshy columns, it was doubtful at first whether to consider them as fleshy insertions of the external oblique, or decussated origins of the *rectus* : the latter muscles are however evidently distinct from the external oblique at the epigastric region of the *abdomen*, and pass over the cartilages of the true ribs to be inserted into the upper part of the *sternum*, and have no other attachment to the *pubis* but through the medium of the fibres before described. The external oblique muscles had the usual serrated origins from the ribs, the atlantal fibres passing obliquely downwards, and blending with those of the *recti*, the lower fibres being inserted distinctly into the *rami* of the *pubis*, and forming the lateral or outer pillars of the abdominal opening. The decussating *fasciculi* of the *recti* formed the mesial or internal pillars of the same opening ; through which, as before mentioned, the *epididymis* projected, inclosed in a muscular pouch or *cremaster*, formed by the fibres of the internal oblique and *transversalis*.

“ The *pectoralis major* arose from the whole length of the *sternum*, and was continued into the deltoid without any line of separation, and inserted with it into the upper and outer half of the *humerus*. Beneath the preceding muscle were two distinct slips, or accessory pectoral muscles, one arising from the lowest part of the *sternum* and inserted into the anterior tubercle of the *humerus* ; the other arising from the cartilages of the three lower true ribs, and attached to the posterior tubercle of the *humerus* along with the *subscapularis* ; between these portions the long head of the *biceps* passed. A distinct slip from the *latissimus dorsi* goes over the long tendon of the *biceps* to be inserted on its outer or anterior side, the rest of the tendon being inserted as usual. The *pectoralis minor* is inserted into the acromial end of the clavicle, which has also a well-developed *subclavius* muscle attached to it.

“ The situation and form of the *testes* have been already noticed : they are the same as in most of the *Glires*. The *epididymis* was attached throughout its whole length to the *testis*, following the greater curvature of the gland, and measuring 1 inch 9 lines in length. The *tubuli testis* were much more minute and tortuous than in the *Rat*. The fatty processes that are found hanging from the *testes*

loose in the *abdomen* in some *Glires* were here developed in an extraordinary degree, measuring 5 inches in length, from 1 to  $1\frac{1}{2}$  inch in breadth, and giving off long conical processes like the *appendices epiploicæ* from the human great intestine. The *testes* in the *Batrachia*, it may be remarked, have similar appendages. The *vasa deferentia* continue slightly tortuous till they reach the *vesicula seminales*, along the mesial aspect of which they pass down to the neck of the bladder, and terminate separately at the commencement of the *urethra*: they gradually enlarge, but are not suddenly dilated at their extremities.

“The *vesicula seminales* are thin membranous bags, with a white glistening exterior, of an elongated form, and give off, on one side principally, from fifteen to twenty obtuse blind processes, which are more easily unravelled than in Man. The whole length of the vesicle in its natural state was 2 inches 3 lines. It becomes gradually smaller at the lower extremity, and forms what may be termed a duct of 10 lines in length. The prostate gland, as in other *Rodentia*, takes the form of accessory *vesiculae*, being composed of a number of distinct tubes, which are compacted together by cellular texture, and form, in this species, four principal masses or lobes. The component tubes are flattened, thin, and easily torn, grow smaller towards the *urethra*, and ultimately join so as to terminate by a few small orifices.

“The manner in which the spermatic fluid and the accessory secretions from the above tubular glands enter the *urethra* differs from what is generally observed in the *Mammalia*, but, as far as I have observed, with some slight modifications, is common to the *Glires*. The *urethra* at its commencement forms a small *cul-de-sac* behind the neck of the bladder; so that on laying open this part, together with the *urethra* anteriorly, the orifice of the bladder is seen to be separated from the canal of the *urethra* by a transverse ridge. Behind this ridge, at the distance of 4 lines from the orifice of the bladder, there projected a middle rounded process or *verumontanum*,  $1\frac{1}{2}$  line in length, on each side of which was a cavity, in which terminated separately the orifices of the *vas deferens*, *vesicula seminalis*, and accessory vesicles. A white coagulated substance was found projecting a few lines from the duct of the *vesicula seminalis*. In the *Acouchy* an amber-coloured substance, with a resinous fracture, was impacted in the duct of the *vesicula seminalis*, and projected in a similar manner into the *urethra*. Daubenton has noticed a similar circumstance in the *Agouti*.

“The membranous part of the *urethra* is 15 lines in length; it is closely embraced by a thick *stratum* of muscular fibres, disposed in a penniform manner from a middle posterior *raphé*. The true *acceleratores* surround the bulb of the *urethra*, which is large. The *crura penis* are embraced by short and strong *erectores*. This organ is also provided with small *levatores* arising from the *symphysis pubis*, but terminating in a single tendon which runs along the *dorsum penis*, following the curvature, where it is bent backwards, and inserted in an elongated flattened bone which lies above the *glans*. This bone is 8

lines in length, pointed at either extremity, and concave towards the *urethra*, which terminates just below it. There were no lateral *ossicula* as in the *Cavies*; neither is the *penis* provided with the horny appendages which give it so singular an aspect in *Cælogenus*. The *glans* is naturally inverted, but when distended has a remarkable bulbous form. The preputial sheath was  $1\frac{1}{2}$  inch in length, and distant from the *anus* for the same extent.

“The urinary bladder when distended approached to a globular form. The *urachus* was continued from the middle of its anterior part.”



April 24, 1832.

N. A. Vigors, Esq., in the Chair.

Lieut. Colonel Sykes, having brought before the Committee at previous meetings various *Birds of the Raptorial and Insessorial Orders*, collected by him during his residence in Dukhun, completed on the present evening the exhibition of his collection of those Orders. He limited his observations on the several species to brief extracts from the copious notes which he had made in India respecting their habits, internal anatomy, and geographical distribution. In bringing them in succession under the notice of the Committee, he observed the order adopted in the following

Catalogue of Birds of the Raptorial and Insessorial Orders (systematically arranged,) observed in the Dukhun by Lieut. Colonel W. H. Sykes, Bombay Army, F.L.S., F.G.S., F.Z.S., M.R.A.S.

ORDER I. RAPTORES, *Ill.*

Fam. *Vulturidæ*, Vigors.—Genus *Vultur*, Auct. *Vulture*.

1. *Vult. Indicus*, Lath. *Vautour Indou*, Temm., Pl. Col. 26. *Mahah Dhoh* of the Mahrattas.

*Irides* deep brown. Length 42 inches, inclusive of tail of  $10\frac{1}{4}$  inches. A stone half an inch in diameter was found in the stomach of one bird. The proportional length of the intestine to the body in these birds is 3 to 1, while in the *Neophron Percnopterus* it is 5.20 to 1. They congregate in flocks of twenty or thirty. On a dead camel, or horse, or bullock being thrown out on the plain, numbers of these *Vultures* are found assembled round it in an incredibly short time, although they may not have been seen in the neighbourhood for weeks before. Col. Sykes's specimens are no doubt referable to M. Temminck's species, although the latter bird is described as having whitish *irides*.

2. *Vult. Ponticerianus*, Lath. *Vautour Royal de Pondicherry*, Sonn., p. 182. pl. 104.

The *irides* are described by Shaw as red, while in two of Colonel Sykes's specimens they were of a deep brown, and in the third of a bright straw-yellow; but as the last had allowed itself to be captured by hand, had only grass and stalks of herbaceous plants in the stomach, and was evidently ill, the pale colour of the *irides* may be attributed to disease. Sexes alike in plumage. Mostly solitary: Colonel Sykes seldom, if ever, saw more than two together. The remarkable flatness of the crown, and very great width of the *cranium*, would seem to indicate

a generic difference between this species and the *Vult. fulvus* and *Bengalensis*. Length of bird 36 inches, inclusive of tail of 11 inches.

3. *Vult. Bengalensis*, Gmel. *Bengal Vulture*, Lath. *Geed* of the Mahrattas.

Of a smaller size, and with shorter and stouter legs than *Vult. Indicus*. Habits similar. Sexes alike. Length 30 inches, inclusive of tail of 10 inches. Colonel Sykes was induced to consider this species of Gmelin as distinct from *Vult. cinereus*, with which it has been classed by M. Temminck, in his *Manuel d'Ornithologie*, p. 4.

Genus *Neophron*, Sav.

4. *Neophron Percnopterus*. *Vultur Percnopterus*, Linn. *Rachamah*, Bruce, *Trav. Append.* p. 163.

*Irides* intense red brown. Gregarious. Sexes alike in adult birds; but non-adult birds vary in plumage from fuscous to mottled brown and white. These birds are always found in cantonments and camps. For the most part of the day they continue on the wing, soaring in circles. When on the ground, they walk with a peculiar gait, lifting their legs very high. They are efficient scavengers. Length 29 inches, inclusive of tail of 11 inches.

Fam. *Falconidæ*, Leach.

Sub-Fam. *Aquilina*. *Eagles*.

Genus *Haliaëtus*, Sav. *Sea Eagle*.

5. *Hal. Ponticerianus*. *Falco Ponticerianus*, Lath. *Aigle de Pondicherry*, Buffon, p. 136. Pl. Enl. 416. Called *Bruhmuny Kite* by Europeans in India.

*Irides* reddish brown. It is seen constantly passing up and down rivers at a considerable height, but prepared to fall at an instant on its prey. Usually it seizes while on the wing, but occasionally dips entirely under water, appearing to rise again with difficulty. It is quite a mistake to suppose it feeds on carrion. Colonel Sykes has examined the contents of the stomach and craw of many specimens, and always found fish, and fish only, excepting on one occasion, when a crab was met with. Sexes alike. Female lays two large white eggs. Length, inclusive of tail, 19 to 21 inches: tail 9 inches.

Genus *Circaëtus*, Vieill.

6. *Circ. brachydactylus*. *Falco brachydactylus*, Wolf. *Aquila brachydactyla*, Meyer. *Falco Gallicus*, Gmel., p. 295. sp. 52. *Le Jean le blanc*, Pl. Enl. 413.

Colonel Sykes's specimen was a female. *Irides* deep orange at the external margin, passing to straw-yellow at the internal margin. The remains of a snake and two rats were found in the stomach. Length, inclusive of tail, 30 inches: tail 11 inches.

Genus *Aquila*, Auct.

7. *Aq. chrysaëta*. *Falco chrysaëtos*, Linn. Golden Eagle, Lath. Colonel Sykes's specimen differs so slightly from the European bird as not to justify its separation.
8. *Aq. bifasciata*, Hardwicke and Gray's Ind. Zool. Irides brownish yellow ochre. Sexes alike in plumage; non-adult birds paler than adults. A whole rat found in the stomach of one bird. A second bird was shot by Colonel Sykes at the dead carcass of a royal tiger; but it had not tasted the banquet, as the stomach was empty. Length, inclusive of tail, 30 inches: tail 11 inches.

Genus *Hæmatornis*, Vigors.

9. *Hæm. Bacha*. *Falco Bacha*, Daud. pl. 22. *Le Bacha*, Le Vaill., Ois. d'Afr. pl. 15. Colonel Sykes does not possess a specimen, but he identified a specimen in the possession of a friend, shot in the Dukhun.

Sub-Fam. *Accipitrina*. Hawks.Genus *Accipiter*, Ray. Sparrow Hawk.

10. ACCIPITER DUKHUNENSIS. *Acc. supra fusco-brunneus, plumarum marginibus pallidioribus, capite postico nuchâque albo variegatis; subtus albus, pectore abdomineque notis subrotundatis grandibus, femorum tectricibus parvis, rufescentibus striatis; reatricibus fusco fasciatis, fasciis externarum confertioribus; tarsis subbreuibus.* Irides stramineo-flavæ, margine gracili nigro circumdatæ. Longitudo corporis  $14\frac{1}{2}$  unc., caudæ  $6\frac{1}{2}$ , tarsi  $1\frac{1}{4}$ . Sexes alike in plumage. Resembles the *Acc. fringillarius*, but differs in the longitudinal broad reddish patches on the breast, in less red on the sides, in a black narrow streak down the throat, in shorter wings, in the tail having six broad bars instead of four, in the male bird being as large as the European female, and finally in the shorter tarsi and centre toes.
11. *Acc. Dussumieri*. *Falco Dussumieri*, Temm., Pl. Col. 308. female. Irides bright yellow, with an exterior narrow margin of black. Wings short. Tail long and narrow, being only the width of the upper feather. M. Temminck's specific characters are taken from a female, the male being unknown. Colonel Sykes has but one specimen, and that a female, the male being unknown to him. Length, inclusive of tail,  $12\frac{1}{2}$  inches: tail  $6\frac{1}{2}$  inches.

Genus *Astur*, Auct. Goshawk.

12. ASTUR HYDER. *Ast. corpore supra et subtus brunneo, dorso imo rufescenti, plumarum rhachibus fuscis, alarum tectricibus albo notatis; abdomine maculis albis fasciato; frontis fasciâ gracili guttureque albis, hoc lineis tribus latis fuscis, unâ in medio, cæteris utrinque ad latera, notato; femorum tectricibus crissoque albis, rufo fasciatis; caudâ supra rufâ, fasciis quinque gracilibus, ferè obsolete, alterâque prope basin latâ, fuscis notatâ;*

*remigibus fusco-brunneis ad apicem fuscis, pogoniis internis fuscis quinque fuscis gracilibus, alboque ad basin notatis.*

*Rostrum ad basin flavum, ad apicem nigrum. Pedes flavi; unguibus nigris. Longitudo corporis 16½—17 unc., caudæ 6½—7.*

This bird has the three stripes upon the throat, and the aspect of *Falco trivirgatus*, Temm., fig. 303, but it is a much larger bird than M. Temminck's, and has otherwise characters in the plumage to entitle it to a specific distinction. A couple of mice were found in the stomach of one bird. Sexes alike in plumage. Female a little larger than the male.

Sub-Fam. *Falconina*.

Genus *Falco*, Auct. *Falcon*.

13. *Falco Tinnunculus*, Linn. *Kestrel*.

*Irides* intense brown. A very abundant bird in the Dukhun. Both sexes are absolutely identical with the European birds in their characteristic plumage. Colonel Sykes, nevertheless, mentions his being in possession of a male bird exactly like the female of the *Kestrel* in plumage and size, and, consequently, larger than the male *Kestrel*: and as this was shot from a party of five or six, perched on the same tree, and without a male *Kestrel* in company, he is induced to believe there is a distinct species, in which both sexes have the plumage of the female European *Kestrel*. Remains of rats, mice, lizards, grasshoppers, and a bird, were found in the stomach of several specimens. In one stomach there remains of no less than four lizards were met with.

14. *Falco Chicquera*, Lath. *Le Chicquera*, Le Vaill., Ois. d'Afr. pl. 22.

*Irides* sanguineous. A common bird in the Dukhun. Sexes alike in plumage. Female usually the larger bird; but Colonel Sykes has a male quite as large as any female. A sparrow was found in the stomach of one male bird, and a young bat in the stomach of another.

Sub-Fam. *Buteonina*. *Buzzards*.

Genus *Circus*, Auct. *Harrier*.

15. *CIRCUS PALLIDUS*. *Circ. pallidè griseus, alis dorsoque saturatioribus; subtis albus; uropygio albo, griseo fasciatim notato; rectricibus, duabus mediis exceptis, griseo alboque fasciatis; remigibus tertiâ quartâ quintâque fuscis.*

*Irides* viridi-flavæ. ♂. Longitudo corporis 19½ unc., caudæ 9½; ♀ corporis 21½; caudæ 10.

This bird has usually been considered the *Circ. cyaneus* of Europe; but it differs in the shade of its plumage (male and female); in the back-head of the male not being white spotted with pale brown; in the absence of dusky streaks on the breast; in the rump and upper tail-coverts being white barred with brown ash; in the inner webs of four of the tail-feathers not being white; and in the bars of the under tail being seven instead of four. The female resembles the female of *Circ. cyaneus*, but



the plumage is two shades lighter, the tail is barred with six broad fuscous bars, instead of four, and the tail-feathers are much more pointed. The remains of six lizards were found in the stomach of one bird. Colonel Sykes never saw these birds perch on trees. They frequent the open stony plains only. The sexes were never seen together.

16. *CIRCUS VARIEGATUS*. *Circ. capite suprâ, nuchâ, ptilis, pectoreque rufis, plumis in medio latè brunneis; dorso, scapularibus, remigibusque externis intensè brunneis; pteromatibus, remigibus internis, caudâque griseis; abdomine femorumque tectricibus rufis; caudæ tectricibus superioribus rufo albo brunneoque, inferioribus griseo saturatiore, notatis.*

Longitudo corporis 21 unc., caudæ 10.

This is a very remarkable bird, and in its plumage seems to possess much of the united characters of the sexes of this genus, which are known generally to exhibit a marked difference. Colonel Sykes possesses but one specimen, a male.

Sub-Fam. *Milvina*.

Genus *Milvus*, Auct. *Kite*.

17. *MILVUS GOVINDA*. *Milv. capite, nuchâ, corporeque subtùs rufescenti-brunneis, plumis in medio fusco lineatis; dorso, alis, caudâque satis furcatâ saturatè brunneis, illarum pteromatibus pallidioribus, hæc fusco obsolete fasciato.*

Longitudo corporis 26 unc., caudæ 11.

This bird differs from the *Falco Cheele* in the want of white spots on the wing-coverts, white before the eyes, and white bar on the tail; in having the inner webs of the tail-feathers barred with numerous narrow bars, and in the shafts of the feathers about the head and neck, and generally underneath, being very dark. Sexes alike. Constantly soaring in the air in circles; watching an opportunity to dart upon a chicken, upon refuse animal matter thrown from the cook-room, and occasionally even having the hardihood to stoop at a dish of meat carrying from the cook-room to the house.

Fam. *Strigidæ*, Leach.—Genus *Otus*, Cuv.

18. *Ot. Bengalensis*, Franklin, Proceed. Zool. Soc. I. p. 115. *Goobur* of the Mahrattas.

*Irides*, external margin dark orange, gradually changing to yellow at the internal margin. Very common in the Dukhun. Generally found on the open rocky plains. A whole rat, (the tail hanging out of the mouth, and the head and most part of the body in the stomach, and partly decomposed,) was found in one bird: another had a crab, a third a *Pastor*; but the usual food appeared to be rats.

Genus *Strix*, Auct.

19. *Strix Javanica*, Horsf.

Although at a superficial view this species appears to be the *barn-*

door Owl of Europe (*Strix flammea*), a comparison of several specimens with the European bird satisfies Colonel Sykes that Dr. Horsfield was right in separating it. Neither sex is unspotted white underneath, nor has the Indian species a white disc. Sexes alike, with the exception of the plumage of the female being a shade or two lighter than that of the male. Length, inclusive of tail, 17 inches: tail 5 inches. One of Colonel Sykes's specimens was captured alive while lying on its back on the ground, defending itself against the attacks of a body of crows. *Irides* reddish dark brown.

20. **STRIX INDRANEE.** *Strix capite suprâ pallidè brunneo, plumis albedo marginatis; dorso imo, pteromatibusque rufescenti-brunneis, fasciis albis fusco marginatis notatis; dorso medio, ptilis, remigibus caudâque brunneis, his rufescenti fasciatis, hâc fasciis albidis gracilibus notatâ, ad apicem albo marginatâ; gulâ crissoque albescentibus; abdomine subrufo, brunneo graciliter fasciato; regione circumoculari nigrâ; disco rufo, brunneo marginato.*

*Irides* rufo-brunneæ. Longitudo corporis 21 unc., caudæ 9.

Inhabits the woods of the Ghauts: rare. The specimen described is a young bird, and a female.

#### Genus *Ketupa*, Less.

21. *Ketupa Leschenaulti*, Less., *Traité d'Ornith.* p. 114. *Strix Leschenaulti*, Temm., *Pl. Col.* 20. *Scops? Leschenaulti*, Steph., vol. 13. p. 53.

A rare bird in the Dukhun. Independently of the naked legs of this bird, its aquiline aspect authorizes its separation from the genera with which it had been placed previously to M. Lesson's arrangement.

#### Genus *Noctua*, Sav.

22. *Noct. Indica*, Frankl. *Peenglah* of the Mahrattas.

*Irides* King's yellow. Sexes alike. Mice and beetles found in the stomach. An exceedingly noisy bird, and frequently heard chattering during the day-time in dense trees. The Mahrattas have a superstition respecting this species; and a class of persons, called from it *Peengleh*, live on the credulity of the people by pretending to consult it, and predict events. Length, inclusive of tail,  $9\frac{1}{2}$  to 11 inches: tail  $2\frac{1}{2}$  to 3 inches. Numerous in the Dukhun, and found in families of four or five.

### ORDER II. INSESSORES, Vigors.

#### Tribus FISSIROSTRES, Cuv.

#### Fam. *Meropidæ*.—Genus *Merops*, Linn.

23. *Merops viridis*, Linn. *Indian Bee-eater*, Lath. *Guépier à collier de Madagascar*, Buff.

Fam. *Hirundinidæ*, Leach.—Genus *Hirundo*, Auct.

24. *Hirundo filifera*, Steph., vol. 13. p. 79. *Hir. flicaudata*, Frankl. Very abundant in Dukhun, and very beautiful, with its thread-like tail-feathers floating behind when in flight.

25. *HIRUNDO JEWAN*. Mas. *Hir. capite, dorso, tectricibus alarum, uropygio, reetricibus mediis fasciisque latâ pectorali metallicè nigris; corpore subtùs rosaceo-albo; gutture rufo; remigibus reetricibusque lateralibus fusco-nigris, his internè albo maculatis.*

Fœm. et jun. *Gutturè magis rufo notato.*

*Irides intensè rufescenti-brunneæ. Longitudo corporis 6 unc., caudæ 3 $\frac{3}{5}$ .*

This bird differs from the common English Swallow, (*Hir. rustica*), only in its somewhat smaller size, larger bill, and in the lateral tail-feathers not being equally elongated. The tail is less forked, and the rufous colour of the throat extends more on the breast.

26. *HIRUNDO CONCOLOR*. *Hir. fuliginoso-brunnea, sericea; caudâ equali, reetricibus, externis mediisque exceptis, internè albo guttatis.*

*Longitudo corporis 5 unc., caudæ 2 $\frac{1}{2}$ .*

These birds live on the banks of rivers. The plumage of the sexes does not differ.

27. *HIRUNDO ERYTHROPYGIA*. *Hir. metallicè nigra; uropygio collarique nuchali rufis; corpore subtùs albo, pallidè rosaceo tincto, plumis in medio graciliter brunneo striatis.*

*Longitudo corporis 6 unc., caudæ 3.*

This species appeared in millions in two successive years in the month of March on the parade-ground at Poona: they rested a day or two only, and were never seen in the same numbers afterwards.

#### Genus *Cypselus*, Ill.

28 *Cypselus affinis*, Hardw. *Allied Swift*, Hardw.

These birds are so rare in Dukhun that Colonel Sykes obtained only two specimens.

• Fam. *Caprimulgidæ*, Vigors.—Genus *Caprimulgus*, Auct.

29. *Caprimulgus monticolus*, Frankl. *Great Bombay Goatsucker*, Lath.

30. *Caprimulgus Asiaticus*, Lath. *Bombay Goatsucker*, Id.

31. *CAPRIMULGUS MAHRATTENSIS*. *Capr. pallidè cinereo-griseus, brunneo ferrugineoque undulatus variegatusque; thorace, remigibus tribus externis in medio, reetricibusque duabus lateralibus ad apices, albo notatis.*

*Longitudo corporis 8 $\frac{3}{5}$  unc., caudæ 5 $\frac{3}{5}$ .*

This species differs from the two preceding in the prevalent grayness of the plumage, and in the absence of the subrufous collar on the nape of the neck.

Fam. *Halcyonidæ*, Vigors.—Genus *Halcyon*, Swains. *Crab-eater*.

32. *Halcyon Smyrnenis*. *Alcedo Smyrnenis*, Linn. *Smyrna Kingfisher*.

In the description of this bird authors appear to have omitted to mention the chestnut small wing-coverts, and fine rich chocolate black medial wing-coverts. This species frequents well irrigated gardens and old wells rather than brooks or rivers. Grasshoppers were frequently found in the stomach.

Genus *Alcedo*, Auct. *Kingfisher*.

33. *Alcedo rudis*, Linn. *Black and White Kingfisher*, Edw., pl. 9.  
In all Colonel Sykes's specimens the male bird is distinguished from the female by a single or broken double black bar across the breast.
34. *Alcedo Bengalensis*, Gmel. *Little Indian Kingfisher*, Edw., pl. 11.  
This species affects brooks: it is never seen in gardens.

Genus *Ceyx*, La Cép.

35. *Ceyx tridactyla*, La Cép. Buff., Pl. Enl. 778. fig. 2.  
This very beautiful bird differs from Buffon's drawing only in a purple spot terminating the ridge of the bill, and in a reddish spot on each side of it.

Tribus DENTIROSTRES, Cuv.

Fam. *Muscicapidæ*, Vigors.—Genus *Muscipeta*, Cuv.

36. *Musc. Paradisi*, Cuv. Mas. *Musc. alba*; *capite cristato colloque violaceo-atris*; *pteromatibus remigibusque atris albo marginatis*; *rhachibus rectricum atris*.  
Fœm. *Dorso, alis, caudâque castaneis*; *corpore subtus albo*; *gutturè, collo, pectore, nuclâque griseis, hâc saturatiore*; *capite cristato violaceo-atro*; *remigibus fuscis*.  
Longitudo corporis  $10\frac{1}{2}$  unc., caudæ 6.  
*Muscicapa Paradisi*, Linn. *Paradise Flycatcher*, Lath. *Avis Paradisiaca orientalis*, Seba, 1. t. 52. f. 3. *Pied Bird of Paradise*, Edw., pl. 113.
37. *Muscipeta Indica*, Steph., vol. 13. p. 111. Mas. *Musc. corpore suprâ castaneo, subtus albo*; *pectore grisescenti*; *capite cristato colloque violaceo-atris*.  
Fœm. *variâ similis, rectricibus duabus mediis paulum elongatis*.  
Statura præcedentis. *Irides intensè rufo-brunnæ*.  
*Avis Paradisiaca cristata*, Seba, 1. t. 30. f. 5. *Upupa Paradisea*, Linn. *Promerops Indicus cristatus*, Briss. *Crested long-tailed Pie*, Edw., pl. 325.

These two birds have lately been erroneously considered to belong to one species. They were never found however by Colonel Sykes (who shot many,) in the same locality, nor did he observe any intermediate stage of plumage. The difference between the females of the two birds noticed above at once decides the distinction of species. The two central tail-



feathers of the males (not of the females) are elongated to three or four times the length of the body: in one specimen they are  $15\frac{3}{4}$  inches long. They feed principally on the ground, and on very minute insects.

There has been much confusion among the early descriptions of these birds. Linnæus describes the *Musc. Indica* as an *Upupa*; Brisson as a *Promerops*; and others as a *Pica*, *Icterus*, *Todus*, *Manucodiata*, &c. The specific name of *Indica* seems to have the right of priority over that of *castanea* given by M. Temminck, (See M. Kuhl's 'Systematic Catalogue of the Pl. Enluminees,' page 5,) as having originally been assigned to the bird by Brisson. Other well marked species, nearly allied to the two preceding, the males of which have similarly elongated tail-feathers, are found in Africa and China.

38. *Muscipeta flammea*, Cuv. *Gobe-mouche flammea*, Temm., Pl. Col., 263. Male and Female.

The cry of this bird is *wheet, wheet, wheet*. In the colours, the female has yellow where the male has scarlet. *Irides* brown-black.

39. *Muscipeta peregrina*. *Parus peregrinus*, Linn. *Crimson-rumped Flycatcher*, Lath.

Genus *Muscicapa*, Auct.

40. *Muscicapa melanops*, Vigors. Figured in Gould's 'Century of Himalayan Birds.'

41. *Muscicapa Banyumas*, Horsf. *Banyumas Flycatcher*, Lath. *Gobe-mouche chanteur*, Temm.

42. MUSCICAPA POONENSIS. *Musc. supra cinereo-brunnea; subtus sordidè alba; mandibulâ superiori nigrâ, inferiori ad basin albâ.*

Longitudo corporis  $4\frac{5}{10}$  unc., caudæ  $1\frac{9}{10}$ .

These birds sit on the extreme twigs of trees, and dart on passing insects in the manner of the *Merops viridis*.

43. MUSCICAPA CÆRULEOCEPHALA. *Musc. cinereo-brunnea, cæruleo levitè tincta; capite thoraceque lazulinis; pectore sublazulino; abdomine crissoque albis.*

Longitudo corporis  $5\frac{7}{10}$  unc., caudæ  $2\frac{1}{2}$ .

44. MUSCICAPA PICATA. *Musc. supra atra, subtus sordidè alba; strigâ a mento ad nucham utrinque extendente, fasciâ alarum, uropygio, crisso, apicibusque rectricum duarum lateralium albis.* Longitudo corporis  $5\frac{3}{4}$  unc., caudæ  $2\frac{3}{4}$ .

Genus *Rhipidura*, Vigors & Horsf. *Fan-tailed Flycatcher*.

45. *Rhipidura albofrontata*, Frankl.

46. *Rhipidura fuscoventris*, Frankl.

Colonel Sykes has shot both these birds in the same localities.

The male has a very sweet note. He spreads and raises his tail over his head in hopping from bough to bough. Both species have the aspect and habits of the Australian bird *Muscicapa flabellifera*, Gmel. *Irides* deep sepia brown.

Fam. *Laniadæ*, Vigors.Genus *Dicrurus*, Vieill.—*Edolius*, Temm.

47. *Dicrurus Balicassius*. *Corvus Balicassius*, Linn.  
 48. *Dicrurus cærulescens*, Linn. *Lanius Fingah*, Shaw, t. 7. p. 291.

Genus *Hypsipetes*, Vigors.

49. HYPSSIPETES GANEESA. *Hyps. griseo-brunnea*, subtùs pallidior; *alis remigibusque brunneis*; *capite suprâ vix cristato metallicè atro*.

Longitudo corporis 10 unc., caudæ 4. Irides intensè rufo-brunneæ.

Tongue bifid, and deeply fringed; sexes exactly alike. Stony fruit found in the stomach. Neck short, and head sunk into the shoulders; flight very rapid. Found only in the dense woods of the Ghauts. The tongue is that of *Pastor*, the legs those of *Dicrurus*.

Genus *Collurio*, Vigors.

50. COLLURIO LAHTORA. *Coll. pallidè griseus*; *strigâ frontali per oculos utrinque ad nucham extendente, alis, reatricibusque mediis nigris*; *corpore subtùs, fasciâ alarum, scapularium marginibus, reatricibus externis, apicibusque duarum sequentium albis*.

Longitudo corporis  $9\frac{1}{2}$  unc., caudæ  $4\frac{1}{2}$ .

This is the variety C. of *Lanius Excubitor* of Dr. Latham. It is closely allied to the North American and European *Lan. Excubitor*, but differs in the black bar extending across the forehead. The male has a sweet note.

51. *Collurio erythronotus*, Vigors, Proceed. Zool. Soc. I. p. 42.

This bird differs from the *Lan. Bentet* of Dr. Horsfield only in the crown being ash-coloured instead of black, and in the defined black bar across the forehead.

52. Jun.? *abdomine graciliter fasciato*.

Supposed young of the above. Length  $7\frac{1}{2}$  inches: tail  $3\frac{2}{3}$ .

53. *Collurio Hardwickii*, Vigors, Proceed. Zool. Soc., I. p. 42. *Bay-backed small Shrike*, Lath.

Genus *Lanius*, Auct.

54. *Lanius Muscipoides*, Frankl. *Keroula Shrike*, Lath.

A rare bird. Colonel Sykes's specimen, a female, corresponds with Major Franklin's specific characters, and with his specimen, a male bird.

Genus *Graucalus*, Cuv.

55. *Graucalus Papuensis*, Cuv. *Corvus Papuensis*, Gmel. *Papuan Crow*, Lath.

Irides rich lake.

Genus *Ceblepyris*, Cuv.

56. *Ceblepyris fimbriatus*, Temm. *Echenilleur frangé*, ♀ Pl. Col. Irides orange.

Colonel Sykes's birds, full-grown males, correspond only to the

female of *Ceb. fimbriatus*, and not at all to the male. Met with only in thick hedges on the plains.

57. *Ceblepyris canus*. *Le Grand Gobe-mouche cendré de Madagascar*, Pl. Enl. 541.

*Irides* intense red brown. Black ants only found in the stomach. This bird does not correspond with the later descriptions of *Ceb. canus* (*Muscicapa cana*), and the history of both these species of *Ceblepyris* requires further illustration. Found only in thick bushes. Specimens of both species from Bengal and Wynaad resemble those collected by Colonel Sykes.

Fam. *Merulidæ*, Vigors.—Genus *Oriolus*, Auct.

58. *Oriolus Galbula*, Linn. *Golden Oriole*, Lath. *Mango Bird* of Dukhun.

Very abundant in Dukhun just before the rains. It is called *Pawseh* by the Mahrattas, from being the precursor of the monsoon. It is a quarrelsome bird. *Irides* rich lake.

59. *Oriolus melanocephalus*, Linn. *Black-headed Oriole*, Lath.

Rare. Seen by Colonel Sykes only in the immediate neighbourhood of the Ghauts. Found also in Africa.

60. **ORIOLOUS KUNDUO.** *Or. corpore suprâ flavo-viridi; uropygio, crisso, pogoniis internis reetricum ad apices, abdominisque lateribus nitidè flavis; alis olivaceo-brunneis; corpore subtus sordidè albo, brunneo striato; rostro nigro.*

*Irides* rufo-brunneæ. Longitudo *Or. Galbulæ*.

Both sexes alike. Size of *golden Oriole*, and much resembling the female of that bird; but the bill is always black, and the *irides* reddish-brown instead of lake.

Genus *Turdus*, Auct.

61. *Turdus macrourus*, Gmel. *Long-tailed Thrush*, Lath.

Rare. Found in dense woods of the Ghauts.

62. *Turdus Saularis*. *Gracula Saularis*, Linn. *Pastor Saularis*, Temm. *Little Indian Pie*, Edw., pl. 181.

63. *Turdus cyanotus*, Jardine and Selby, pl. 46.

This bird has the tongue of a *Pastor*. *Irides* intense red brown. Stony fruit and *Cicadæ* found in the stomach. Has the naked spot behind the eyes, but the bird has not the air of a *Pastor*. Inhabits the Ghauts.

Genus *Petrocincla*, Vigors.

64. **PETROCINCLA PANDOO.** *Petr. brunnescenti-cyanea; pteromantibus, remigibus, reetricibusque fuscis.*

*Irides* fusce. Statura minor quàm *Turd. cyanei*.

This bird differs from the *solitary Thrush* of Europe (*Turd. cyaneus*, Linn.) in its smaller size, slighter form, brighter cœrulean tint, want of orange eyelids and white tips to the feathers. Found only in the dense woods of the Ghauts. Flight low and rapid. It appears to correspond with var. A. of Dr. Latham's *solitary Thrush*, vol. 5. p. 47.

65. *PETROCINCLA MAAL*. *Petr. suprâ griseo-brunnea, subtùs rufescenti-alba, plumis brunneo marginatis; crisso rufescenti, fusco-brunneo fasciato.*

*Statura præcedentis.*

This bird corresponds as closely as possible with what is stated to be the female of the *Turd. cyaneus*, and may by analogy be supposed to be the female of *Petrocincla Pandoo*; but it inhabits only the prickly milk-bushes (*Euphorbia tortilis* and *pentagona*) of the rocky plains of the Dukhun. Colonel Sykes never saw it in the Ghauts, nor in company with *Petr. Pandoo*.

66. *Petrocincla cinclorhyncha*, Vigers, Proceed. Zool. Soc. I. p. 172. Figured in Gould's Century of Himalayan Birds.

Genus *Timalia*, Horsf.

67. *TIMALIA MALCOLMI*. *Tim. pallidè grisescenti-brunnea, uropygio pallidiori, remigibus reatricibusque mediis saturatoribus, his fusco obsoletè fasciatis; subtùs albescens, leviter rosaceo tincta; frontis plumis subcyanis, in medio albo striatis.*

*Irides flavo-aurantiæ. Rostrum brunneum, mandibulâ inferiori ad basin flavescenti. Longitudo corporis 11½ unc., caudæ 5½.*

*Kokuttee* of the Mahrattas. Congregate in flocks of ten or a dozen; fly low, slowly, and with difficulty: never cease chattering, and all at the same time. Food, grasshoppers and grain. Colonel Sykes has dedicated this species to Sir John Malcolm, G.C.B., who zealously aided his researches in India.

68. *TIMALIA SOMERVILLEI*. *Tim. rufescenti-brunnea; abdomine, crisso, dorso imo caudâque dilutè rufis, hâc saturatori obsoletè fasciatâ; remigibus brunneis; gutturis pectorisque plumis in medio subcyaneo notatis.*

*Rostrum pedesque flavi. Longitudo corporis 9½, caudæ 4½. Irides pallidè flavæ.*

A size less than *Tim. Malcolmii*, but shorter. *Irides* bright yellow: same habits as the preceding, but found in the Ghauts only; the latter on the plains. Colonel Sykes has dedicated this bird to Dr. William Somerville, F.R.S. in testimony of his respect.

69. *Timalia Chataræa*, Frankl. *Gogoye Thrush*, Lath.?  
Habits of the preceding, but about half the size of *Tim. Malcolmii*.  
*Irides* red brown; legs yellow.

Genus *Ixos*, Temm.

70. *Ixos jocosus*. *Lanius jocosus*, Linn. *Jocose Shrike*, Lath.

This is also the *Lanius Emeria* of Shaw. The male has a sweet note. Found only in the lofty woods of the Ghauts. *Irides* fuscous. Lives on fruit: sexes alike.

71. *Ixos Cafer*. *Turdus Cafer*, Linn. *Cape Thrush*, Lath. *Le Cou-rouge*, Le Vaill.

Inhabits gardens: destructive to fruit: without musical notes. Sexes alike.



72. *Ixos fulicatus*. *Motacilla fulicata*, Linn. *Sooty Warbler*, Lath.  
*Traquet noir des Philippines*, Buff.  
 Sir J. Anstruther's variety. Lath., vol. 7. p. 112. Female sooty-  
 black or brown-black.

Genus *Pomatorhinus*, Horsf.

73. POMATORHINUS HORSFIELDII. *Pom. olivaceo-brunneus*; *strigá*  
*superciliari*, *collo in fronte*, *pectore*, *abdomineque medio albis*.  
*Irides fusco-sanguineæ*. *Rostrum flavum*. *Pedes fuscii*. Lon-  
 gitude corporis  $9\frac{7}{10}$  unc., *caudæ*  $3\frac{7}{10}$ .

Minute insects (Dipterous) found in the stomach. Birds remark-  
 ably shy, and only met with in the dense woods of the Ghauts.  
 The note of the male is *hoot, whoot, whoot*, uttered slowly: the  
 female answers *hooe*. The tongue and habits of this bird are  
 those of a *Thrush* or *Timalia*. I have dedicated this species  
 to a gentleman to whom science is deeply indebted.

Fam. *Sylviadæ*, Leach.—Genus *Jora*, Horsf.

74. *Jora Tiphia*. *Motacilla Typhia*, Linn. Lath., vol. 7. p. 128.  
 var. A. Brown's *Illust.* pl. 36.

Dr. Horsfield's *Jora scapularis* appears to correspond with the  
 female of *Jora Tiphia*. *Irides* gray.

Genus *Sylvia*, Auct. *Warbler*.

75. *Sylvia montana*, Horsf. *Prinia montana*, Swains.  
 Differs from the type of *Prinia* in its rounded tail. *Irides* fuscous.  
 76. *Sylvia sylviella*, Lath. *Lesser White-throat*.  
 Differs from the European bird only in the reddish tint of the  
 white below.  
 77. SYLVIA RAMA. *Sylv. pallidè brunnea*, *subtùs albescens*; *caudá*  
*obsoletè fasciatá*.  
 Longitudo corporis  $4\frac{7}{10}$ , *caudæ*  $1\frac{3}{10}$ .  
 Sexes alike. A size smaller than *Sylv. montana*, and might be mis-  
 taken for it; but Colonel Sykes has shot them male and female,  
 in several places in Dukhun, full-grown birds.

Genus *Prinia*, Horsf.

78. PRINIA SOCIALIS. *Prin. capite dorsoque intensè cinereis*; *remi-*  
*gibus reatricibusque rufo-brunneis*, *his prope apices fusco-fas-*  
*ciatis*; *subtùs rufescenti-alba*, *abdominis lateribus satura-*  
*tioribus*.

*Rostrum nigrum*. *Pedes flavi*. *Irides pallidè aurantiacæ*. Lon-  
 gitude corporis  $5\frac{2}{10}$ , *caudæ*  $2\frac{2}{10}$ .

Sexes alike in size and plumage. This species constructs the  
 same ingenious nest, and has the same habits, same note (*tooee*,  
*tooee*), and feeds in the same manner, as the *Orthotomus Ben-*  
*nettii*.

79. PRINIA INORNATA. *Prin. suprà pallidè cinereo-brunnea*, *strigá*  
*superciliari corporeque subtùs albescens*, *abdominis lateribus*  
*crissoque rufescentibus*; *caudá obsoletè fasciatá*.

*Irides* rufo-brunneæ. *Rostrum* brunneum; *mandibulá* inferiori ad basin flavâ. *Longitudo corporis*  $4\frac{7}{10}$  unc., *caudæ*  $2\frac{7}{10}$ .  
 Sexes do not differ in size or plumage. Habits of *Prin. socialis*.  
 Both the above species are remarkable for a struggling flight, as if they experienced difficulty in making their way.

Genus *Orthotomus*, Horsf. *Tailor Bird*.

80. ORTHOTOMUS BENNETTII. *Orth. olivaceo-viridis*; *subtùs albidus*; *capite suprâ ferrugineo*; *caudá elongatá obsoletè fasciatá*.  
*Irides* flavæ. *Longitudo corporis* 6 unc., *caudæ*  $2\frac{7}{10}$ .  
 Two central tail-feathers elongated beyond the rest for one inch, and two-tenths of an inch wide only. Sexes alike. This bird is very remarkable for the ingenuity shown in constructing its nest by sewing the leaves of trees together with cotton thread and fibres. Colonel Sykes has seen nests in which the thread used was literally knotted at the end. This species very closely resembles Dr. Horsfield's *Orth. Sepium*, but on a comparison of the birds they were found to have specific differences.
81. ORTHOTOMUS LINGOO. *Orth. olivaceo-brunneus*, *subtùs sordidè albus*.

*Longitudo corporis*  $5\frac{6}{10}$  unc., *caudæ*  $2\frac{1}{10}$ .

This species differs from the type of *Orthotomus* in the short tail, but has the characters of the genus sufficiently marked to be included in it. Sexes exactly alike in plumage. Principal food black ants.

Genus *Budytes*, Cuv.

82. *Budytes citreola*. *Motacilla citreola*, Lath. This is the variety A. of *Mot. citreola* of Dr. Latham, vol. 6. p. 330.

Length  $6\frac{7}{10}$  inches: tail  $2\frac{8}{10}$ .

This bird so closely resembles the European species that Colonel Sykes has not ventured to separate it. It has the habits of a *Motacilla*, but its long hind claw sufficiently distinguishes it, and M. Cuvier has facilitated research in forming a genus for such *Wagtails* as have this claw.

83. BUDYTES MELANOCEPHALA. *Bud. olivaceo-viridis*; *corpore subtùs nitidè flavo*; *capite, nuchá, reatricibusque nigris*, *harum duabus lateralibus albo marginatis*; *alis fuscis, plumis olivaceo-flavo notatis*.

*Irides* intensè rufo-brunneæ. *Longitudo corporis*  $6\frac{8}{10}$  unc., *caudæ* 3.

These are solitary birds, and are rarely found, excepting in the beds of rivers. In seven specimens four birds only were examined, and they happened to be males; so that Colonel Sykes is uncertain with respect to the female.

84. BUDYTES BEEMA. *Bud. olivaceo-viridis*, *subtùs flavus*; *capite suprâ griseo*; *strigá superciliari albá*; *alis fuscis plumis flavo-tescenti marginatis*; *caudá atrá, reatricibus duabus lateralibus albis*.

*Irides* flavo-brunneæ. *Statura præcedentis*.

This bird very closely resembles *Budytes flava* of Europe, but differs in the shade of the upper plumage, in the hind claw being two-tenths of an inch longer, and in the base of the lower mandible being whitish. This is a solitary bird in beds of rivers: female not known.

Genus *Motacilla*, Auct.

85. *Motacilla variegata*, Steph., vol. 13. p. 234. *Pied Wagtail*, Lath., vol. 6. p. 320. pl. 114. *Mot. picata*, Frankl.

86. MOTACILLA DUKHUNENSIS. *Mot. dorso scapularibusque pallescenti-griseis, caudæ tectricibus ad apicem nigrescentibus; capite suprâ, nuchâ, gutture, pectore, rectricibusque mediis atris; frontis fasciâ latâ, corpore subtus, plumarum marginibus, alarum remigibus primariis exceptis, rectricibusque duabus lateralibus albis; remigibus fuscis.*

*Irides* intensè rufo-brunneæ. *Statura* *Mot. albæ*.

Sexes do not differ in size or plumage; but young birds have the black less pronounced. This is the most common and abundant *Wagtail* in the Dukhun, frequenting not only the beds of rivers, but the plains; and Colonel Sykes has seen it in his own garden frequently. It very closely resembles the *Mot. alba*, of Europe, but differs in being of a light slate or cinereous instead of a blackish cinereous, and in the wing-coverts and secondaries being edged with broader white. It is almost identical with the *Mot. alba* of the Northern Expedition.

Genus *Megalurus*, Horsf.

87. MEGALURUS? RUFICEPS. *Meg. olivaceo-brunneus, subtus albescens, pectore brunneo striato; capite genisque brunnescenti-rufis, strigâ superciliari rufescente; capitis dorsique plumarum rhachibus pallidioribus; rostro pedibusque luteis.*

*Longitudo corporis*  $7\frac{1}{2}$  unc., *caudæ*  $2\frac{1}{2}$ .

Wings short: tail equal, narrow. Female unknown. Black ants only found in the stomach. This bird has the air of the *Anthus Richardi* figured in the *Planches coloriées*, 101. Frequents the plains only, like a *Lark*.

Genus *Anthus*, Bechst. *Pipit*.

88. ANTHUS AGILIS. *Anth. olivaceo-brunneus; subtus rufescenti-albescens, fusco-brunneo striatus; remigibus flavo-olivaceo marginatis; ungue postico subelongato, subcurvato.*

*Irides* fusco-sanguineæ. *Longitudo corporis*  $6\frac{5}{8}$  unc., *caudæ*  $2\frac{5}{8}$ .

Found on open stony lands: female unknown. Closely resembles the *Titlark* of Europe. Its chief difference is in the hind toe.

Genus *Saxicola*, Bechst. *Wheatear*.

89. *Saxicola rubicola*, Temm. *Stone Chat*.

*Irides* intense brown. These birds were met with only in low scattered bushes. Caterpillars, flies and ants found in the stomach.

90. *SAXICOLA BICOLOR*. *Sax. atra*; fasciâ alarum, uropygio, abdomine mediò, crissoque albis.  
Rostrum pedesque nigri. Irides fuscæ. Longitudo corporis 5 $\frac{8}{10}$  unc., caudæ 2 $\frac{1}{10}$ .

Female unknown. Three males were examined. Black ants, caterpillars and beetles were found in the stomach. Habits of the preceding.

91. *SAXICOLA RUBECULOÏDES*. *Sax. cinereo-brunnea*, subtùs alba; gulâ thoraceque rufis; reatricibus mediis nigrescentibus, cæteris ad basin albis.  
Irides intensè brunneæ. Longitudo corporis 4 $\frac{7}{10}$  unc., caudæ 2.

92. *SAXICOLA ERYTHROPYGIA*. *Sax. fusco-brunnea*; subtùs rufobrunnea, abdomine fusco vix striato; uropygio rufo; crisso rufo tincto.

Statura *Sax. bicoloris*. Male unknown.

Genus *Phœnicura*, Jard. & Selb.

93. *Phœnicura atrata*, Jard. & Selb. *Indian Redstart*, Iid.

This bird is of the size of the *Redstart* of Europe, and has the same habits. It has a very peculiar manner of vibrating its tail when seated on a bough, as if it had an ague fit. A pair of these birds built their nest in an outhouse constantly frequented by Colonel Sykes's servants, and within reach of the hand. They had no alarms.

94. *Phœnicura Suecica*. *Motacilla Suecica*, Linn.

Not differing from the European bird. Irides deep brown. Length 5 $\frac{9}{10}$  inches; tail 2.

Fam. *Pipridæ*, Vigors.

Genus *Parus*, Linn. *Titmouse*.

95. *Parus atriceps*, Horsf. *Mésange Cap-nègre*, Temm., Pl. Col. 287. f. 2.

96. *Parus xanthogenys*, Vigors, Proceedings Zool. Soc. I. p. 23.  
Figured in Gould's 'Century of Himalayan Birds.'

Irides sienna brown. Tongue divided into four short *lacinia* at the tip. Wasps, bugs, grass seeds, and the fruit of the *Cactus Opuntia* were found in the stomachs of both species.

Tribus *CONIROSTRES*, Cuv.

Fam. *Fringillidæ*, Vigors.—Genus *Alauda*, Auct.

97. *Alauda Gulgula*, Frankl.

This is the common *Lark* of the Dukhun, with the habits and notes of the *Skylark* of Europe. When confined in a cage and shrouded from the light, it learns to imitate the notes of other birds, and even quadrupeds. The male is crested. It is called *Chundoola* in Dukhun. Irides sepia brown. Length 6 $\frac{7}{10}$  inches; tail 2 $\frac{3}{10}$ . Food, grasshoppers.

98. *ALAUDA DEVA*. *Al. rufescenti-brunnea brunneo intensiori notata*; corpore subtùs striâque superciliari rufescenti-albis, pectore



*brunneo striato; capite cristato brunneo striato; rectricibus brunneis rufo marginatis.*

Statura minor quam præcedentis.

99. ALAUDA DUKHUNENSIS. *Al. corpore suprâ griseo-brunneo, plumis in medio fusco-brunneo notatis; subtus albescens, pectore strigâque superciliari rufescentibus; rectricibus fusco-brunneis, duabus lateralibus albo marginatis.*

*Irides* intensè brunneæ. Longitudo corporis  $6\frac{3}{10}$  unc., caudæ 2.

Grass seeds only found in the stomach. Frequents stony plains.

Genus *Mirafra*, Horsf.

100. *Mirafra phœnicura*, Frankl.

This bird is characterized by the lightness, shortness, abruptness, and sudden ascents and descents of its flight. *Irides* yellow-brown. Granivorous.

Genus *Emberiza*, Auct. *Bunting*.

101. *Emberiza melanocephala*, Scop.

This native of Corfu is common to Western India. It appears in considerable flocks at the ripening of the bread grain *Jowaree* (*Andropogon Sorghum*) in December. *Irides* intense brown. Length  $7\frac{3}{10}$  inches: tail 3 inches. Granivorous. Allied to *Emb. luteola*, Mus. Carls. vol. 4. t. 93.

102. *Emberiza hortulana*, Linn. *Red-brown Bunting*.

This, although not absolutely identical, is so closely allied to the European bird that Colonel Sykes cannot separate it. *Irides* intense brown. Length  $7\frac{1}{10}$  inches; tail 3 inches. Grass seeds only found in the stomach. Bird solitary.

103. *Emberiza cristata*, Vigors, Proceed. Zool. Soc. I. p. 35.

Length  $6\frac{1}{2}$  inches: tail  $2\frac{7}{10}$  inches. Rare in Dukhun, and found only on rocky and bushy mountains. Female of a uniform sooty brown. Grass seeds only found in the stomach. Native of China and Nepaul as well as Dukhun.

104. EMBERIZA SUBCRISTATA. *Emb. suprâ intensè brunnea, plumis brunneo pallidiori marginatis; subtus pallidè brunnea, fusco striata; alarum plumarum rectricumque lateralium marginibus, rectricibusque duabus mediis castaneis; capite subcristato.*

*Irides* intensè brunneæ. Rostrum rufo-brunneum. Longitudo corporis  $6\frac{6}{10}$  unc., caudæ  $2\frac{5}{10}$ .

Sexes alike in size and plumage. Birds rare and solitary, and found only in the open spaces on high mountains. This bird is pronounced in Europe to be the female of *Emb. cristata*; but setting aside the fact of both sexes of each bird being in the present collection, their localities are different, and they were never seen together by Colonel Sykes.

Genus *Linaria*, Bechst. *Linnet*.

105. *Linaria Amandava*. *Fringilla Amandava*, Linn.

These beautiful little birds, so common in Goojrat, are rare in Dukhun.

Genus *Ploceus*; Cuv. *Weaver Bird*.106. *Ploceus Philippensis*, Cuv. *Philippine Grosbeak*, Lath.

The *Weaver Bird* is very common in Dukhun, and there are few wells overhung by a tree where their nests are not seen pendent. They live in small communities, and are very noisy in their labours. They associate so readily with the *common Sparrow* that at the season of the falling of the grass seeds Colonel Sykes, in firing into a flock of *Sparrows* on the grass plats in his own grounds, killed as many *Weaver Birds* as *Sparrows*. Fruit of the *Ficus Indica* and grass seeds have been found in the stomach. *Irides* intense brown.

107. *Ploceus flavicollis*. *Fringilla flavicollis*, Frankl.

This bird has so nearly the bill, tongue, *irides*, size and aspect of *Ploc. Philippensis*, that Colonel Sykes has considered it a *Ploceus*. Grass seeds and a few grains of rice found in the stomach. Very rare in Dukhun.

Genus *Fringilla*, Auct. *Finch*.108. *Fringilla crucigera*, Temm., Pl. Col. 269. fig. 1. *Duree Finch*, Lath.

This minute bird has the strange habit of squatting on the high roads and almost allowing itself to be ridden over ere it rises. Smaller than a *Sparrow*. *Irides* red brown. Coleopterous insects, maggots, and seeds of *Panicum spicatum* found in the stomachs of many specimens. This bird has the straight hind claw of a *Lark*, and should therefore neither be classed as a *Fringilla*, agreeably to M. Temminck, nor as a *Passer*, agreeably to Brisson. Its habits also separate it from both these genera. M. Temminck in his Plate has placed it on a twig, but it never perches.

Genus *Lonchura*.

*Rostrum* forte, breve, latum, altitudine ad basin longitudinem æquans; *mandibulis* integris, superiori in frontem angulariter extendente, cumque eo circuli arcum formante.

*Alæ* mediocres, subacuminatæ; *remigibus*, 1mâ brevissimâ subspuriâ, 2dâ 3tiâ 4tâque ferè æqualibus longissimis.

*Cauda* gradata, lanceolata; *rectricibus* mediis cæteras paullò longitudine superantibus.

*Pedes* mediocres, subgraciles.

The peculiar spear-head form of the tail, and the ridge of the upper mandible and the forehead, forming a segment of the same circle, together with the habits of the following species, afford sufficient characteristics to justify their separation from the genus *Fringilla* of M. Temminck. The *Gros-bec longicone* of the Pl. Col. 96. (*Emb. quadricolor*, Lath.) belongs to the same group.

109. *Lonchura nisoria*. *Fringilla nisoria*, Temm. *Gros-bec épervin*, Pl. Col. 500. Fig. 2.

Found only in the Ghauts. Grass seeds in the stomach. Length 5 $\frac{1}{4}$  inches: tail 1 $\frac{3}{4}$  to 2 inches. Sexes alike.

110. *LONCHURA CHEET*. *Lonch. pallidè cinnamomeo-brunnea*; corpore subtilis uropygioque albis; remigibus reatricibusque intensè brunneis.

Fœm. coloribus minùs intensis.

Irides intensè rufo-brunneæ. Longitudo corporis  $5\frac{3}{4}$  unc., caudæ 2.

Tail lanceolate; central feathers longer than the rest, and ending in a point. Sexes alike. These birds live in small families. Colonel Sykes has frequently found them in possession of the deserted nests of the *Ploceus Philippensis*; but their own nest is a hollow ball of grass. Ten white eggs, not much larger than peas, were found in a nest. The cry of the bird is *cheet, cheet, cheet*, uttered simultaneously by flocks in flight.

111. *Lonchura leuconota*. *Fringilla leuconota*, Temm. *Gros-bec leuconote*, Pl. Col. 500. fig. 1.

Found only in the Ghauts. Length  $4\frac{3}{8}$  inches, inclusive of tail  $1\frac{3}{8}$  inch. Sexes alike. Grass seeds only found in the stomach.

Genus *Passer*, Auct.

112. *Passer domesticus*, Briss. *Fringilla domestica*, Linn.

On submitting the *Indian Sparrow*, male and female, to a rigid comparison with *Sparrows* shot in the Regent's Park, they were found to be absolutely identical.

Fam. *Sturnidæ*, Vigors.—Genus *Pastor*, Temm.

113. *Pastor tristis*, Temm. *Gracula tristis*, Lath.

The *irides* are red brown, and remarkable for being studded on the external margin with regularly arranged yellowish-white specks. Sexes alike: omnivorous: quarrelsome, noisy. Length  $11\frac{3}{8}$  inches, inclusive of tail of  $3\frac{5}{8}$ .

114. *PASTOR MAHRATTENSIS*. *Past. suprâ griseo-niger*, remigibus caudæque saturatoribus; capite genisque atris; corpore subtilis subrufescenti-griseo; crisso pallidiori, plumis albo marginatis.

Rostrum pedesque flavi. Irides pallidè griseæ. Longitudo corporis  $9\frac{3}{4}$  unc., caudæ  $2\frac{3}{8}$ .

Sexes alike. Found only in the Ghauts. Stony fruit in the stomachs of three birds. Resembles *Past. tristis*, but is a size less, possesses no crest, and has gray *irides*.

115. *Pastor roseus*, Temm. *Turdus roseus*, Linn.

Irides intense red brown. Tongue bifid and fringed; not quite so much so as *Hypsipetes Ganeesa*. These birds darken the air by their numbers at the period of the ripening of the bread grains, *Andropogon Sorghum*, and *Panicum spicatum*, in Dukhun, in December. Colonel Sykes has shot forty or fifty at a shot. They prove a calamity to the husbandman, as they are as destructive as locusts, and not much less numerous.

116. *Pastor Pagodarum*, Temm. *Turdus Pagodarum*, Gmel. *Gracula Pagodarum*, Shaw, vol. 7. p. 471. *Le Martin Brame*, Le Vaill., Ois. d'Afr. pl. 95. tom. 2.

Irides greenish white. Length  $8\frac{3}{8}$  inches, inclusive of tail of  $2\frac{3}{8}$ .

to 3 inches. Sexes alike. These birds are great frequenters of the *Ficus Indica*, *Ficus religiosa*, and *Cactus Opuntia*, for their fruit. Insects also are found in the stomach. Birds lively and elegant in flight.

Fam. *Corvidæ*, Leach. Genus *Corvus*, Auct.

117. *CORVUS CULMINATUS*. *Corv. suprâ splendenti-ater; subtus fuliginoso-ater; rostri culmine elevato.*

Longitudo corporis 14 unc., caudæ 7.

Smaller than the European Crow. These birds are remarkable for their audacity. Bill with a considerable *culmen*.

118. *Corvus splendens*, Vieill. *Common Crow* of India.

This is no doubt Vieillot's *splendid Crow*, but in the thousands Colonel Sykes has met with he never saw the plumage ornamented with the pronounced green and blue in Vieillot's plate. Has the noisy, impudent, and troublesome habits of the English Crow. Length 18 inches, inclusive of tail of 6 inches. A wounded Crow was put into the cage with a *Viverra Indica*, in the expectation that the latter would make a meal of it. The Crow however stood so vigorously on the defensive, that a treaty of peace ensued, and they lived amicably together for several weeks, the Crow partaking of the food of the *Civet* until it died from its wound.

Genus *Coracias*, Linn. *Roller*.

119. *Coracias Indica*, Linn. *Coracias Bengalensis*, Steph. *Blue Jay* from the *East Indies*, Edw., pl. 326.

Very common in Dukhun. Called *Tas*, from its note, by the Mahrattas. Sexes do not differ in size or plumage. *Irides* intense red brown. A grasshopper  $2\frac{1}{2}$  inches long was found in the stomach of one bird. Length  $13\frac{1}{4}$  inches, inclusive of tail of  $4\frac{7}{10}$  inches.

Fam. *Buceridæ*, Leach.

*Hornbills* are by no means rare in Dukhun, but from accident Colonel Sykes had not a specimen to produce.

Tribus SCANSORES, Auct.

Fam. *Psittacidæ*, Leach.—Genus *Palæornis*, Vigors.

120. *Palæornis torquatus*, Vigors.

Appear in considerable flocks in Dukhun, and are very destructive to the crops, particularly to the *Carthamus Persicus*. Fond also of the fruit of the *Melia Azadirachta*. The female differs from the male only in wanting the collar, and has in consequence been considered to belong to a different species. The Mahrattas call the bird *Ragoo* and *Keeruh*. Length  $17\frac{1}{2}$  inches, inclusive of tail of  $9\frac{1}{2}$  inches.

121. *PALÆORNIS MELANORHYNCHUS*. *Pal. viridis, corpore subtus, notâ circumoculari, dorsoque imo pallidioribus; capite, collo in fronte nuchâque, columbino-canis; rostro, torquæ collari latâ*



*nigris*; *fronte, remigibus, reatricibusque mediis cyaneis, illo pallidiori*; *reatricibus subtilis, apicibusque supra flavis.*

*Irides albæ, subflavo-marginatæ. Longitudo corporis 14 $\frac{2}{10}$  unc., caudæ 7 $\frac{6}{10}$ .*

Found only in the Ghauts. Sexes alike. This bird has the aspect of *Pal. columboides*, but differs in the black bill, broad black collar, pale green yellow beneath instead of dove colour, and in the want of the metallic green narrow collar and blueish rump.

Fam. *Picidæ*, Leach.—Genus *Bucco*, Linn. *Barbet.*

122. *Bucco Philippensis*, Gmel. *Barbu des Philippines*, Buff.

This well known bird is called *Tambut*, or the *Coppersmith*, by the Mahrattas. It sits on the loftiest and extreme twigs of trees, uttering the syllables *took, took, took*, deliberately, and nodding its head at each *took*; the sound and the motion originating the idea of a coppersmith at work hammering. *Irides* lake colour. Length 6 $\frac{1}{2}$  inches, inclusive of tail 1 $\frac{1}{2}$  inch. Fruit and insects found in the stomach.

123. *Bucco caniceps*, Frankl.

Scarcely distinguishable from *Bucco corvinus* and *Bucco Javanicus*. Found only in the dense woods of the Ghauts. Its note is quite startling, and makes the hills echo. *Irides* red deep brown. Length 8 $\frac{7}{10}$  inches, inclusive of tail of 2 $\frac{7}{10}$  inches: the bird is consequently smaller than Major Franklin's. Stony fruit only found in the stomach.

Genus *Picus*, Linn. *Woodpecker.*

124. *Picus Mahrattensis*, Lath. *Mahratta Woodpecker*, Id.

*Irides* rich lake. Length 7 $\frac{4}{10}$  inches, inclusive of tail of 2 $\frac{2}{10}$  inches. Although this is called the *Mahratta Woodpecker*, Colonel Sykes met with three birds only in Dukhun during six years.

Fam. *Certhiada*, Vigors.—Genus *Upupa*, Linn. *Hoopoe.*

125. *Upupa minor*, Shaw. *La Huppe d'Afrique*, Le Vaill.

*Irides* almost black. Length 12 to 12 $\frac{1}{2}$  inches, inclusive of tail from 4 $\frac{3}{10}$  to 4 $\frac{5}{10}$  inches. Feeds on the ground, and does not hop.

Fam. *Cuculidæ*, Leach.—Genus *Leptosomus*, Vieill.

126. *Leptosomus Afer*. *Cuculus Afer*, Gmel. *Edolian Cuckoo*, Shaw.

*Cuculus Edolius*, Cuv. *Cuc. serratus*, Shaw?

*Irides* reddish deep brown. Length 13 $\frac{1}{10}$  inches, inclusive of tail of 6 $\frac{5}{10}$  inches. Rare in Dukhun.

Genus *Eudynamys*, Vigors & Horsf.

127. *Eudynamys orientalis*. *Cuculus orientalis*, Linn. Female *Cuc. Mindanensis*.

Called *Koel* or *Koel* by the Mahrattas. A well known and noisy bird, with singularly loud notes, not at all like those of a *Cuckoo*. *Irides* rich lake. Length 17 inches, inclusive of tail

of 7 inches. These birds are frugivorous. In the stomachs of many the fruits of the *Bergera Koenigi* and *Uvaria undulata* only were found. The difference in the plumage of the sexes is very remarkable. The female is the larger bird. The tongue of this bird is exactly that of the *Cuc. canorus*.

Genus *Cuculus*, Auct.

128. *Cuculus canorus*, Linn. *Common Cuckoo*, Lath.

*Irides* yellow. Length  $14\frac{5}{8}$  inches, inclusive of tail of  $6\frac{5}{8}$  inches. Rare in Dukhun.

129. *Cuculus fugax*, Horsf. *Bychan Cuckoo*, Lath.

*Irides* bright yellow. Length  $13\frac{9}{10}$  inches, inclusive of tail of 6 inches. Tongue as in 127. This bird has so much the aspect of a *Hawk* that Colonel Sykes passed it for one, until its note of *koel, koel*, exactly resembling that of *Eudynamys orientalis*, recalled him to the tree on which it was seated, and he shot the bird.

Genus *Centropus*, Ill. *Coucal*.

130. *Centropus Philippensis*, Cuv. *Coucou des Philippines*, Buff. *Chestnut-winged Coucal*, Lath. *Malabar Pheasant* of Europeans.

*Irides* rich lake. Length  $19\frac{1}{2}$  inches, inclusive of tail of  $11\frac{1}{2}$  inches. This is a very useful bird, as Colonel Sykes found a snake eight inches long, centipedes, noxious insects, and lizards in the stomach. In the stomach and *oesophagus* of one bird a lizard thirteen inches long was found.

Tribus TENUIROSTRES, Cuv.

Fam. *Metiphagidæ*, Vigors.—Genus *Chloropsis*, Jard. & Selb.

131. *Chloropsis aurifrons*, Jard. & Selby?

Fam. *Cinnyridæ*, Vigors.—Genus *Cinnyris*, Cuv. *Sun-bird*.

132. *Cinnyris lepida*. *Certhia lepida*, Sparrm. *Nectarinia lepida*, Temm.

*Irides* red brown. Length  $4\frac{9}{10}$  inches, inclusive of tail of  $1\frac{5}{8}$  inch. Female ashy brown above; light yellow below. Common in Dukhun. Feed on small insects; also suck honey.

133. *Cinnyris currucaria*. *Certhia currucaria*, Linn. *Grimpercau gris des Philippines*, Pl. Enl. 576. f. 2.

This has been considered a young bird; but Colonel Sykes can venture to affirm, from a long observation of its habits in his garden at Poona, that it is a species. *Irides* bright lake. Length  $4\frac{9}{10}$  inches, inclusive of tail of  $1\frac{5}{8}$  inch. A spider, a *Cicada*, and minute Coleopterous insects were found in the stomach of many birds of this species. They also hover before flowers, and suck the honey while on the wing, like the *Cinn. lepida*.

134. CINNYRIS VIGORSII. *Cinn. collo supra, nuchá, ptilis, scapularibusque intensè sanguineis, collo infra pectoreque coccineo-sanguineis; strigá utrinque mentali sub rictu ad pectus exten-*

*dente maculâque auriculari splendidè violaceis; capite suprâ, caudæ tectricibus, reetricibus mediis, lateraliumque, externo excepto, pogniis externis metallicè viridibus; alis, reetricibus lateralibus, dorsi inferioris lateribus, fasciâque subpectoralibus fuscis; abdomine griseo; dorso imo sulphureo.*

*Irides* intensè brunneæ. Longitudo corporis  $5\frac{1}{2}$  unc., caudæ  $2\frac{3}{4}$ .

*Larvæ* of flies, a spider, ants, and minute insects found in the stomach. Inhabits only the lofty trees of the dense woods of the Ghauts.—“I will here beg leave to speak in the first person. I have dedicated this magnificent bird to a gentleman whose enlarged views of natural affinities in zoology have contributed essentially to enhance the value of the science, and to facilitate the labours of every zoologist. The dedication is also influenced by a desire to testify my sense of the many kind attentions of Mr. Vigors.”—W. H. S.

135. CINNYRIS MINIMA. *Cinn. capite nuchâque olivaceo-viridibus; pectoris notis, dorso, scapularibus, uropygioque intensè sanguineis, hoc violaceo splendenti; subtùs pallidè flavâ; alis caudâque fusco-brunneis.*

*Fœm. olivascenti-brunnea, uropygio rufo.*

*Irides* rufo-brunneæ. Longitudo corporis  $3\frac{3}{4}$  unc., caudæ  $1\frac{1}{2}$ .

Met with only in the dense woods of the Ghauts. White ants and *larvæ* of flies were found in the stomach. One bird was seen sucking honey. Female of a uniform brown, with a patch of brick red on the rump and upper tail-coverts, and the yellow below fainter than in the male. Colonel Sykes believes this to be the smallest of the *Sun-birds*.

136. *Cinnyris Mahrattensis. Certhia Mahrattensis*, Shaw. *Cinnyris orientalis*, Frankl.

Dr. Latham does not mention the crimson joined to the yellow spot under the wing. These birds suck flowers while hovering on the wing; they eat minute insects also. Female not met with. Length  $4\frac{3}{4}$  inches, inclusive of tail of  $1\frac{5}{8}$  inch.

137. CINNYRIS CONCOLOR. *Cinn. viridi-olivacea, alis caudâque saturatoribus, corpore subtùs pallidiori.*

*Irides* intensè rufo-brunneæ. Longitudo corporis 4 unc., caudæ 1.

Insects with long *antennæ* were found in the stomach. As four specimens obtained by Colonel Sykes were all females, and as they were met with in the same locality as *Cinn. Vigorsii*, *Cinn. concolor* may be the female of that splendid species; but the difference in the size, form, and aspect of the bird, independently of colour, is opposed to this: they were never seen together. The bird has the outline of *Cinn. Mahrattensis*. The specific appellation of *concolor* is given provisionally.

Colonel Sykes, in concluding his notice of the birds of the two first Orders, observed that in the majority of instances his knowledge was derived from an observation of many specimens of the same species in the living state. For the most part also he had obtained both sexes, and was very rarely confined to a single specimen.

May 8, 1832.

W. Yarrell, Esq. in the Chair.

A preparation was exhibited of the generative organs of a hybrid male bird, bred by the Society, and produced between a *Muscovy Drake* and a *common Duck*; and Mr. Yarrell described the external and internal appearances of the individual from which the preparation was obtained.

He stated that the bird in its plumage, with the exception of a small chestnut-coloured patch on the chest, exhibited all the appearance of a true *Muscovy Drake*. The head, neck, back and wings were marked with the purple and violet tints which usually characterize that species; the curled feathers at the base of the tail, peculiar to the males of *Anas Boschas*, were wanting.

Internally the *viscera* generally partook more of the character of *Anas Boschas*, but particularly in the length of the intestines and caecal appendages, which are remarkable for their variation in this respect, depending on the species, and having a due relation to the nature of the food selected by each. The organ of voice, a most valuable criterion of species throughout this numerous family, was in its form much more like that of *Anas Boschas* than that of *Anas moschata*, the bony enlargement being nearly globular, without any of the depression which is constant in this part in *Anas moschata*.

All the parts of the sexual organs were of large size, and apparently perfect.

Mr. Yarrell concluded by remarking that the hybrid bird in question strongly resembled the true *Muscovy*, while internally the *viscera* were as decidedly indicative of the *common, Duck*.

The Skeletons of *Capromys Fournieri*, Desm., and *Dasyprocta Acouchy*, F. Cuv., having been placed on the table, Mr. Owen entered into a series of remarks explanatory of their peculiarities, which he pointed out with reference to the skeletons of other *Rodentia* exhibited for the purpose of comparison. He showed that the *cranium* both in *Capromys* and in the *Acouchy* presents a gentle curve along the coronal aspect, and that this surface is bounded by nearly parallel lines, as in the *Agouti* and *Capybara*, differing from that of *Arvicola*, *Mus*, *Hypudæus*, *Bathyergus*, and many other *Rodentia*, in which the frontal bones are more or less compressed between the orbits. The orbits are more circumscribed by bone than in the *Rat*, in consequence of the developement of the post-orbital process. The *Acouchy*, however, resembles the *Rat* in the slenderness of the zygomatic arch; whilst *Capromys* has this arch broad and strong, as it exists in *Hystrix*, *Castor*, *Lepus*, and *Capybara*, although it is far from presenting the enormous developement exhibited in *Calogenus*. The suborbital *foramina*, though larger



in *Capromys* than in the *Acouchy*, have not the same proportional magnitude as in the *Rat*. The lachrymal bone in *Capromys* is very small: in the *Acouchy* it is remarkably developed, as well as in the *Agouti*, but it does not form any part of the external boundary of the suborbital *foramen*, which is exclusively formed by the superior maxillary bone, the ungueo-maxillary suture running parallel, but half a line posterior, to the anterior margin of that boundary. M. Cuvier, in describing the *cranium* of the *Agouti*, (Ossements Fossiles, vol. v. part i., p. 21,) particularly notices this large size of the lachrymal bone, which, he states, "contribue à entourer le trou sous-orbitaire dans le haut, en sorte que l'anneau formé autour de ce trou par le maxillaire n'est pas complet, ce dont je ne connois point d'autre exemple:" but in examining, for this peculiarity, two skulls of the *Agouti*, (which, however, it is possible may not be of the identical species with the one described by the great anatomist above quoted,) Mr. Owen has not found it in either; the whole of the lachrymal bone being capable of removal without the integrity of the outer boundary of the suborbital *foramen* being thereby affected; the lachrymal bone, however, approaches nearer in the *Agouti* to the anterior margin of that boundary, than in the *Acouchy*. There is also this difference between the two species; in the *Agouti* the narrow process of the maxillary bone which separates the outer part of the lachrymal bone from the suborbital *foramen* is articulated by suture with the nasal process of the maxillary bone, affording a curious example of an articulation between two parts of the same bone; in the *Acouchy* there is no such suture, but the whole outer boundary of the suborbital *foramen* is one continuous piece of bone. The styloid processes are much stronger and the bony *meatus* more produced in *Capromys* than in either of the before-named animals. The lower jaw of *Capromys*, like that of the *Acouchy*, is deficient in the tubercular process that is seen on the middle of the outer surface of the ascending *ramus* in the lower jaw of the *Rat*.

The chief characteristic of the skeleton of *Capromys* is seen in the spinal column, and arises from the number of the dorsal or costal *vertebræ*, of which there are not less than 16. In the *Capybara* and the prehensile *Porcupine* there are 15, in the *Beaver* 14; but the more common number in this order is 12, as in the *Acouchy*, or 13 as in the *Rat*. Notwithstanding the excess of costal *vertebræ*, *Capromys* has the same number of lumbar *vertebræ* as the *Acouchy*, viz. 7; they are also proportionally larger. The sacral *vertebræ*, if reckoned according to form and *anchylosis*, amount to 4; but if considered as depending on the more definite character of articulation with the *ilia* are only 2. The caudal *vertebræ*, if the latter mode of considering the *sacrum* be adopted, are 22 in the specimen; but some were evidently wanting. The directions of the spines of the *vertebræ* in *Capromys* indicate considerable flexibility in the trunk: the principal centre of motion is marked by the erect spine in the 13th costal *vertebra*; in the *Acouchy* it is in the 12th or last but one.

In the extremities the bones of the *Capromys* participate in the

characters both of the *Rat* and *Acouchy*; those of the anterior extremity presenting, in addition to the perfect clavicles, some other characters in common with the former, while those of the posterior more resembled the corresponding bones in the *Acouchy*. Thus in the *scapula* the *acromion*, as in the *Rat*, projects beyond the glenoid cavity to join the clavicle, and the coracoid process is well developed; while in the *Acouchy* the former process is much less produced, and the latter almost obsolete. In the descending process of the *acromion*, *Capromys*, like *Cælogenus* and *Hystrix*, is intermediate between the *Rat* and the *Acouchy*. The *humerus* of *Capromys* is proportionally stronger than in the *Acouchy*, and it has the deltoid process even more developed than in the *Rat*; this process is but slightly indicated by a ridge in the *Acouchy*. The internal condyle, like that of the *Acouchy*, the *Rat* and most *Rodentia*, is imperforate. The rest of the bones of the anterior extremity afforded no peculiar characters.

Passing over the bones of the *pelvis*, which also were destitute of any marked character, Mr. Owen observed that the *femur* of *Capromys*, like that of the *Acouchy*, has no middle process or second *trochanter*, such as is observable in the *Rat* and *Beaver*. The *tibia* and *fibula* were also distinct in *Capromys*, as in the *Acouchy*; the latter bone reaching to the *tarsus*, and not being, as in the *Rat* and *Beaver*, ankylosed to the lower third of the *tibia*. The metatarsal bones of *Capromys* agree in number with those of the *Rat*, but are broader and flatter, and correspond to the more plantigrade character of this animal.

Mr. Owen concluded his remarks on the osteology of these animals by presenting the following table, in which the points of admeasurement are for the most part the same as are used by Mr. Say, in his account of *Capromys (Isodon) Pilorides* (Journal of Acad. of Nat. Sci. of Philadelphia, ii. p. 334.).

CRANIUM.	<i>Capromys.</i>		<i>Acouchy.</i>	
	Inches.	Lines.	Inches.	Lines.
From the anterior edge of the sockets of the incisors to the posterior part of the occipital condyles . . . . .	3	5	2	9
From ditto to the posterior part of the occipital crest . . . . .	3	8	3	$\frac{1}{2}$
Distance between the remotest points of the zygomatic arches . . . . .	2	0	1	6
Shortest distance between the orbits . .	1	1	0	$10\frac{1}{2}$
Length of a series of molar teeth . . . .	0	9	0	6
Width of the largest molar tooth . . . .	0	$2\frac{1}{4}$	0	$1\frac{1}{2}$
Vertical diameter of the <i>foramen magnum</i>	0	5	0	4
Transverse diameter of ditto . . . . .	0	5	0	5
Vertical diameter of the suborbital <i>foramen</i> (anteriorly) . . . . .	0	8	0	6
Ditto of the orbit . . . . .	0	7	0	$10\frac{1}{2}$

	<i>Capromys.</i>		<i>Acouchy.</i>	
	Inches.	Lines.	Inches.	Lines.
Greatest vertical extent of the <i>zygoma</i> . .	0	6½	0	3
From the occipital spine to the coronal suture . . . . .	1	7½	1	3
Length of the sagittal suture . . . . .	1	4½	1	
Ditto of the nasal suture . . . . .	1	2	1	3½
Length of the lower jaw from the anterior edge of the sockets of the incisors to the angle . . . . .	2	4	1	10
From the angle to the summit of the condyle . . . . .	1	0	0	10
Distance between the centres of the articulating surfaces of the condyles . .	1	3	1	2
Greatest basal width of the lower jaw . .	1	8	1	1
<b>SPINE.</b>				
	<i>Capromys.</i>	<i>Acouchy.</i>		
Number of the cervical <i>vertebræ</i> . . . . .	7	7		
Length of that part of the column . . . . .	..	..	2 6	1 7
Number of the costal <i>vertebræ</i> . . . . .	16	13		
Length of that part of the column . . . . .	..	..	4 3	3 9
Number of the lumbar <i>vertebræ</i> . . . . .	7	7		
Length of that part of the column . . . . .	..	..	6 6	3 8
Number of the sacral <i>vertebræ</i> (by <i>anchylosis</i> ) . . . .	4	4		
Length of the <i>sacrum</i> . . . . .	..	..	..	1 6
Number of the caudal <i>vertebræ</i> . . . . .	..	16		
Length of the tail . . . . .	..	..	..	3 2
<b>EXTREMITIES.</b>				
Length of the clavicle . . . . .	1	3	0	8
<i>Scapula</i> from the end of the <i>acromion</i> to the lower part of the base . . . . .	2	5	1	10
—— greatest breadth at the base . . . . .	1	3	0	10½
Length of the <i>humerus</i> . . . . .	2	8½	2	2
—— <i>ulna</i> . . . . .	2	11	2	0
—— <i>radius</i> . . . . .	2	5½	2	4
—— <i>femur</i> . . . . .	3	3	2	7
—— <i>tibia</i> . . . . .	3	2	3	0
—— bones of the hand . . . . .	2	2	1	6
—— of the foot . . . . .	3	6	3	5

The exhibition of the collection of *Shells* formed by Mr. Cuming on the western coast of South America and in the South Pacific Ocean was resumed, and the following new species were characterized by Mr. Broderip and Mr. G. B. Sowerby.

Genus CHITON.

\* Ligamento marginis lævi.

CHITON BIPUNCTATUS.—*Chit. testâ ovatâ, lævi, virescente, nigro, albidoque varid; margine concolori, plerùmque maculâ albâ utrinque inter valvam primam et secundam positâ: long.  $\frac{1}{2}$ , lat.  $\frac{1}{4}$  poll.*

*Hab.* ad oras Peruvix. (Inner Lobos Island.)

Found under stones at low water. This species varies much in its colouring, some specimens being nearly black, others light green, and some much and prettily varied. In almost all a white mark may be observed on the margin just behind the anterior valve.—G. B. S.

CHITON EXIGUUS. *Chit. testâ oblongâ, minimâ, rufescente, angustâ; valvarum intermediarum carinâ dorsali latissimâ, trigonâ, margine sulcatâ; arearum lateralium margine distinctâ: long.  $\frac{1}{8}$ , lat.  $\frac{1}{8}$  poll.*

*Hab.* in Polynesiâ. (Lord Hood's Island.)

Found on the *Pearl Oysters*. This is the smallest species which Mr. Sowerby has seen: the dorsal keel of the intermediate valves is very broad, and distinguished by a groove on each side.—G. B. S.

CHITON CATENULATUS. *Chit. testâ oblongâ, pallidâ, virescente varid; valvâ anticâ, valvarum intermediarum areis lateralibus et valvâ posticâ parte posticâ radiatim granulosis; intermediarum areis centralibus et posticâ areâ anticâ longitudinaliter scabrososulcatis: long.  $\frac{1}{7}$ , lat.  $\frac{3}{7}$  poll.*

*Hab.* ad oras Peruvix. (Inner Lobos Island.)

Found under stones at low water. In general appearance this species resembles *Chit. luridus*: by careful attention to the above characters it may however be readily distinguished.—G. B. S.

CHITON GRANIFERUS. *Chit. testâ ovatâ, castaneâ, nigro albidoque varid; dorso elevato; valvâ anticâ radiatim granosâ; valvâ posticâ parte posticâ et valvarum intermediarum areis lateralibus subradiatim graniferis; areis centralibus longitudinaliter granosolineatis: long. 1, lat.  $\frac{7}{7}$  poll.*

*Hab.* ad oras Chiliæ.

A single specimen was found on a *Mytilus* in nine fathoms water at Conception.—G. B. S.

\*\* Ligamento marginis squamoso.

CHITON STRAMINEUS. *Chit. testâ ovatâ, lævi, pallidè stramineâ; dorso rotundato; squamulis marginalibus sparsis: long.  $\frac{5}{7}$ , lat.  $\frac{1}{7}$  poll.*

*Hab.* ad Insulam Chiloe Chilensium.

Found under stones at low water. All the specimens are of a uniform pale straw colour.—G. B. S.



CHITON PUSIO. *Chit. testâ ovali, lævigatâ, olivaced, punctulis viridibus numerosis ornatâ; valvarum marginibus anticis lateribusque rugulosis: long.  $\frac{5}{16}$ , lat.  $\frac{3}{16}$  poll.*

*Hab.* ad Valparaïsam.

Found on *Amphidesma solidum* in from thirty to fifty fathoms water, with a sandy floor.—G. B. S.

#### Genus MARGINELLA.

MARGINELLA CURTA. *Marg. testâ ovatâ, cinerascens-fulvâ; spirâ brevi; labii externi reflexi margine externâ castaned, facie albâ; labii interni expansi et incrassati margine castaned; columellâ quadriplicatâ, plicis æqualibus: long.  $\frac{9}{16}$ , lat.  $\frac{9}{16}$  poll.*

*Hab.* ad Iquiqui et ad Paytam.

The body-whorl, in fully grown specimens, is rather angular at the upper part, and it is wholly covered with white specks. It was dredged in fine black sand.—G. B. S.

#### Genus BULINUS.

\* Labio externo tenui, acuto.

BULINUS VEXILLUM. *Bul. testâ pyramidalî, albente, vittis castaneis fasciatâ; anfractibus 6 levissimè longitudinaliter striatis; umbilico subobsoleto: long.  $\frac{1}{3}$ , lat.  $\frac{1}{12}$  poll.*

*Hab.* in Sinu Panamæ. (King's and Saboga Islands.)

Found on the trunks of large trees.—W. J. B.

BULINUS PUSTULOSUS. *Bul. testâ fusiformi, e fusco albente, subdiaphanâ; anfractibus 6, striis moniliformibus frequentibus longitudinalibus; umbilico mediocri: long.  $\frac{1}{7}$ , lat.  $\frac{1}{7}$  (circa) poll.*

*Hab.* in Chili. (Huasco.)

Found under stones on elevated ground.—W. J. B.

BULINUS PUPIFORMIS. *Bul. testâ griseo-albâ, pupiformi, longitudinaliter levissimè striatâ; apice nigro-fuscescente; labro subreflexo: long.  $\frac{2}{3}$ , lat.  $\frac{2}{3}$  poll.*

*Hab.* in Chili. (Huasco.)

Found under stones and in shady places.—W. J. B.

BULINUS PANAMENSIS. *Bul. testâ ovato-fusiformi, subglabrâ, diaphanâ, pallidè fulvâ; anfractibus 6 subventricosis, labro vix subreflexo: long. 1, lat.  $\frac{1}{2}$  poll.*

*Hab.* in Sinu Panamæ. (King's and Saboga Islands.)

Found on the trunks of large trees.—W. J. B.

BULINUS ALBICANS. *Bul. testâ ovato-ventricosâ, subpellucidâ, fuscâ lineolis strigisque longitudinalibus albis variâ; anfractibus 6 longitudinaliter striato-rugosis; columellâ et fauce rubro-castaneis; umbilico mediocri: long.  $\frac{2}{7}$ , lat.  $\frac{1}{7}$  poll.*

*Hab.* ad Copiapo, Chili.

This species, which resembles *Bul. guttatus* in its white markings, but differs from that shell in shape and other characters, was found by Mr. Cuming at Copiapo, in the dry sand on the elevated ground, near the port. The upper part of the inner lip is some-

what reflected so as partially to conceal the *umbilicus*. Old shells of this species are of a dead white, with the exception of the *columella* and aperture.—W. J. B.

**BULINUS AFFINIS.** *Bul. testâ valdè fusiformi, pellucidè fuscâ albo fucatâ, longitudinaliter striato-rugosâ; umbilico obsoleto: long. 1, lat.  $\frac{1}{2}$  poll.*

*Hab.* in Peruvîâ. (Mexillones, desert of Atacama.)

Found in small crevices of the dry earth on the top of the mountain Mexillones, 2000 feet above the sea.—W. J. B.

**BULINUS MODESTUS.** *Bul. testâ pyramidali, turritâ, elongatâ, tenui, subalbidâ lineolis castaneis longitudinalibus frequentibus variâ; anfractibus 8 longitudinaliter striatis; umbilico mediocri; epidermide tenui: long.  $1\frac{3}{8}$ , lat.  $\frac{7}{8}$  poll.*

*Hab.* in Peruvîæ montibus. (Huacho.)

The body-whorl of young shells of this species is somewhat carinated in the middle. The old shells vary in colour, but are all of a sombre hue. The longitudinal *striæ* are rather coarse.

Found on small bushes.—W. J. B.

**BULINUS SCUTULATUS.** *Bul. testâ pyramidali, tenui, albidâ vel fulvâ, lineis, maculis fasciisque castaneis interruptis scutulatâ; anfractibus 8 subrotundatis longitudinaliter striatis; umbilico subobtecto: long.  $1\frac{9}{10}$ , lat.  $1\frac{5}{10}$  poll.*

*Hab.* in Peruvîæ collibus. (Islay.)

This shell varies much in its colour and markings. The body-whorl is generally more or less banded, and there is often an obscure whitish band at the base.

Found on an *Helianthus*.—W. J. B.

**BULINUS TURRITUS.** *Bul. testâ turritâ, imperforatâ; anfractibus 10 substriatis, albidis, castaneo-fasciatis: long.  $1\frac{1}{2}$ , lat.  $1\frac{4}{8}$  poll.*

*Hab.* in Peruvîæ montibus. (Truxillo.)

*Obs.* Species *Turritellam* mentiens.

The chestnut bands are three on the upper whorls; one at the suture, and two near together about the middle. On the body-whorl there are four; one at the suture, two near together towards the middle, and one towards the base.

Found under stones.—W. J. B.

**BULINUS PULCHELLUS.** *Bul. testâ elongatâ; anfractibus 7 longitudinaliter elevato-striatis, albidis, ultimo trifasciato, cæteris bifasciatis, fasciis subnigro-castaneis; umbilico mediocri: long.  $1\frac{7}{8}$ , lat.  $\frac{3}{8}$  poll.*

*Hab.* in Peruvîæ montibus. (Truxillo.)

This pretty species was found on a species of *Aloe*, on hills about 500 feet above the level of the sea.—W. J. B.

\*\* *Labio externo tenui subreflexo, acuto.*

**BULINUS EROSUS.** *Bul. testâ ovato-pyramidali, albicante, sparsim diaphand quasi erodâ; anfractibus 6 ventricosis longitudinaliter subrugoso-striatis; apice solidulo, subpapillari: long.  $\frac{3}{2}$ , lat.  $\frac{9}{8}$  poll.*

*Hab.* in Peruvia. (Huantajaya near Iquiqui.)

Found under stones on hills 2500 feet above the level of the sea.—W. J. B.

**BULINUS DERELICTUS.** *Bul. testâ ventricosâ-pyramidalî, albidâ, subdiaphanâ; anfractibus 6 longitudinaliter striatis; apice solidulo, subpapillari; umbilico magno: long.  $\frac{1}{17}$ , lat.  $\frac{5}{8}$  poll.*

*Hab.* ad Cobijam Boliviae. (Puerto del Mar.)

Found unprotected on flat rocks without soil or verdure: all was desolate for a league around.—W. J. B.

**BULINUS VARIANS.** *Bul. testâ elongatâ, subnitidâ, castaneâ, maculis strigisque albis varidâ; anfractibus 8 longitudinaliter striatis; umbilico mediocri: long.  $1\frac{3}{10}$ , lat.  $\frac{5}{7}$  poll.*

*Hab.* in Peruvia montibus. (Truxillo.)

A whitish band may be traced at the upper part of each whorl next to the suture, and another at the base of the body-whorl. But this species varies so much in its markings, that hardly two individuals are alike. Some are also rather more ventricose than others.

Found on the same species of *Aloe* and in the same places with *Bul. pulchellus*.—W. J. B.

**BULINUS TIGRIS.** *Bul. testâ cylindrico-fusiforâ, nitidâ, subglabrâ, fulvo-albente longitudinaliter castaneo strigatâ; anfractibus 7 longitudinaliter striatis; columellâ subcallosâ; umbilico tantum non oblecto: long.  $1\frac{1}{2}$ , lat.  $\frac{1}{2}$  poll.*

*Hab.* in Peruvia montibus. (Truxillo.)

This differs from the preceding in many points. The body-whorl is of considerably greater length in proportion, and the aperture is consequently much longer and more acute at the upper part. There is somewhat of a callosity on the *columella*, and the *umbilicus*, which is small, is almost hidden by the reflected inner lip.

Found on bushes.—W. J. B.

\*\*\* Labio exteriore subreflexo.

**BULINUS PROTEUS.** 1. *Bul. testâ ovato-acutâ, sordidè albidâ fulvo maculatâ; anfractibus 6 creberrimè longitudinaliter granuloso-striatis, ultimo maximo, ventricoso; umbilico magno; epidermide tenui: long.  $1\frac{5}{8}$ , lat.  $1\frac{2}{10}$  poll.*

2. *Var. granulis striisque paulò elevatioribus subalbidis: long.  $1\frac{7}{10}$ , lat. 1 poll.*

3. *Var. albida fasciis castaneis: long.  $1\frac{3}{10}$ , lat.  $\frac{5}{8}$  poll.*

*Hab.* in Peruvia montibus. (St. Jacinta, near Samanco.)

4. *Var. nana, albida fasciis interruptis sordidè castaneis: long.  $1\frac{1}{10}$ , lat.  $\frac{1}{10}$  poll.*

*Hab.* in Peruvia montibus. (Pacosmayo.)

*Obs.* After a careful examination of numerous individuals, I am unable to detect any specific characters which may be safely relied on to separate the four varieties above described. There is indeed a considerable difference in size between the first and the last; but I have seen many instances where food and locality have had as much effect in the development of the volume of a shell, as they

are known to have in determining the intensity or distribution of its colour.

The body-whorl of No. 1. is, generally speaking, more ventricose and deeper than that of any of the other varieties; and when No. 1. and No. 4. are placed side by side, the discrepancy may appear somewhat startling; but if the gradations be placed before us, these differences vanish, or are so melted down into each other that nothing remains fixed but the number of whorls, the style of sculpture, the relative size of the *umbilicus*, and the general form and make of the shell.

Mr. Cuming found all his specimens under stones.—W. J. B.

**BULINUS MUTABILIS.** *Bul. testâ cylindrico-attenuatâ, subalbidd castaneo strigato-maculatâ; anfractibus 7 creberrimè granuloso-striatis; umbilico mediocri; epidermide fuscâ: long.  $1\frac{1}{2}$ , lat.  $\frac{2}{3}$  poll.*

*Hab.* in montibus Peruvix. (Santos.)

*Var.* albo castaneoque alternatim fasciata, fasciis castaneis albo maculatis: long.  $1\frac{2}{3}$ , lat.  $\frac{2}{3}$  poll.

*Hab.* in Peruviâ. (Campania of Truxillo.)

Both these varieties were found under stones.

The sculpture is very like that of the preceding species, but much finer and closer; and indeed there is a general resemblance at first sight; but the number of whorls, the cylindrical shape, and other points in the species before us, sufficiently mark the difference between them.—W. J. B.

**BULINUS VERSICOLOR.** *Bul. testâ ovato-pyramidali, albidâ maculis castaneis, vel castaneâ maculis albidis variâ; anfractibus 6 minutissimè longitudinaliter subdepresso-granuloso-striatis; labio exteriore albente; fauce subnigro-castaneâ; umbilico mediocri; epidermide tenui: long.  $1\frac{1}{2}$ , lat.  $\frac{2}{3}$  poll.*

*Var.* fasciâ albidâ basali.

*Hab.* in montibus Peruvix. (Mongon, near Casma.)

This shell varies in its colouring almost as much as *Bul. multicolor*, King (*Helix multicolor*, Rang), and bears some resemblance to that species at first sight. On examination, the difference between the two species is very apparent. The whitish basal band of the variety is seen internally as well as externally.

Found on bushes.—W. J. B.



May 22, 1832.

Richard Owen, Esq., in the Chair.

Mr. Yarrell exhibited skeletons and stuffed specimens of several *Mammalia*, in illustration of the distinctive characters of two species of that class, which he had recently ascertained to be inhabitants of Britain.

The first of these additions to the British Fauna is the *oared Shrew*, *Sorex remifer*, Geoff., distinguishable from the more common *water Shrew* by its greater size and its uniform colour. The whole of the upper part of the head, the body, and sides, are velvet black; the situation of the ear is marked by a tuft of white hairs, more conspicuous than in the *water Shrew*, from the greater contrast of colour; there is a small patch of light brown under the lower jaw; the under surface of the body is rusty black; and the tail is black, with a line of pendent greyish white hairs along its under surface.

Mr. Yarrell remarked, that although the individual exhibited (the only indigenous specimen which he had yet seen,) was smaller than that described by M. Desmarest in his 'Mammalogie' (the length of the head and body being 3 inches 4 lines, and that of the tail 1 inch 9 lines), he had determined its identity with the species to which he referred it, by comparison with a specimen of *Sor. remifer*, transmitted by M. Baillon of Abbeville to the British Museum; the two specimens being perfectly similar in every particular of colour, markings, and measurement. He further observed, that the *Sor. ciliata* of Sowerby's 'British Miscellany,' pl. 49, is probably referable to the same species.

The second animal to which Mr. Yarrell more particularly directed the attention of the Committee, was a species of *Arvicola*, new, not only to Britain, but also apparently to science. It is so nearly related to *Arv. agrestis* (the *Mus agrestis* of Ray, and probably also of Linnæus, and apparently the *Mus arvalis* of Pallas), as to require that the characters of the latter, the common short-tailed *field Campagnol*, should be modified. Mr. Yarrell accordingly thus characterized the two species:—

ARVICOLA AGRESTIS. *Arv. supra rufescenti-fusca, subtus cinerea; auriculis vix prominulis; caudâ tertiam partem corporis longitudine vix æquante.*

ARVICOLA RIPARIA. *Arv. supra saturatè castanco-rufescens, subtus cinerea; auriculis paullo prominulis; caudâ dimidium corporis longitudine æquante, apicis pilis subelongatis.*

Mr. Yarrell pointed out, on the specimens exhibited by him, the external differences between these species, consisting chiefly in the size and colour of the body, and the relative length of the tail. He

further illustrated the differences of proportion between them by referring to skeletons of each, and laid before the Committee the following table of comparative measurements:—

	<i>Arv. agrestis.</i>		<i>Arv. riparia.</i>	
	in.	lin.	in.	lin.
Length of the head . . . . .	0	10 $\frac{1}{2}$	0	9 $\frac{1}{4}$
—— from the first dorsal <i>vertebra</i> to the last . . . . .	0	10	0	9
—— of the six lumbar <i>vertebræ</i> . . . . .	0	11 $\frac{1}{2}$	0	7 $\frac{1}{2}$
—— from the first dorsal <i>vertebra</i> to the tuberosity of the <i>ischium</i> . . . . .	2	3	1	9 $\frac{1}{2}$
—— of the <i>os innominatum</i> . . . . .	0	7 $\frac{3}{4}$	0	6 $\frac{3}{4}$
—— from the sacral <i>vertebræ</i> to the end of the tail. . . . .	1	9	2	2
—— of the <i>scapula</i> . . . . .	0	5	0	4
—— <i>humerus</i> . . . . .	0	5	0	4
—— from the <i>olecranon</i> to the <i>carpus</i> . . . . .	0	6 $\frac{1}{2}$	0	5 $\frac{1}{2}$
—— of the <i>femur</i> . . . . .	0	6 $\frac{3}{4}$	0	5 $\frac{1}{2}$
—— <i>tibia</i> . . . . .	0	7 $\frac{3}{4}$	0	7 $\frac{1}{2}$
—— from the <i>os calcis</i> to the end of the longest toe . . . . .	0	7	0	7 $\frac{3}{4}$

It hence appears that the relative dimensions of the body and tail in each of the species are nearly reversed. The number of the cervical, dorsal, lumbar, and sacral *vertebræ*, are the same in both, being 7, 13, 6, and 1, respectively; but the tail of the *field Campagnol* has but 19 *vertebræ*, while that of the *bank Campagnol* has 4 more, making 23. The cavity of the *thorax* is of much larger size in the *field* than in the *bank* species, the ribs being of greater expanse, and the *sternum* longer. The head of the *bank Campagnol* is shorter and more square in its form, exhibiting a greater appearance of strength; and although it is a smaller animal, with a shorter back as well as shorter limbs, it has actually longer feet than the *field* species.

Referring to the internal anatomy of the two species, Mr. Yarrell stated, that he had detected no difference in the *viscera* of the *thorax*. The stomachs were also of the same form, each presenting an apparent contraction at the distance of one-third from the cardiac orifice. The liver of the *bank Campagnol* was, however, more extensively divided than that of the *field* species, having seven lobes, while that of the latter presented but five: both are equally destitute of gall-bladder. But the difference in the comparative length of the small and large intestines was most marked:—

	<i>Arv. agrestis.</i>		<i>Arv. riparia.</i>	
	inches.		inches.	
Length of the small intestines . . . . .	14	1 $\frac{1}{2}$	9	1 $\frac{1}{2}$
—— <i>cæcum</i> . . . . .	2	3 $\frac{3}{4}$	4	
—— large intestines . . . . .	8		10	

These measurements, in which it will be observed that the proportions are reversed, appear to indicate some difference in the choice of food, with which Mr. Yarrell stated that he was not yet

acquainted, the contents of the stomachs which he had examined having been too far digested to enable him to ascertain their nature.

Mr. Yarrell concluded by remarking, that, to the differences between the species, indicated in their fur, their osteology, and their internal anatomy, a fourth series might be added, derived from their habits. The *bank Campagnol* frequents hedge-bottoms and ditch-banks, and is said to make its nest of wool: the *field Campagnol* prefers living among the long herbage of water-meadows and moist pastures, and makes its nest of dried grass.

An Extract was read from the '*Analyse des Travaux de la Société d'Histoire Naturelle de l'Ile Maurice, pendant la 2de Année*': it was communicated to the Committee by its author, M. Julien Desjardins, Corr. Memb. Z. S., the Secretary of the Society whose labours are enumerated in it.

Among the novelties which have occupied that Society during the season of 1830-1831 have been some observations by M. J. Desjardins on the Zoology of the Mauritius as compared with that of the Isle of Bourbon, from which has resulted the curious fact, that notwithstanding that these islands are situated in such close proximity to each other, are of the same formation, and present a most remarkable analogy in their soil, their animals are not universally the same, some species being met with in the one which never occur in the other.

In the department of Ornithology Madagascar has furnished to M. J. Desjardins the opportunity of describing specimens obtained from thence of the *Ardeu alba*, Linn., and *Ard. Garzetta*, Linn., and also of a *Platalea*, regarded by him as the *Plat. leucorodia*, Gmel., but which, from his description forwarded to the Committee, is evidently the species described by Mr. Vigors, on February 22, 1831, (Part i. p. 41,) under the name of *Plat. Telfairii*; it was at that time stated by mistake to be a native of the Mauritius; its true *habitat*, as pointed out by M. Desjardins, is Madagascar, where it was obtained in Imirne, a kingdom of the interior, in which is situated Tananarivoe the capital of the island. Of another bird, which is common in Madagascar, the *Cuculus canorus*, Linn., a single specimen has been shot in the Mauritius. An *Ibis*, which is regarded by M. Bojer as the species sacred among the ancient Egyptians, has been obtained, with several other birds, from Agalega, one of the islands of the north-eastern Archipelago of Madagascar. In some remarks on the bones of the *Dodo*, (consisting of a *sternum*, a *cranium*, and four bones of the extremities,) which were sent by M. Desjardins to Paris, and which excited so much attention during the past summer from M. Cuvier and M. de Blainville, occasion is taken to correct some errors which have crept into the published statements respecting them. They were discovered, in 1786, in a cavern on the island of Rodriguez.

In Ichthyology, three species have been described by M. Liénard, sen., two of which belong to the genera *Pleuronectes* and *Holocentrum*. Another fish belonging to the family of the *Perches* with a

single dorsal fin, has appeared to the same naturalist to require generic distinction, and he has accordingly described it as the type of a new genus, to which he has given the name of *Platysome*: it is evidently, from the brief notice contained in the 'Analyse,' the *Dules caudavittatus*, Cuv. and Val., or a nearly allied species, a fish which certainly differs considerably, by its compressed form and other particulars, from many of those with which it was generically associated by the authors last quoted. M. J. Liénard has exhibited a drawing of an *Acanthurus*: and M. J. Desjardins has described three fishes of the genera *Serranus*, *Labrus*, and *Xirichthys*; and has also exhibited and described specimens, obtained from the north-western coast of Sumatra, of eight other fishes.

Among the *Crustacea*, two species of *Crabs* common on the coasts of the Mauritius, and belonging to the genera *Portunus* and *Podophthalmus*, have been described and drawn by M. J. Liénard.

Finally, M. E. Liénard has described minutely a marine substance which he has regarded as an *Alcyonium*: he proposes to continue to figure and describe the numerous zoophytes which abound in the adjoining seas to such an extent as to render the Mauritius highly favourable for the pursuit of zoological studies in this beautiful but intricate department of nature.

Mr. Gray exhibited living specimens of the common *Lizard*, *Lacerta agilis*, Linn., for the purpose of pointing out the marks of distinction between the sexes. The male is generally larger than the female, and more distinctly coloured; the under side of his body and base of his tail are very bright orange, while in the female these parts are pale yellowish green; his ante-anal scale is short and transverse, that of the female being much longer and hexagonal; and the under side of the base of his tail is flat, with a slight longitudinal middle depression just behind the vent, this part of the tail being in the female rounded and convex. In April and May the male may also be known by the base of the tail being dilated on the sides, just behind the thigh, a dilatation probably caused by the size of the *penes*, which are retracted into these parts.

Mr. Gray further explained various particulars of the habits of this species, observed by him in individuals which he had kept in a living state; and added, that in the only instance in which he had observed the *coitus*, one alone of the *penes* was inserted.



June 12, 1832.

Dr. Marshall Hall in the Chair.

The exhibition was resumed of the new species of *Shells* collected by Mr. Cuming on the western coast of South America and among the islands of the South Pacific Ocean.

The whole of the new species, thirty-nine in number, of the

Genus COLUMBELLA

contained in the collection, were illustrated by Mr. G. B. Sowerby. They are as follow:

**COLUMBELLA PULCHERRIMA.** *Col. testá ovatá, spirá subulatá; anfractibus 9, primo minimo, albo, 2do, 3tio, 4to et 5to nigro-rufescentibus, politis; 6to, 7mo, et 8vo concoloribus, spiraliter sulcatis; ultimo ventricoso, longitudinaliter rugoso, et spiraliter sulcato, albido, sulcis brunneis; labio externo incrassato; peritremate polito, intùs supernè emarginato, infrà denticulato; labio interno tenui, polito; canali recurvá: long. 1, lat.  $\frac{1}{2}$  poll.*

*Hab.* ad oras Americæ Centralis. (Gulf of Dulce.)

A single specimen was found in ten fathoms, on a sandy muddy floor.

**COLUMBELLA HARPIFORMIS.** *Col. testá ovato-subtrigond, nigrá, albido maculatá, epidermide tenui fulvá indutá; spirá brevi; anfractibus 6-7, marginibus crenulatis, ultimo trigonali, longitudinaliter costato; aperturá elongatá, supernè in canalem elongatam productá; labio externo incrassato, inflexo, intùs denticulato; canali subrecurvá: long.  $\frac{7}{8}$ , lat.  $\frac{1}{8}$  poll.*

*Hab.* in Sinu Panamæ.

Found on dead shells in ten fathoms.

**COLUMBELLA BICANALIFERA.** *Col. testá ovato-pyramidali, apice acuto, basi spiraliter sulcato; anfractibus 7, superioribus longitudinaliter rugosis, pallescentibus, fusco-variis; ultimo pallido, fusco strigato, strigis prope suturas saturatioribus; aperturá oblongá, in canalem supernè decurrente; labio externo incrassato, reflexo, subflexuoso, supernè acuminato. long.  $\frac{1}{2}$ , lat.  $\frac{1}{8}$  poll.*

*Hab.* ad Insulas Gallapagos.

Dredged in sandy mud at a depth of ten fathoms.

**COLUMBELLA SPURCA.** *Col. testá oblongá, castaneá, albido maculatá et guttatá; spirá acuminatá; anfractibus 7, supernè angulosis, ultimo ventricoso, infrà spiraliter sulcato; aperturá oblongá, intùs violascente, supernè angulatá; labio externo flexuoso, subincrassato, intùs denticulato; columellá infrà unituberculatá; labii interni margine ad basin denticulatá: long.  $1\frac{2}{8}$ , lat.  $\frac{1}{8}$  poll.*

*Hab.* sub lapidibus ad oras Peruvianas. (Inner Lobos Island.)

**COLUMBELLA BUCCINOIDES.** *Col. testâ oblongâ, lævi, piceo-nigrâ, prope suturas pallidè maculatâ; spirâ acuminatâ; anfractibus 8, ultimo infrâ spiraliter striato; labiî externi extûs subincrassati, intûs obsoletè denticulati, margine superiori subemarginatâ; canali brevissimâ: long.  $\frac{7}{10}$ , lat.  $\frac{3}{10}$  poll.*

*Hab.* ad oras Peruvianas.

Found under stones at low water mark, at Ancon. It very closely resembles a *Buccinum*.

**COLUMBELLA CORONATA.** *Col. testâ oblongo-acuminatâ, albâ, brunneo variegatâ; anfractibus 7-8, lævibus, tribus ultimis serie unicâ tuberculorum mucronatorum coronatis; labio externo intûs denticulato: long.  $\frac{1}{2}$ , lat.  $\frac{6}{10}$  poll.*

*Hab.* in Sinu Panamæ sub lapidibus.

A very pretty species, which varies much in the arrangement of its colours.

**COLUMBELLA LYRATA.** *Col. testâ oblongâ, acuminatâ, albâ, epidermide fuscâ indutâ; anfractibus 10, longitudinaliter costatis, costis infrâ nigris; ultimo anfractu infrâ spiraliter striato, supernè longitudinaliter costato, costis nigro-articulatis; aperturâ oblongâ, breviusculâ, medio coarctatâ, labio externo intûs denticulato: long.  $\frac{9}{10}$ , lat.  $\frac{7}{10}$  poll.*

*Hab.* sub lapidibus in Sinu Panamæ et ad Chiriqui.

**COLUMBELLA UNCINATA.** *Col. testâ oblongâ, utrinque acuminatâ, fulvâ, fasciâ centrali albido-articulatâ; anfractibus 6-7; superioribus parvis, subnodulosis; ultimo maximo, supernè angulato; aperturâ longitudinali, elongatâ, flexuosâ, supernè in canalem brevem uncinatam porrectâ; labio externo incrassato, intûs denticulato, denticulis confertis; labio interno granuloso: long.  $\frac{5}{10}$ , lat.  $\frac{3}{10}$  poll.*

*Hab.* ad oras Columbiæ. (Isle of Muerte, Bay of Guayaquil.)

Found in sandy mud at a depth of ten fathoms.

**COLUMBELLA ELEGANS.** *Col. testâ elongato-subulatâ, albâ fusco variegatâ et reticulatâ, epidermide tenui fulvâ indutâ; anfractibus 11-12, primis lævibus, cæteris longitudinaliter costatis; ultimo infrâ spiraliter sulcato; labio externo incrassato; peritremate subreflexo, supernè intûs emarginato, demùm dentibus nonnullis internis; labio interno lamellari; canali incrassatâ: long.  $1\frac{5}{10}$ , lat.  $\frac{5}{10}$  poll.*

*Hab.* ad Guacamayo in Americâ Centrali.

A very fine species, found in sandy mud.

**COLUMBELLA UNIFASCIATA.** *Col. testâ oblongo-pyramidali, lævi, castaneo-nigricante; anfractibus 6, medio spiraliter albido unifasciatis; aperturâ breviusculâ; peritremate intûs denticulis nonnullis: long.  $\frac{4}{10}$ , lat.  $\frac{2}{10}$  (ferè) poll.*

*Hab.* ad Valparaiso.

Found under stones at low water.

**COLUMBELLA GIBBERULA.** *Col. testá ovato-pyramidali; spirá subulatá; anfractibus 8-9, pallidis, brunneo nubeculatis, ultimi dorso supernè gibberulo, ad utrumque latus varicoso; aperturá breviusculá; peritremate incrassato, expanso, intùs denticulis nonnullis; labio interno supernè calloso, medio arcuato; canali brevi, reflexá: long.  $\frac{7}{8}$  poll., lat.  $\frac{3}{8}$  poll.*

*Hab.* ad oras Americæ Meridionalis et Centralis.

Found in sandy mud at eleven fathoms depth, at the Bay of Carracas and Puerto Portrero.

**COLUMBELLA TURRITA.** *Col. testá elongato-pyramidatá; spirá subulatá; anfractibus 10, albidis, fusco reticulatis, et prope suturam articulatis; aperturá oblongá, supernè acuminatá, subcanaliferá; labio externo incrassato; peritremate albo, subreflexo, intùs lævi; columellá arcuatá: long.  $1\frac{2}{8}$  poll., lat.  $\frac{4}{8}$  poll.*

*Hab.* ad oras Americæ Centralis. (Bay of Montijo, and St. Elena.)

Found in coarse gravel and sandy mud at a depth of ten fathoms.

**COLUMBELLA FULVA.** *Col. testá ovato-subulatá, fulvá, epidermide minutissimè reticulatá indutá; anfractibus 10; superioribus longitudinaliter costatis; ultimo infrá spiraliter striato, supernè longitudinaliter costato; aperturá, labio externo dentibusque internis albis: long.  $\frac{7}{8}$  poll., lat.  $\frac{7}{8}$  poll.*

*Hab.* ad Panamam, sub lapidibus.

**COLUMBELLA RUGOSA.** *Col. testá oblongá, medio gibbosulá; epidermide fuscá; spiræ apice plerùmque eroso; anfractibus 7, longitudinaliter costato-rugosis; ultimo infrá spiraliter costato, supernè longitudinaliter costato, costis omnibus supernè unituberculatis; aperturá subapertá: long.  $\frac{9}{8}$  poll., lat.  $\frac{4}{8}$  poll.*

*Hab.* ad oras Americæ Meridionalis. (Panama et Xipixapi.)

Found under stones.

In general appearance this and *Col. fluctuata* resemble each other nearly, but the aperture of *Col. fluctuata* is much narrower. When the epidermis is removed, the shell is white, covered nearly all over with black patches.

**COLUMBELLA FLUCTUATA.** *Col. testá oblongá, albá, nigro vel castaneo maculatá et fluctuatá; epidermide fuscá; spiræ apice plerùmque eroso; anfractibus 7, longitudinaliter costatis, ultimi costis abbreviatis; aperturá medio coarctatá; labio externo supernè emarginato, interno infrá denticulato: long.  $\frac{9}{8}$  poll., lat.  $\frac{5}{8}$  poll.*

*Hab.* sub lapidibus ad oras Americæ Centralis. (Gulf of Nocoioy.)

**COLUMBELLA RECURVA.** *Col. testá oblongá, turritá, fulvá; spirá acuminato-pyramidali; anfractibus 10-11; primis 6 longitudinaliter costatis; cæteris serie tuberculorum unicus instructis; ultimi dorso subgibbo, parte inferiore transversim striatá; aperturæ elongatæ canali longiusculá, recurvá; labio externo reflexo, incrassato: long.  $1\frac{5}{8}$  poll., lat.  $\frac{5}{8}$  poll.*

*Hab.* ad oras Americæ Meridionalis. (Isle of Plata.)

Found among coral sand at a depth of seventeen fathoms.

**COLUMBELLA LANCEOLATA.** *Col. testá oblongá, turritá, albidd, fulvo varid; spirá acuminato-pyramidali; anfractibus 10-12; primis 6-7 lævigatis; cæteris serie unidá tuberculorum instructis; ultimi dorso subgibbo, parte inferiore transversim striatá; aperturæ elongatæ canali breviusculi, subrecurvá; labio externo incrassato, variciformi: long. 1 $\frac{6}{10}$ , lat.  $\frac{5}{10}$  poll.*

*Hab.* ad Insulas Gallapagos.

Found in fine coral sand in from six to eight fathoms.

**COLUMBELLA MACULOSA.** *Col. testá oblongo-subulatá, albidd, irregulariter fulvo maculatá; spirá acuminato-pyramidali; anfractibus 9-10; primis 7-8 lævigatis; cæteris tuberculorum serie unidá coronatis; ultimo serie alterá adjectá; aperturá brevi, canali subrecurvá: long. 1, lat.  $\frac{7}{10}$  poll.*

*Hab.* ad littora Americæ Centralis. (Guacamayo.)

Dredged with *Col. subulata* in sandy mud.

**COLUMBELLA HEMASTOMA.** *Col. testá oblongá, lævigatá, apice acuminato; anfractibus 7-8, castaneis, albo maculatis, ultimo dorso nigro, infrá castaneo; aperturá elongatá, flexuosá; labio externo extùs incrassato, supernè prominente, albo; peritremate aurantiaco; labio interno intùs denticulato; columellá unituberculatá: long.  $\frac{9}{10}$ , lat.  $\frac{5}{10}$  poll.*

*Hab.* ad insulas Gallapagos et ad littora Panamæ.

Found under stones.

A dwarf variety occurs, which differs, however, very slightly in its proportions.

**COLUMBELLA VARIA.** *Col. testá oblongá, decussato-costatá, apice acuminato; anfractibus 8-9 fuscis, albido variegatis, longitudinaliter costatis, interstitiis costarum sulcatis; aperturá subovali; labii externi extùs incrassati margine supernè emarginatá: long. 1, lat.  $\frac{7}{10}$  poll.*

*Hab.* ad Panamam, sub lapidibus.

The ribs cease a little below the middle of the last volution.

**COLUMBELLA SCALARINA.** *Col. testá ovatá, longitudinaliter costatá, apice pyramidali; anfractibus 6-7, supernè contabulatis, longitudinaliter costatis, interstitiis costarum decussatis, costis ad basin continuis; aperturá coarctatá, supernè emarginatá; peritremate intùs denticulato, denticulis superioribus majoribus: long.  $\frac{7}{10}$ , lat.  $\frac{9}{10}$  poll.*

*Hab.* ad Panamam et Chiriqui, sub lapidibus.

This shell is of a pale colour, with spiral dark brown bands; it is covered with a thin but rough epidermis. The ribs continue to the base.

**COLUMBELLA PYROSTOMA.** *Col. testá ovatá, medio turgidá; spirá brevi, conicá; anfractibus 6, longitudinaliter tuberculato-costatis, costis nigris, interstitiis rufescentibus; aperturá rufá: long.  $\frac{6}{10}$ , lat.  $\frac{4}{10}$  poll.*

*Hab.* ad oras Americæ Meridionalis. (Panama and Gallapagos.)



This species somewhat resembles *Col. mendicaria*. Mr. Sowerby is doubtful as to the propriety of admitting it among the *Columbellæ*; although wherever *Col. mendicaria* is placed this species must of course follow. Perhaps it might not be inconvenient to separate these from *Columbella*, and to combine them with their cognate species from among Lamarek's *Purpuræ*, *Ricinule* and *Murices*, and thus bring together a number of shells which would form a very natural genus.

✓ **COLUMBELLA MAURA.** *Col. testâ ovatâ, medio turgidâ; spirâ longiusculâ, conico-acuminatâ; anfractibus 6—7, tuberculato-costatis, nigris, albido nonnunquam variegatis; aperturâ pallidâ: long.  $\frac{1}{8}$ σ, lat.  $\frac{1}{5}$ σ poll.*

*Hab.* ad oras Americæ Meridionalis. (Panama and Gallapagos.)

Somewhat related to the last, though partaking rather less completely of the characters of *Columbella*.

Found with the last, under stones.

✓ **COLUMBELLA LIVIDA.** *Col. testâ ovatâ, medio turgidâ; spirâ longiusculâ, conico-acuminatâ; anfractibus 6—7, longitudinaliter tuberculato-costatis, lividis, pallidè fusco fasciatis; labio externo intus denticulis tribus: long.  $\frac{7}{8}$ σ, lat.  $\frac{7}{8}$ σ poll.*

*Hab.* ad Panamam, sub lapidibus.

This differs from the two last in several particulars, though it is so intimately related to them as to form a part of the same division of the genus.

**COLUMBELLA NIGRO-PUNCTATA.** *Col. testâ ovato-acuminatâ, albâ, nigro-punctatâ; anfractibus 6, tuberculorum infra suturam serie unidâ, medio longitudinaliter costatis, costis decussatis: long.  $\frac{7}{8}$ σ, lat.  $\frac{5}{8}$ σ poll.*

*Hab.* ad Insulas Polynesias. (Lord Hood's Islands.)

Somewhat related to, but distinct from Lamarek's *Col. zonalis*.

Found on the *Meleagrina*.

**COLUMBELLA OBTUSA.** *Col. testâ oblongâ, subcylindricâ, lævi; anfractibus 8, albicantibus, castaneo maculatis, maculis angulatis subtrapeziformibus; anfractu ultimo ad basin sulcato: long.  $\frac{1}{8}$ σ, lat.  $\frac{3}{8}$ σ poll.*

*Hab.* ad Insulam Huaheine dictam.

This appears to be a very rare species, since only two specimens were found on the reefs of Huaheine, one of the Society Islands.

**COLUMBELLA FUSCATA.** *Col. testâ ovato-acuminatâ, medio ventricosâ, castaneâ, albido guttulatâ, epidermide fuscâ indutâ; spirâ acuminatâ; anfractibus 7, ultimo maximo; aperturâ elongatâ, flexuosâ; peritrematis albidâ aut violaccâ medio intus denticulato; columellæ dinidio inferiore denticulato: long.  $\frac{1}{8}$ σ, lat.  $\frac{1}{8}$ σ poll.*

*Hab.* ad oras Americæ Meridionalis. (Panama, St. Elena, and Monte Christie.)

Found under stones; it appears to be very common.

**COLUMBELLA COSTELLATA.** *Col. testá oblongo-pyramidalí, albidá, castaneo-nigricante maculatá; spirá acuminatá; anfractibus 8—9, longitudinaliter costellatis, ultimo ad basin spiraliter striato: long.  $\frac{1}{2}$ , lat.  $\frac{5}{8}$  poll.*

*Hab. ad Panamam.*

A single specimen was found at a depth of sixteen fathoms.

**COLUMBELLA GUTTATA.** *Col. testá oblongo-pyramidalí, lævigatá, fuscí, maculis guttulisque albidis notatá; spirá acuminatá, plerùmque decollatá; anfractibus 7—8, ultimo spiraliter striato ad basin; aperturá albicante, dentibus internis peritrematis superioribus majusculis: long.  $\frac{1}{2}$ , lat.  $\frac{1}{2}$  poll. paullo plùs.*

*Hab. ad Panamam, sub lapidibus.*

This species has been long well known; Mr. Sowerby is not however aware that it has been hitherto described.

**COLUMBELLA VARIANS.** *Col. testá ovatá, medio ventricosá, albidá, coloribus variis pictá; spirá breviter pyramidalí; anfractibus 4—6, spiraliter sulcatis; supernè subangulatis, noduliferis; aperturá angustá, flexuosá; peritremate supernè angulato, intùs denticulato; labio interno prope basin denticulato; columellæ dentibus tribus, parvis: long.  $\frac{1}{2}$ , lat.  $\frac{5}{8}$  poll.*

*Hab. ad insulas Gallapagos. (Hood's Island.)*

A very pretty species, exceedingly variable in its colouring. It would appear that it abounds in some spots; for Mr. Sowerby has a great number brought by the Endeavour, Capt. Cook, many years since, but without locality.

**COLUMBELLA ANGULARIS.** *Col. testá oblongo-pyramidalí, pallidá, fusco variá; spirá subulatá; anfractibus 10, longitudinaliter costatis, ultimi medio subangulato, basi reflexo; aperturá subquadratá, canali longiusculá, latá; peritremate extùs incrassato: long.  $1\frac{1}{2}$ , lat.  $\frac{5}{8}$  poll.*

*Hab. ad Panamam.*

**COLUMBELLA CASTANEA.** *Col. testá ovato-oblongá, castaneá, punctulis albidis conspersá; spirá breviusculá, acuminatá; anfractibus 5, supernè anguliferis, ultimo magno, ad basin spiraliter sulcato; aperturá elongatá, flexuosá, supernè angulosá; peritremate aurantiaco; labio externo intùs denticulato; interno supernè califero, medio albo eroso, infrá plicato-rugoso: long.  $\frac{1}{2}$ , lat.  $\frac{1}{2}$  poll.*

*Hab. ad oras Americæ Centralis. (Real Llejos.)*

A few specimens only of this species have been found; and some had already been brought to England long ago. All appear to have been picked up on the shore.

**COLUMBELLA SULCOSA.** *Col. testá ovato-oblongá, fulvá, nigricante, vel rufo-nigricante lineatá; spirá acuminatá; anfractibus 7, longitudinaliter costatis, decussatim spiraliter sulcatis; caudá reflexá; aperturá supernè latiore, infrá canali distinctá; labio externo extùs incrassato, intùs denticulis 4 centralibus; interno rugis basalibus nonnullis: long.  $1\frac{1}{2}$ , lat.  $\frac{5}{8}$  poll.*

*Hab.* ad Insulas Polynesias. (Annaa, or Chain Island, and Lord Hood's Island.)

**COLUMBELLA MAJOR.** *Col. testá ovatá, medio gibbosá, castanéá albido punctulatá; spirá breviusculá, pyramidali, acuminatá; anfractibus 6—7, lævigatis, ultimo maximo, supernè rotundato-turgido, infrá spiraliter sulcato; aperturá elongatá, flexuosá, albá, supernè angulatá; labio externo supernè obtusè angulato, albo, intùs denticulato; labio columellari supernè callifero, infrá plicato-rugoso: long.  $1\frac{1}{10}$ , lat.  $\frac{7}{10}$  poll.*

*Hab.* sub lapidibus ad oras Americæ Meridionalis. (Isle of Muerte.)

This species has long been known, and has commonly been called *Col. Strombiformis*. It does not, however, agree with Lamarck's description of that shell, and Mr. Sowerby possesses specimens of another which corresponds exactly with it.

**COLUMBELLA PROCERA.** *Col. testá oblongo-pyramidali, medio ventricosá, cærulescenti-albidá, fusco punctatá et maculatá; spirá gradatim acuminatá; anfractibus 8—9, longitudinaliter costellatis; superioribus decussatis; medianis subtuberculiferis; ultimo medió lævigato, infrá spiraliter sulcato; aperturá oblongá, supernè acuminatá, subtùs in canalem breviusculam desinente; labio externo intùs denticulato; columellá arcuatá, lævi: long.  $2\frac{3}{10}$ , lat.  $\frac{1}{10}$  poll.*

*Hab.* ad Panamam.

This species is remarkable for its gigantic size. It must be placed with the *Columbellæ*, although not precisely according with the character given of that genus by Lamarck; for it is more nearly related to them than to any other genus. A single specimen only was found.

**COLUMBELLA PYGMÆA.** *Col. testá ovato-oblongá, pallescente; spirá acuminatá; anfractibus 6; superioribus 5 longitudinaliter costatis, fasciá interruptá nigrá; ultimo supernè longitudinaliter costato, infrá spiraliter sulcato, fasciis duabus interruptis nigris; aperturá latiusculá; labii externi margine supernè emarginatá: long.  $\frac{5}{10}$ , lat.  $\frac{5}{10}$  poll.*

*Hab.* ad Sanctam Elenam.

Found on dead shells in sandy mud, at a depth of ten fathoms.

**COLUMBELLA UNICOLOR.** *Col. testá ovatá, medio ventricosá, castanéá; anfractibus 5, lævibus; suturá profundiusculá; aperturá latiusculá, ad basin subeffusá; canali brevissimá; labio externo extùs subincrassato, intùs denticulis obsoletiusculis nonnullis: long.  $\frac{4}{10}$ , lat.  $\frac{1}{10}$  poll.*

*Hab.* ad Insulas Gallapagos. (Hood's Island.)

**COLUMBELLA VERSICOLOR.** *Col. testá ovatá, medio ventricosá, pallidá coloribus variis pictá; spirá acuminatá; anfractibus 6, supernè rotundato-angulatis; suturá profundá; aperturá supernè angulosá; peritremate intùs denticulato: long.  $\frac{2}{10}$ , lat.  $\frac{2}{10}$  poll.*

*Hab.* ad Insulas Polynesias. (Annaa, or Chain Island.)

**COLUMBELLA DORSATA.** *Col. testâ oblongo-pyramidali, albâ, lineis irregularibus, flexuosis, confertis, castaneis obtectâ; anfractibus 8, lævibus, supernè turgidulis; ultimi lateribus inflatis, dorso prominente; suturâ distinctâ; aperturâ angustâ, flexuosâ, albâ; peritremate extûs incrassato; labio columellari exarato: long. 1, lat.  $\frac{1}{2}$  poll.*

*Hab.* ad oras Columbiae. (Island of Muerte, Bay of Guayaquil.)

This species is somewhat like *Col. gibberula*, but it is much larger, and the middle of the columellar lip is worn away; there are also other minor differences.—G. B. S.



June 26, 1832.

William Yarrell, Esq. in the Chair.

Specimens preserved in spirit were exhibited of two species of *Mus* collected by Lieut.-Col. Sykes in Dukhun, both of which were apparently new to science. One of them is that referred to in Col. Sykes's 'Catalogue of the *Mammalia* noticed in Dukhun' (Proceedings, Part I. p. 103.). It was characterized by Mr. Bennett as

**MUS OLERACEUS.** *Mus caudâ longissimâ; auriculis rotundatis majusculis; suprâ nitidè castaneus; ore, gastræo, pedibusque flavescenti-albidis.*

Long. capitis corporisque,  $2\frac{3}{4}$  unc.; caudæ,  $4\frac{1}{4}$ ; capitis 1; auricula,  $\frac{1}{4}$ ; tarsi postici cum digitis,  $\frac{3}{4}$ ; tibie posticæ,  $\frac{5}{8}$ ; mystacum,  $1\frac{1}{4}$ .

*Hab.* in arvis Indiæ Orientalis, nidum e foliis graminum in plantis oleraceis construens.

The upper surface is thickly clothed with rather long smooth silky hairs of a bright pale chestnut colour; on the under surface and the inside of the limbs the quality of the hairs is the same, but their colour is nearly white with a yellowish tinge. This latter colour extends up the cheeks, round the mouth and the under surface of the muzzle, and over the upper surface of the feet; the hairs on the latter, on the muzzle, and on the long scaly tail, being very short. The claws are white and minute. The ears are rather large, rounded above, and very nearly naked. The muzzle is rather short and obtuse, and the eyes are placed at an intermediate distance between its end and the base of the ears. The moustaches are numerous and long, some of them being black, and others silvery or bright chestnut.

The extreme length of the tail, as compared with that of the body, and the comparative length of the hinder *tarsus*, furnish characters sufficient to distinguish this *Indian field Mouse* from all its congeners.

The second species belongs to that section of the genus *Mus* in which spines are intermixed with the fur. It was designated

**MUS PLATYTHRIX.** *Mus caudâ corpus longitudine subæquante; auriculis mediocribus nudis subrotundatis: suprâ fusco-canescens, pilis plurimis applanatis spinescentibus; infrâ et ad pedes flavescenti-albidus.*

Long. capitis corporisque,  $3\frac{1}{4}$  unc.; capitis,  $1\frac{1}{4}$ ; caudæ, 3; auricula,  $\frac{1}{4}$ ; tarsi postici cum digitis,  $\frac{3}{4}$ ; mystacum,  $1\frac{1}{4}$ ; spinarum,  $\frac{1}{4}$ .

The head is rather flat, and the muzzle slightly elongated and

acute ; the tail regularly ringed with scales, from between which only a few scattered hairs make their appearance. The fur of the upper surface is of a light grey at the base ; but the longer hairs have a blackish shade, with an intermixture of testaceous brown, which is more obvious posteriorly and towards the lower part of the sides. The flattened spines, which are numerous, are white and transparent throughout the greater part of their length, with a dark margin and blackish acuminate tip, beneath which they exhibit, in certain lights, somewhat of a changeable gloss. The moustaches are few in number, black at the base and white at the tips, and reach beyond the ears, which are naked, rounded with a slight point, extremely open, membranaceous, and of a dusky black. The whole under surface, together with the insides of the limbs, the upper surface of the feet, and the claws, are of a yellowish or dirty white. The tail is of a uniform livid grey, but little darker above than beneath, and tapering to a very fine point.

Several imperfect skins of *Mammalia*, recently obtained by Mr. Gould from Algoa Bay, were exhibited ; and Mr. Bennett remarked, that notwithstanding their deficiency in the most important particulars, they were yet of sufficient interest to claim the attention of the Committee, on account of the extreme rarity of two of the species to which they belonged, and of the probability that a third was altogether unknown to science.

One of them, the skin of a *Monkey* deficient as to head and hands, was, Mr. Bennett stated, evidently referable to the *Colobus polycomus*, Illig. ; the long milk-white tail, strongly contrasting with the bright deep black fur of the body, being fully sufficient to characterize it. On the upper part of the skin, above the shoulders, some nearly white hairs were intermingled with the black ones. The only discrepancy observable between the specimen and the description of the species given by Pennant, was in the great length of the hairs of the body, the greater number of them being four or five inches long : this, it was remarked, might be dependent on age or locality.

Another skin, equally imperfect with the preceding, was that of the *Colobus ferrugineus*, Illig., with the state of which, described by M. Kuhl under the name of *Col. Temminckii*, the specimen agreed in every respect except in the absence of any yellow tinge in the rufous fur covering the under surface of the body.

The third skin was still more imperfect than the others, having attached to it no portion of the neck, extremities, or tail, and consisting only of that of the body. Its length is 2 feet, its width  $1\frac{1}{2}$ . The dorsal portion is of a bright rufous fawn, which is continued on the shoulders and on the buttocks, but from which the red nearly disappears on the under surface, that being pale fawn. Across the whole of the back, commencing between the shoulders and passing backwards, a series of broad transverse glossy black stripes are seen, which run down the sides, becoming narrower towards the belly. These stripes are twelve in number, and are preceded and succeeded by a few similar, closer set, and fainter stripes, of a deeper rufous

than the ground. The broadest of the dark stripes are on the loins, where they are fully an inch in width: their direction in passing down the sides is rather backwards. The commencement of a dark streak is also seen on the skin leading to the outside of the thighs. The quality of the fur is rather rigid, and the hairs are adpressed, resembling in these particulars the covering of the *Zebbras*. It may not improbably belong to some species of *Antelope*, with which Europeans are yet unacquainted, but for which travellers to the country from whence the specimen was obtained may be induced to inquire, on being made aware of the existence of so beautiful an animal in that locality. The dark cross markings which ornament the fur are so uncommon among the *Mammalia*, that they alone will probably furnish a sufficient character to distinguish the quadruped in question from any other species inhabiting the interior of Africa, in the neighbourhood of Algoa Bay.

Several specimens were also exhibited of imperfect skins of *Ceropithecus Diana*, obtained from the same locality.

Specimens were exhibited of two species of *Hedgehog* from the Himalayan Mountains, which had recently been added to the Society's collection. Both of them belonged to that extra-European form of the genus *Erinaceus*, which is distinguished by the possession of long ears. Their characters were thus explained by Mr. Bennett:

**ERINACEUS SPATANGUS.** *Er. auriculis longis: spinis parallelim dispositis, apicibus longè cærulescenti-nigris, laterum versus apices flavescenti annulatis; capite, pedibus, gastræoque brunneo-fuscis; auriculis mentoque albis.*

Long. capitis corporisque,  $3\frac{1}{4}$  unc.; a naso ad auriculæ basin,  $\frac{7}{8}$ ; auriculæ,  $\frac{3}{4}$ ; caudæ,  $\frac{1}{4}$ ; pedis postici cum unguibus, 1.

The form of the body is oval, rather elongate, with the head projecting in front. The spines are not irregularly interwoven, as in the *Hedgehogs* generally, but are disposed parallel to each other, radiating from a point on the loins; a disposition which gives to this species a more smooth and elegant appearance than is observed in any one of the genus previously known. The spines are nearly white for rather more than one half of their length, the remainder being of the blueish black which constitutes the general colour of the upper surface, scarcely any of the white being seen: the only deviation from this general colour occurs in a rather broad patch on each side, where it is spotted with yellowish, an intermixture occasioned by the existence of a narrow ring of the latter colour near the tips of the spines in those situations.

The fur is generally of a dull brown; it is short on the upper surface of the head, and long on the under parts of the body. On the ears and chin the hairs are short and white.

The lengthened ears are rounded and somewhat thickened at their extremities. The *moustaches* are extremely long, and of a glossy brown.

The specimen described is probably not fully adult, there being

only two false molars on each side of the upper jaw. With this exception the development of the whole of the teeth appears to be complete.

The small size of the *Er. Spatangus*, its elongated form, the regular disposition of its spines, the more rounded form of its ears, and the comparative length of its hinder foot, distinguish it from the other species exhibited, which Mr. Gray was disposed to consider as the *Er. collaris* figured in the 'Illustrations of Indian Zoology,' but which Mr. Bennett rather regarded as a new species, it being destitute of a white collar, and differing in other particulars from the figure referred to. Mr. Bennett accordingly characterized it as the

ERINACEUS GRAYI. *Er. auriculis longis: spinis irregulariter intertextis, flavescenti apiculatis nigrescentique annulatis; capite grisescenti-brunneo; auriculis mentoque usque ad auriculas albescentibus; gastræo pedibusque dilutè brunneis.*

Long. capitis corporisque, 6 unc.; a naso ad auriculæ basin,  $1\frac{3}{8}$ ; auriculæ, 1; caudæ,  $\frac{5}{8}$ ; pedis postici cum unguibus,  $1\frac{1}{4}$ .

Jun. (edentulus). *Spinis haud flavescenti apiculatis, apicibus latè nigrescentibus, spinis aliquibus albis intermixtis.*

Long. capitis caudæque,  $3\frac{1}{2}$  unc.; pedis postici cum unguibus,  $\frac{3}{4}$ .

The form of the body is broadly oval, approaching to globular. The spines are yellowish-white for about five eighths of their length, then ringed with blackish, and are terminated by a yellowish tip of about one eighth of their length: hence results a general colour of grizzled yellow and black.

The head is brown above, with an intermixture of white hairs. The ears are covered with short whitish hairs. The hairs of the chin and lower jaw are also white, with the exception of a patch of brown in the middle of the hinder part towards the throat. The under surface is pale brown.

The ears are less thickened towards the tip, and more acuminate than in the preceding species. The *moustaches* do not reach beyond the tips of the ears.

In the younger specimen the colour, both of the upper and under surface, is much darker than in the adult.

The exhibition was resumed of the new species of *Shells* collected by Mr. Cuming on the western coast of South America and in the islands of the South Pacific Ocean. Those exhibited on the present occasion were accompanied by descriptions from the pen of Mr. Broderip.

#### Genus BULINUS.

\* Labio exteriorè acuto.

BULINUS RUBELLUS. *Bul. testá tenui, diaphand, subpyramidali, pallidè rubrá obscurè albido-maculosá; anfractibus 7 longitudináliter striatis; umbilico mediocri: long.  $1\frac{1}{2}$ , lat.  $\frac{5}{7}$  poll.*

*Hab.* in Peruvíæ montibus. (Truxillo.)



In very old or weathered specimens the transparency and colour are lost, and the shell has a more dense appearance. Some old specimens have a curved longitudinal external streak of chestnut rising from the *umbilicus*, and terminating near the base of the aperture at the lower edge of the inner lip. Found on bushes.—W. J. B.

**BULINUS NUX.** *Bul. testá pyramidalí, fuscá; anfractibus 7 longitudinaliter rugosis; umbilico mediocri: long.  $\frac{1}{2}$ , lat.  $\frac{2}{3}$  poll.*  
*Hab.* ad Insulas Gallapagos. (Charles's Island.)  
 Found on bushes.—W. J. B.

#### Genus PARTULA.

**PARTULA ROSEA.** *Part. testá ovato-pyramidalí, rosed; anfractibus 6 longitudinaliter substriatis, lineis creberrimis sub-decussatis, ultimo maximo; epidermide tenui: long.  $\frac{2}{3}$ , lat.  $\frac{2}{3}$  poll.*

*Var.  $\alpha$ .* purpureo-fusca.

*Var.  $\beta$ .* albida suturis et anfractûs ultimi basi roseis; epidermide flavâ.

*Hab.* in insulâ Huaheine.

Found by Mr. Cuming on the *Te* plant.—W. J. B.

**PARTULA AURICULATA.** *Part. testá perforatá, ovato-pyramidalí, castaneá; anfractibus 6 subventricosis, longitudinaliter striatis; aperturá albá, quasi auriculatá, labiis complanatis crassis; dente in anfractûs basalis faciem internam albo: long.  $\frac{2}{3}$ , lat.  $\frac{2}{3}$  poll.*

*Var. flavicans* aperturæ margine externo subroseo.

*Hab.* in Huaheine.

The thick flattened lips forming the aperture of this species are so disposed as to give the mouth, in many individuals, the appearance of a key-hole, while in others it is ear-shaped. The white tooth on the internal surface of the body whorl is not developed in some specimens. Found on bushes at Huaheine.—W. J. B.

**PARTULA VARIA.** *Part. testá ovato-pyramidalí, subglabrâ, levissimè longitudinaliter substriatâ, subdiaphanâ, fuscâ, fuscâ subviridifasciatâ, vel anfractibus superioribus fuscis, ultimo flavente: long.  $\frac{1}{2}$ , lat.  $\frac{2}{3}$  poll.*

*Hab.* in insulâ Huaheine.

This pretty species, of which hardly two individuals are exactly similar in colour, was found upon bushes.—W. J. B.

#### Genus PLANORBIS.

**PLANORBIS PERUVIANUS.** *Plan. testá discoïdèd, pellucidâ, utrinque concavâ, anfractûs basalis parte ultimâ subdepressâ; aperturâ subgibbâ, subdilatatâ: lat.  $\frac{2}{3}$ , long.  $\frac{1}{2}$  poll.*

*Hab.* in Peruviâ. (Malabriga, province of Truxillo.)

Found in a muddy pond nearly dried up.—W. J. B.

#### Genus PURPURA.

**PURPURA MURICATA.** *Purp. testá ovato-globosâ, transversim quadricarinatâ, carinis tuberculiferis imbricatis; subalbidâ lineis pallidè griseo-rufis cinctâ; columellâ flavescenti-carned; labro crenulato.*

*carinas versus arcuato, in canali altâ supernè desinente, intùs substriato, pallidè carneo; spirâ mediocri: long.  $2\frac{2}{3}$ , lat.  $2\frac{2}{3}$  poll.*

*Hab.* ad portum Sanctæ Elenæ in fissuris rupium.

This fine species, of which but very few were found by Mr. Cuming, has the upper carination very much developed, the tubercles being highly elevated and wavy, and thickly set with deeply imbricated foliations. On the next carination, these characters are less strongly marked; and on the two last, the tubercles almost entirely disappear. The ridge formed by the basal canal is very prominent.—W. J. B.

#### Genus PECTUNCULUS.

PECTUNCULUS MACULATUS. *Pect. testâ orbiculatâ, subauritâ, subæquilaterâ, convexâ, albente castaneo-maculosâ, striis radiantibus subdecussatis creberrimis; intùs albâ, marginibus crenatis; epidermide fuscâ, villosâ: long.  $2\frac{2}{3}$ , alt.  $2\frac{2}{3}$ , lat.  $1\frac{1}{3}$  poll.*

*Hab.* in Portu Portrero.

The spots vary in different individuals; but the colouring matter appears to be very sparingly secreted as the animal advances in age, while in very young specimens it greatly predominates. The shell rapidly increases in convexity as it becomes older: when very young, it is comparatively lenticular. Found in fine gravel in eleven fathoms water.—W. J. B.

PECTUNCULUS OVATUS. *Pect. testâ obovatâ, convexâ, glabrâ, lineis transversis minutissimis, albente, umbonibus castaneo pallidè notatis; intùs albâ, marginibus crenatis; epidermide subvillosâ: long.  $1\frac{1}{2}$ , alt. 2, lat.  $1\frac{1}{3}$  poll.*

*Hab.* ad insulam Lobos.

Found in coarse sand at the depth of seventeen fathoms.—W. J. B.

PECTUNCULUS INTERMEDIUS. *Pect. testâ suborbiculatâ, subglabrâ, subdepressâ, albidâ, castaneo umbones versus pallidè zonato-radiatâ; striis radiantibus subdistantibus, decussatis; intùs albâ, marginibus crenatis; epidermide subpilosâ: long.  $1\frac{5}{8}$ , lat.  $1\frac{1}{2}$ , alt.  $1\frac{7}{8}$  poll.*

*Hab.* ad Iquiqui.

In many specimens the pale chestnut radiating zones near the umbones are effaced by decomposition. Found in coarse sand at a depth of ten fathoms.—W. J. B.

At the request of the Chairman, Mr. Spooner read the following Notes of the *post mortem* examination of the *Dromedary, Camelus Dromedarius*, Linn., which lately died at the Society's Gardens.

“On the cavity of the abdomen being laid open, several gallons of serum escaped, intermixed with a large portion of coagulable lymph, which, on a further investigation, appeared to have flowed from the liver. This viscus was constituted of one main lobe, having several small lobuli extending from its posterior edge, by means of which it became attached to the right kidney: it was confined to the right side of the spine. The posterior vena cava passed through its substance previously to piercing the diaphragm, situated to the right side of which vein was the vena porta. There was no gall-bladder:

the bile was conveyed from the liver by the hepatic duct, which emptied itself into the *duodenum*, about 6 inches from the *pylorus*, in common with the pancreatic duct, as in the *Horse* and most of the *Deer* tribe. The peritoneal tunic of the liver was ruptured, and in many parts had undergone the ulcerative process. The gland presented one entire mass of disease, which was undoubtedly of a chronic character. It was morbidly enlarged to three times its natural bulk, having numerous abscesses in its substance; several hydatids were also adhering to its surface. The intestinal canal bore no marks of disease, other than a peculiar flabbiness and a slight blush of inflammation invading the peritoneal tunic. The kidneys were extensively diseased, and a great part of their cortical substance was absorbed: they were entirely detached from their capsules, floating loosely in them, and were of a very dark colour, and, for the most part, disorganized, the *pelvis* and *infundibula* being the only parts demonstrable. Considerable effusion had taken place into the cavity of the chest. The lungs exhibited extensive marks of disease: they were emphysematous; and *hydatids* and *vomicæ* invaded their structure. The heart was peculiarly flabby, and the right side was distended with coagulated blood."

Mr. Spooner described in detail the structure of the stomach, in which he found nothing to add to the accounts already given by Daubenton and Sir E. Home. He remarked, however, that the cells of the first cavity in this instance contained food; and he was therefore induced to suggest that doubts might be entertained of the correctness of the generally received opinion, that these sacs are destined to act as reservoirs for fluids.

Mr. Owen stated, that he also had found in the cells of the stomachs of *Lamas* which he had dissected, more or less of food: but he suggested the probability that this might have been forced into them by moving the animal about after death, when, muscular power being abolished, resistance to the admission of the food into the cells would have ceased. He added, that in the instance of the *Camel*, which was killed some years since at the Royal College of Surgeons, (the particulars of the examination of which have been published by Sir E. Home,) the cells of the second and first cavities of the stomach were found to be filled with water only: in this case, the animal had been kept without drink for three days; was then allowed to drink freely; was killed three hours afterwards; and was opened without being moved from its erect position.

Mr. Cox suggested, that the existence of food in the cells of the stomach, in the instances referred to, might perhaps be accounted for by the fact, that the animals in question had been kept for many years in this country, where they were at all times provided with water: under these circumstances, a receptacle for the preservation of fluid would not be called into use; and the cells having therefore ceased to be applied to that purpose, the muscular power of their apertures would have been consequently diminished.

Colonel Sykes added, that on examining, in India, the stomach of a *Camel*, he had found the cells devoid of food.

July 12, 1832.

Sir Thomas Phillipps, Bart., in the Chair.

At the request of the Chairman, Mr. Arthur Strickland, of Boynton near Burlington, Yorkshire, exhibited a specimen, from his collection, of a *Puffin* shot by Mr. George Marwood, jun., of Busby, "in the middle of August 1828, in a very stormy day, at the mouth of the Tees: it was seen early in the morning, sitting on the water like a duck, and was shot as it was rising: its manner of flight was consequently not noticed."

After observing on the confusion in which our knowledge of the entire group of the *Petrels* is at present involved, in consequence of the unsatisfactory descriptions of them contained in books, Mr. Strickland proceeded to state, that the addition to the British Fauna which he submitted to the examination of the Committee was apparently referable to the *Puffinus fuliginosus* (*Procellaria* (*Nectris*) *fuliginosus*, Kuhl). The description of this species given by M. Kuhl in his 'Beiträge,' rests upon two unpublished drawings, which form part of the valuable collection of Sir Joseph Banks, now deposited in the British Museum, one of which is marked *Procellaria fuliginosa* by Forster, and the other *Nectris fuliginosa* by Solander, in whose MS. Notes it is described under the latter name. The *Proc. fuliginosa* of the same MSS., though similar in size and colour, is entirely different, and at once distinguishable by having the bill short and powerful, and the nostrils in a raised tube, like the true *Procellariæ*. The *Proc. fuliginosa*, Lath., is also altogether distinct, being the *Thalassidroma Leachii*, Vigors: and the only description in the 'General History of Birds' which at all resembles the present species, is that of the *Proc. grisea*, a species distinct from that described under the same name by Linnæus.

Mr. Strickland stated, that he could detect no differences between his specimen and the drawings referred to, except that the latter represented a bird of somewhat larger size, and having the lower parts of the breast of a rather lighter colour. These differences were also observable on comparison with an apparently original specimen of Sir Joseph Banks's bird, preserved in spirit, which he had ascertained to exist in the Museum of the Royal College of Surgeons. He added, that Sir Joseph Banks's specimens, described by Dr. Solander, were obtained in the Southern Pacific Ocean, in various latitudes and longitudes, extending nearly from the coast of Chili to that of Van Diemen's Land; but remarked, that there was reason to believe, that birds of an equally distant locality had, in more instances than one, reached this country.

In its distinct and very little raised nostrils, the bird in question agrees with the *Shearwater Petrel*, *Puffinus Anglorum*, Ray: it has



no back toe, but in lieu thereof a strong claw; and its tail is rounded. It may be thus characterized:

*PUFFINUS FULIGINOSUS.* *Puff. brunneus sepicolor; alis saturatioribus; gula griseo leviter tincta; rostro concolore; tarsis externè digitisque externis brunneis; tarsis internè palamisque fusco-ochraceis.*

Long. 18 unc.; *alæ*, 12; *tarsi*,  $2\frac{1}{4}$ ; *digiti medi*,  $2\frac{1}{7}$ ; *rostri*, a rictu ad apicem,  $2\frac{1}{7}$ , a fronte ad apicem,  $1\frac{7}{8}$ .

Mr. Strickland concluded by remarking, that although a single and perhaps purely accidental instance of a species appearing in this country may not fully entitle it to be ranked as a British bird, yet that the circumstance is worthy of being noticed, as it is only by carefully recording such instances as do occur that we can decide what is entitled to that appellation, and be thereby enabled to perfect our local catalogues.

At the request of the Chairman, Mr. Gould exhibited numerous specimens of two *Birds* hitherto confounded under the name of *Motacilla flava*. In a communication which accompanied his exhibition, Mr. Gould explained the differences between the species, and entered at some length into their history. One of them, the *yellow Wagtail* of England, was described by Ray under the name of *Mot. flava*: its head is of a fine olive colour, and the stripe above and below the eye is of a bright yellow. The other, the *Mot. flava* of Linnæus, has the head of a lead colour approaching to blue, and the stripe above and below the eye of a clear white. The latter bird does not appear to have been ever met with in England: it is the one described by continental authors under the Linnean name; while British writers have as constantly described under that name the bird to which it was originally given by Ray, and which regularly visits their own country. For Ray's bird, Mr. Gould suggested that the name of *Mot. flava*, under which it was described by our illustrious countryman, ought, according to the established rules of nomenclature, to be retained. To that of Linnæus, M. Temminck, and other continental authors, he proposed to apply the name of *Mot. neglecta*.

The species may be thus characterized:

*MOTACILLA FLAVA*, Ray. *Mot. suprè olivaceo-viridis, subtùs flava; reatricibus duabus lateralibus dimidiato obliquè albis; capite olivaceo; strigd supra- et infra-oculari flavâ.*

*Fœm.* *Coloribus magis obscuris; capite dorso concolore; strigis ocularibus obscurè flavis.*

*MOTACILLA NEGLECTA.* *Mot. suprè olivaceo-viridis, subtùs flava; reatricibus duabus lateralibus dimidiato obliquè albis; capite plumbeo; strigd supra- et infra-oculari albâ.*

*Fœm.* *Coloribus magis obscuris; capite plumbeo-olivaceo; strigis ocularibus minùs conspicuis.*

Mr. Gould further remarked, that the differences pointed out in these characters do not depend upon season; there being on the table specimens of *Mot. neglecta*, the *blue-headed Wagtail*, from Swe-

den and Paris, and of *Mot. flava*, the olive-headed Wagtail, of England, all killed in the month of May.

He added, that he regarded the *Mot. cinerea* of Ray as the young or female of the grey Wagtail, *Mot. boarula*, Linn.

Mr. Gould also stated, that he had recently seen a fine specimen of *Cypselus alpinus*, Ill., which had been shot by the gardener of Mr. Holford, at Kingsgate, near Margate. This fine Swift, which has rarely been known to range westward of the European continent, had been only once previously observed in England.

Mr. Owen referred to his Notes (published in the First Part of the 'Proceedings,' pp. 141 and 154) on the anatomy of individuals of two subgenera of the Linnæan genus *Dasypus*; one of which, the *Das. 6-cinctus*, Linn., had not, he believed, been previously dissected. He stated, that two other individuals of that species, one an adult female, the other a young one of the same sex, having subsequently come under his examination, he was enabled to confirm some of the peculiarities observed in the dissection of the young male specimen, and particularly the existence of the double *cæcum*, and the additional lobe of the lungs. He was also enabled to add to that account a description of the genital and mammary organs.

"The number of nipples in the Weasel-headed Armadillo (*Das. 6-cinctus*) is two only, while the nine-banded Armadillo (*Das. Peba*, Desm.) has four (see Part I. p. 142). They are situated in the pectoral region, and in the adult female (which died before the young one had ceased to suck,) were elongated to the extent of an inch and a half; at the apex of each were six minute orifices of the *tubuli lactiferi*; the nipples were very soft and silky to the touch, and extremely flexible. On removing the integument from this region, one large mass of conglomerate mammary gland was found, extending across the whole sternal aspect of the *thorax*, from one *axilla* to the other, and measuring in length 5 inches, the thickness of the mass being from 3 to 4 lines: it was of a deep yellow colour. There was not the slightest trace of a division at the mesial line; but although I succeeded in injecting one side of this large gland with mercury, I was unable to force any into the opposite side.

"The *clitoris* in this animal was much longer than in the nine-banded species, measuring 9 lines in the undisturbed state, and resembling more the corresponding organ in the male: it was of a pointed form, was covered with a leaden-coloured integument, and was situated an inch anterior to the *anus*; the genito-urinary orifice was placed on an eminence half an inch from the extremity. From this orifice the genito-urinary canal extended 8 lines, receiving the *vagina* by a transverse semilunar slit, and being then continued for 5 lines further without any diminution of diameter, and terminating in the form of a *cul de sac*, into which the *urethra* opened by a very small orifice. In *Das. Peba*, the genito-urinary cavity was not separated by a corresponding contraction from the urinary bladder, but was a more direct continuation of it; so that in both these species we

have a remarkable deviation from the ordinary structure of this part; the orifice of the *vagina* having nearly the same relation to the genito-urinary passage as the *urethra* has in the *Mammalia* generally, and the genito-urinary canal being, in consequence, a continuation of the urinary bladder rather than of the *uterus*. This was particularly observed in *Das. Peba*; but was less obvious in the *Weasel-headed* species, on account of the recent distension of the parts in parturition. In neither species is there any *os tincae* between the *vagina* and *uterus*; so that the limits of the two parts can only be loosely defined by difference in diameter, and in the character of the lining membrane. In the *Weasel-headed* species, some of the muscular fibres had apparently been ruptured in parturition; for on injecting the parts with spirit, the external cellular texture was distended at the contracted part of the uterine canal, evidently with a force insufficient to have ruptured the coats without previous lesion. At this part there were numerous jagged longitudinal *rugae*; two or three of which were continued along the *vagina*, but the interior of the *uterus* beyond was smooth. There was a difference of form in the *uterus* of the two species. In *Das. Peba* it is of an oval form, the *fundus* ending almost in a point, and the Fallopian tubes are continued from the sides of the *fundus* without any appearance of *cornua*; but in *Das. 6-cinctus* the *uterus* is triangular, the *fundus* forming a straight line, and the angles being produced a little, so as to form rudimentary *cornua*, from which the Fallopian tubes are continued. These tubes in both the species wound round the capsules of the ovaries, and terminated in the usual fimbriated extremities directed towards the ovary. The breadth of the base of the *uterus* in the *Weasel-headed Armadillo* was 1 inch, 1 line; from the *fundus* to the opening of the *vagina* into the genito-urinary canal, 2 inches. The ovaries were transversely oval, measuring 3 lines by  $1\frac{1}{2}$ . The Fallopian tubes became tortuous towards the extremity.

“In the absence of distinction between the *uterus* and *vagina*, and in the mode of communication of what may be considered a single elongated uterine tube with the genito-urinary canal, may be observed the first traces of that approximation to the oviparous type of the genital organs which peculiarly characterizes the *Marsupial Edentata*.

“The urinary bladder in the adult female was an oval cavity about the size of a pigeon’s egg; its coats were tolerably thick. The ureters open close to the orifice, and very near together; a distinct groove or channel commences between the two orifices, and is continued into the narrow canal for about 2 lines, and then terminates on a ridge analogous to the *verumontanum*. The length of the *urethra* is 5 lines.

“The *cæca* in this individual were of equal size, half an inch in length, and the same in breadth; their relation to the *ilium* and the structure of the ileo-cæcal orifice were the same as in the young male.

“The *pancreas* was of large size, measuring in length  $4\frac{1}{2}$  inches; a broad process, or subsidiary *pancreas*, extended from the duodenal end of the gland downwards into the mesentery, which confined the

*duodenum*, in the centre of which process there was a slight deficiency.

“The spleen was shorter and thicker than in *Das. Peba*, measuring  $2\frac{1}{2}$  inches in length, and 2 in breadth. There was no supernumerary spleen as in the young male.

“The suprarenal glands were as large as almonds: they were very elastic; and on pressure, the blood which they contained was propelled along the vein. In section they presented first a distinct fibrous cortical part, then a dark coloured portion, and lastly a firmer substance in the centre.”

Mr. Owen subsequently adverted to several external peculiarities which he had observed in the *6-banded Armadillo*, and which, he remarked, were of some interest, as connected with the burrowing habits of the animal. On the second toe from the inside there is a soft large cushion, evidently a modification of the organ of touch: at the hinder part of the fore-foot there is also a warty prominence, from which many hairs grow. There is a loose portion of integument below each eye, supported upon a prominence of the *zygoma*, hirsute, and resembling an inferior eyebrow; by means of which, and the coronal plate of armour above, the eye is well defended during the act of burrowing.



July 24, 1832.

William Clift, Esq., in the Chair.

A Letter was read, addressed by Sir F. Mackenzie to the Secretary of the Society, and dated July 16: it related to the breeding of some *Woodcocks*, *Scolopax rusticola*, Linn., at Conan on the eastern coast of Ross-shire, the estate of that gentleman.

For several years past, two or three of these birds have occasionally been seen in the woods, and about five years since a couple were shot just before St. Swithin's-day: these were, however, old birds, and from their being covered with fat, it was evident that they had not nested. The keeper, in fact, had never been able to find one of their nests or to see a young bird, until the present season. In two small woods near his house he this year discovered four *Woodcocks'* nests, one having four, and the others three eggs each, all of which were hatched and ran. The young birds he repeatedly saw before they took wing; and now five or six couple may every evening, towards dusk, be observed flying about the lodge as they pass to their feeding grounds. The old birds give notice of their approach by a sharp cry of *twit-twit-twit*, repeated as rapidly as possible, and heard at three or four hundred yards distance; while the young ones are less noisy and more flagging in the motion of their wings. Than the flight of the *Woodcock* before and after incubation, Sir F. Mackenzie states that he knows nothing more rapid, as for an hour or two about dusk he (probably the male, though two have been seen together pursuing each other) flies in large circles over the tops of the trees, uttering his sharp and piercing cry, a whistle which sportsmen may have occasionally heard weakly when cocks are first flushed in the back flight in March. Sometimes his sudden flight will be arrested and changed into a sailing slowly, like a *pouter Pigeon*, his cry being at the same time varied to a purr or bleat resembling that of the *Ptarmigan*: then he will dart away with greater rapidity than a *Pigeon* in full flight, moving his wings, however, with a different action from that of the *Pigeon*, and with inconceivable rapidity.

The soil where the nests were found is gravelly and rather dry; the grass tolerably long, without underwood; and the trees, oak, birch, and larch not exceeding thirty years' growth. The situation is warm, and not 150 feet above the level of the sea; it is not far distant from the river. The woods are kept quiet, and several pheasants' nests were hatched in their close vicinity.

It is probable that the parent birds sought this spot for the purpose of breeding, as they must have arrived in the spring from other localities: for those who shot in the covers till February declare that they did not know of a single *Woodcock* being then left

in them; and had there been two or three, the keeper must have been aware of it.

The skeleton was exhibited of the *Weasel-headed Armadillo*, *Dasypus 6-cinctus*, Linn.; and Mr. Owen read the following Notes on the osteology of that species:—

“After the minute and elaborate descriptions and comparisons of the skeletons of the *Dasypodæ*, which have been given by the Baron Cuvier in the fifth volume of the ‘*Ossemens Fossiles*,’ but little remains to be added on that subject. As, however, the skeleton of the *weasel-headed Armadillo*, now before the Committee, has been prepared, with great care, from one of the adult specimens lately alive in the Society’s Gardens, and as this species has been much more rarely subjected to anatomical examination than the *nine-banded*, a few observations on it may not be unacceptable.

“The *cranium* presents the elongated conical form common to the *Dasypodæ*, tapering gradually towards the nose, but it is shorter, broader and flatter than in *Das. Peba*. On the anterior part of the *os frontis* may be observed two broad but slightly raised eminences which occupy the whole breadth of the bone: they are most marked in the older subjects, where their smooth and shining surface presents a remarkable contrast to the rest of the *cranium*, which is sculptured by the perforations and canals of numerous vessels. On removing the thin layer of bone which formed the convexity of one of these eminences, I found the cavity beneath was principally a continuation of that of the *cranium*, and had lodged the olfactory ganglions. The rest of the cavity anteriorly was occupied by a very large and complicated turbinated process of the ethmoidal bone; the cribriform plate of the same bone was observed to be of great extent, and the whole structure displayed the high degree in which this animal is endowed with the sense of smell. These eminences are described by Cuvier as being more developed in the *Cabassou*, *Das. unicinctus*, Gmel. They correspond in situation to those which render the *os frontis* of *Chlamyphorus* so peculiar.

“The number of *vertebræ* and the length of each division of the vertebral column are as follows:

	No.	Length.	
		Inches.	Lines.
Cervical .....	7 .....	1	4
Dorsal .....	11 .....	4	0
Lumbar .....	3 .....	1	4
Sacral .....	8 .....	3	0
Caudal .....	16 .....	5	0

“The cervical *vertebræ* present the peculiarity observable in the other species of this tribe, that of being partially ankylosed together. In this instance the *axis* and the 3rd and 4th *vertebræ* are so joined; the lines of division between the two former being indicated only by the lateral orifices for the nerves, which are two on each side. This *anchylosis* of the cervical *vertebræ* is also found,

as is well known, in the *Cetacea*; and as in that order this firm connexion of the *vertebræ* assists materially in enabling the head to overcome the resistance of the dense fluid through which they perpetually move, so in the animals of this genus a like advantage may be derived from this structure during the act of displacing the denser material in which they excavate their retreats. The bodies of the 4th, 5th, 6th, and 7th cervical *vertebræ* are in the form of transverse bars, the bony sheath of the spinal marrow being of equal thickness at every part, resembling in that respect the cervical *vertebræ* of the *Mole*, *Talpa Europæa*, Linn.; they have, however, the transverse processes much larger than in that animal. In *Das. Peba* the 5th, 6th, and 7th cervical *vertebræ* have distinct spines, but these are deficient in the present specimen.

“Cuvier assigns twelve as the number of the dorsal *vertebræ* in the *Encoubert*, but there were not more than eleven in this specimen, as clearly appears from the number of the ribs, all of which have been carefully preserved: and indeed, the costal *vertebræ* are readily distinguishable from the lumbar by a well marked articular process on each side of the body, for the head of the rib; but the last cervical also participates in this character. The spines of the 1st, 2nd, and 3rd dorsal *vertebræ* are the longest, and slope considerably backwards; the rest of the spines, together with those of the lumbar *vertebra*, also incline in the same direction, but in a less degree.

“Every one who has seen the living *Armadillo* running about the open plot of ground in the Society's Gardens must have been struck with the machine-like manner in which the body is carried along. The short legs are almost concealed, and their motions are not accompanied by any corresponding inflections of the spine, the two extremities of the trunk not being alternately raised and depressed as in the *quadrupeds* which move by bounds. Hence there is no centre of motion in the vertebral column, or point towards which the spinous processes converge, but all these have a direction towards the *sacrum*. The relation which the structure of the vertebral column bears to the mode of progression of a *quadruped* is extremely interesting, and enables us to judge in some degree from the spine alone of the locomotive faculties of a fossil species.

“There is another peculiarity to be noticed in the spine of *Dasyus*, viz. the elongated form of the anterior articular processes, especially of the hinder dorsal and of the lumbar *vertebræ*: these project upwards, outwards and forwards, and like struts or braces, assist in supporting the tegumentary mass which covers the body, and which may be not unaptly compared to a tiled roof. The spinal nerves pass out by *foramina* proper to each individual *vertebra*, and not in the interval of two.

“The ribs are on each side eleven in number, and six of these are true. The sternal portions are completely ossified, as in *Birds*, and joined to the dorsal portions by a distinct articulation. The first pair are short, and remarkably broad, measuring 1 inch in length and  $7\frac{1}{2}$

lines in breadth : the rest increase in length to the seventh, and then again diminish. The external surfaces of the posterior ribs do not present the deep excavations observable in those of *Das. Peba*. The sternal portions of the first pair of ribs are ankylosed to the vertebral portions. The small processes that intervene between the *manubrium* and the sternal ends of the clavicles in the young animal, are afterwards ankylosed to the latter bone, and being joined together form a part superadded to the *manubrium*. This part is evidently a rudimentary form of the Y-shaped bone placed anterior to the *manubrium* of the *Ornithorhynchus*, which Cuvier regards as analogous to the *os furcatorium* of birds ; it thus affords an additional and very interesting example of the affinity of the *Edentata* to the *Monotremata*, and supplies a step which was wanting in tracing the recedence of the latter, to their remarkably constructed *sternum*, from the mammiferous to the oviparous type of the *Vertebrata*. The *manubrium* itself also presents a peculiarity observable in that of the *Monotremata*, viz., a mesial longitudinal ridge on the anterior surface. This appearance in the *Ornithorhynchus* is regarded by Cuvier as indicative of an original division in the bone itself, ‘*Ossemens Fossiles*,’ v. pt. 1, p. 149 ; but I have examined the foetus of the nine-banded species, and find that ossification commences in the *manubrium* by a single central *nucleus*, and not by two lateral depositions. The other bones of the *sternum* appear, on an anterior view, to be almost deficient, being wedge-shaped, with the *apices* anterior ; their number is four, exclusive of the ensiform cartilage.

“The *pelvis* in this skeleton presents all the peculiarities which have been so well described by Cuvier : the *ilia* are of a prismatic shape, not expanded as in *Megatherium*, but forming two short and thick props or supporters to the armour. At the posterior part of the *pelvis* the tuberosities of the *ischia* project in a similar manner, and form similar props. It is evident from the form of the *pubis* that only a small portion of what usually constitutes the *symphysis* is here joined to its fellow, viz. the anterior angle ; and this approximation to the structure of *Birds* is rendered more evident in a nearly allied genus, *Chlamyphorus*, and in another edentate species, *Myrmecophaga didactyla*, where the *ossa pubis* remain entirely separate. An equally remarkable instance of the correspondence of this part of the skeleton,—the *pelvis*,—with that of *Birds*, obtains in the great breadth of the posterior part of the *sacrum*, the angles of which are ankylosed to the spines of the *ischia*, and convert the great ischiatic notches into complete *foramina*. The cavity of the *pelvis* is very wide, as may be inferred from the size of the young at the time of birth. The brim measures in the antero-posterior diameter 2 inches 3 lines ; in the lateral diameter 1 inch 3 lines : the outlet is of a triangular form, and measures in the antero-posterior diameter 1 inch 6 lines ; in the lateral diameter 1 inch 8 lines. The ischiatic *foramen* is of an oval form, 1 inch in the long, and  $\frac{1}{2}$  inch in the short diameter.

“The great size of the *pelvis* in this burrowing animal is the more remarkable when contrasted with the peculiarly diminutive dimensions of the same part in the *Mole* ; in which it has been regarded as



one of the perfections of form, adapting that animal to its subterraneous mode of life. In the *Armadillo*, however, the burrows serve only as temporary retreats; for it is endowed with powers of rapid progression on the surface, and its organ of vision, though small, is accordingly perfect. Thus the *pelvis* is destined to afford attachment to numerous and powerful muscles, and the hind-legs are evidently of considerable use in clearing out the burrow, as may be inferred from the action of the *Armadillo* when he hides himself in the straw, which he throws behind him with great force: whereas in the *Mole*, the whole power of digging is concentrated in the anterior extremities, the peculiar mechanism of which is admirably adapted to that act.

“The caudal *vertebræ*, like the cervical, present in *Dasybus* a peculiarity which is also found in the *Cetacea*, viz. that of having inferior spines, or V-shaped bones. These are present beneath all but the two last *vertebræ*; they are of a triangular form, but are articulated, not by their bases, as in the *Whale*, but by their *apices*; or rather the part which corresponds to the *apex* is flattened, and produced into two lateral processes.

“With respect to the bones of the extremities, it may be remarked that the *scapula* is very concave towards the ribs, more so than in the *nine-banded* species; and that besides the two spines, there is also a third ridge near the superior *costa*. Below the articular surface on the inferior *costa* there is also a little tubercle, which does not exist in *Das. Peba*. The supra-spinal notch is large, and the *acromion* long and narrow, but not ankylosed, as in the *Sloth* and *Megatherium*, to the coracoid. The length of the *scapula*, from the base to the articular surface, is 2 inches 1 line; of the base, 2 inches; of the *acromion*, 11 lines. The clavicles in *Das. 6-cinctus* are slightly curved, and are shorter and stronger than in *Das. Peba*: their length is  $1\frac{1}{2}$  inch. There is thus a correspondence between the clavicle and the rest of the anterior extremity, the claws being stronger, and the whole of the bones shorter and thicker than in *Das. Peba*. The *humerus* measures in length 2 inches 3-10ths: at the upper extremity are two large tuberosities and a deep middle groove; about the middle of the bone is a strong deltoid process: the bone is considerably twisted, and the inner condyle perforated as in most *Edentata*. The *supinator* ridge is strongly marked; the anconeal *fossa* large and shallow.

“The *ulna* measures in length 2 inches 3-10ths; it is a very strong bone, compressed, and arched backwards: the extremity of the *olecranon* is bent backwards in the form of a hook: the lower extremity has an equal share with the *radius* in the articulation with the carpal bones. The *radius* is in length 1 inch 4 lines. The large palmar sesamoid bone, formed at the expense of the tendons of the *flexor profundus digitorum*, is shaped like the head of a spade, with the concavity towards the *carpus*, and the sharp margin anterior: in length and breadth it measures half an inch. It is articulated by a distinct capsule and synovial membrane with the *ossa pisiforme* and *cuneiforme* on one side, and to the *navicular* on the other. The *flexor profundus*

is in comparison to the *flexor sublimis* a very powerful muscle. The latter terminates only in two tendons, which are inserted into the first and second *phalanges* of the *index* and *digitus medius*, forming strong sheaths for the passage of the tendons of the *profundus*. This muscle arises by three distinct portions; one from the whole anterior part of the *olecranon*; a second from the anterior part of the rest of the *ulna*, and from the interosseous ligament; the third portion appears to hold the place of *flexor longus pollicis*, and comes from the anterior part of the *radius*. The whole is inserted into the spade-shaped bone, beyond which tendons are continued to the extreme *phalanges* of all the fingers.

“The greater length of the *index* finger depends on that of the first *phalanx*, which in all the other fingers is very short, and in the two external is a mere *lamina* of bone. This is a peculiarity found in most of the *Edentata*; so that in the *Sloths*, where the first *phalanx* is early ankylosed to the metacarpal bones, its existence was overlooked before the observations of Cuvier. The distal *phalanges* of the second and third fingers are the largest; at the lower part of them is the rudiment of the bony sheath supporting the claws. Besides the lever afforded by the palmar spade-shaped bone, there is a distinct sesamoid interposed between the last joints of each finger and the *flexor* tendon. The length of the whole hand is 2 inches 4 lines; its breadth 10 lines.

“There is scarcely any *cervix* to the *femur*, but immediately beyond the head are the two *trochanters*, and a large middle process, analogous to the deltoid in the *humerus*. The length of the *femur* is 2 inches 6 lines. The *patella* is oblong and narrow. The *tibia* and *fibula* are ankylosed at both extremities: the length of the *tibia* is 2 inches; the breadth of the interosseous space nearly 5 lines. The bones of the *tarsus* presented the same disposition as is described by Cuvier, and figured in Pl. xi. fig. 18. of the work above quoted. The small supernumerary bone on the tibial side of the *tarsus* has the tendon of a small muscle inserted into it, which seems to be a *fasciculus* separated from the *tibialis posticus*; the rest of the *tibialis posticus* is inserted as usual into the base of the internal cuneiform bone.

“The *flexor longus digitorum pedis* and the *flexor longus pollicis pedis* are united through nearly their whole extent. The common tendon, having reached the sole, expands and surrounds a sesamoid bone, smaller than, but analogous to, the spade-shaped sesamoid in the palm. Cuvier states that he had not observed this plantar sesamoid in any *Armadillo* except the *Cachicame*, *Das. Peba*. The length of the whole foot is 2 inches 8 lines; its breadth 1 inch.”

August 14, 1832.

William Yarrell, Esq., in the Chair.

Specimens were exhibited of the following *Fishes* collected on the coast of Madeira by the Rev. R. T. Lowe, and presented by him to the Society :

*Alepisaurus ferox*, Lowe.  
*Box Salpa*, Cuv. & Val.  
*Raja clavata*, Linn.  
*Torpedo marmorata*, Risso.  
*Rhombus Maderensis*, Lowe.  
*Caranx* Cuv.  
*Pagellus breviceps?* Cuv. & Val.  
 ——— *Acarna*, Cuv. & Val.

At the request of the Chairman, the Rev. L. Jenyns exhibited an immature specimen of a second species of *crested Wren*, not hitherto recorded as having been met with in England; the *Regulus ignicapillus*, Temm. In its adult state this species is readily distinguishable from the more *common* one by the existence on each side of the face of three streaks, the upper and lower of which are white, and the intermediate one black, as well as by the patch on its head of a more deep and brilliant orange. In the immature state it may be distinguished by its somewhat smaller size; by its bill, which is much longer and is also broader at the base; by its first quill-feather being somewhat longer; and by the greater size, both in length and breadth, of its tail. The individual exhibited was killed by a cat at Swaffham in Cambridgeshire.

Mr. Jenyns also exhibited a specimen of *Sorex remifer*, Geoff., killed in a corn-field at the distance of half a mile from any water. Its chief interest was the confirmation afforded by it of the existence in England of this species, which has recently been added by Mr. Yarrell to the British Fauna on the authority of a specimen exhibited by him at a late Meeting of the Committee (p. 109).

Specimens were exhibited of a species of *Woodpecker*, hitherto undescribed, which had recently been obtained by Mr. Gould from that little-explored district of California which borders the territory of Mexico. The exhibition was accompanied by a communication from Mr. Gould, in which, after some general remarks on the *Picidæ* and their geographical distribution, he referred to the species before the Committee as possessing the characters of the genus *Picus* in their most marked development, together with the greatest size hitherto observed in that group. In this respect it as far exceeds the *ivory-*

billed Woodpecker of the United States, *Picus principalis*, as the latter does the *Pic. Martius* of Europe. Mr. Gould described it as the

*PICUS IMPERIALIS*, Mas. *Pic. ater, virescenti splendens; cristâ elongatâ occipitali coccinea; maculâ triangulari interscapulari, remigibus secundariis, primariarumque (præter trium quatuorve exteriorum) rhachibus internis albis; rostro eburneo.*

Fœm. Paulo minor; cristâ occipitali cum corpore concolore.

Longitudo maris, 2 ped.; alæ (clausæ), 1 ped.; caudæ, 10 unc.; tarsi, vix 2 unc.; digiti externi postici, eadem ac tarsi. Ungues validissimi, arcuati; Rostrum exactè cuneiforme, a rictu ad apicem 4 unc. long., ad basin 1 unc. latum.

This species is readily distinguishable from the *Pic. principalis* by its much larger size; by the length of its occipital crest, the pendent silky feathers of which measure nearly 4 inches; by the absence of the white stripe which ornaments the neck of that bird; and by the bristles which cover its nostrils being black, whereas those of the *Pic. principalis* are white.



August 28, 1832.

Dr. Marshall Hall in the Chair.

Mr. Owen read the following Notes on the Anatomy of the *Flamingo*, *Phœnicopterus ruber*, Linn.: they were derived from the examination of an individual which died about three months since in the Society's Menagerie.

"The anatomical differences observable in the groups of the *Wading Birds* are so considerable, that we find them generally alluded to by Cuvier in the characters of the families of the *Grallatores* in the 'Règne Animal.' Where they are omitted, we may presume that the illustrious author had not had the opportunity of examining the internal structure of the birds in question, and that they either had not before been dissected, or that their anatomy had been described with too little exactness to warrant his giving it on the authority of previous writers.

"This appears to have been the case with the three genera which he has placed at the end of the order, viz., *Chionis*, Forster, *Glareola*, Gmel., and *Phœnicopterus*, Linn.; and these are the most interesting in an anatomical point of view, as being the representatives of as many distinct families. With respect to the *Flamingo*, we must suppose that an opportunity of dissecting it had never occurred to Cuvier, and probably the absence of any allusion to *cæca* in Perrault's anatomical description (*Mémoires de l'Académie*, t. iii., 3. P., p. 462.), may have influenced his silence regarding the internal structure of a bird which he considers as one of the most extraordinary and most isolated of its class.

"The recent death of a male specimen which for a short time was living at the Society's Gardens, enables me to lay before the Committee some particulars respecting its anatomy which appear to throw light on its true affinities.

"The peculiar forms of the beak and tongue have long attracted attention, and have been repeatedly described. Cuvier, in allusion to the small tooth-like *laminæ* which are arranged along the margins of the upper mandible, points out the relation which in this particular the *Flamingo* bears to the *Anatidæ*; and a like correspondence is observable in the rest of the alimentary canal. The horny denticles of the upper mandible, and the transverse marginal furrows of the lower mandible, form together a sort of filter, and, like the plates of *Whalebone* in the *Balænæ*, allow the superfluous moisture to drain away, while the small *Mollusca* and other littoral *animalcula* are detained and swallowed. The structure of the gullet is in accordance with the size of the substances which serve for nutriment. In the typical *Grallatores*, as *Ardea* and *Ciconia*, which swallow entire fish and other food in large morsels, the *œsophagus* is remarkable for its

[No. XXII.] ZOOLOGICAL SOCIETY. PROCEEDINGS OF THE COMM. OF SCIENCE.

great and uniform capacity; but in *Phœnicopterus* it is not more than half an inch in diameter when dilated. At the lower part of the neck it expands into a considerable pouch, which measured in the specimen here described 3 inches in diameter, and  $4\frac{1}{4}$  inches in length. In Perrault's specimen the diameter was only  $1\frac{1}{2}$  inch, and it was probably in a state of contraction, as he describes it as furnished internally with many small longitudinal *rugæ*. The circular fibres around this part were very distinct. Beyond this pouch the *œsophagus* again contracts to about 4 lines in diameter, and so continues for  $3\frac{1}{2}$  inches, when it terminates in the *proventriculus*. This glandular cavity was 1 inch 8 lines in length, and 5 lines in diameter: the gastric follicles were broad, short, and simple, and were arranged in two long oval groups, blending together at the edges. The *proventriculus* terminates in a small but strong gizzard, of a flattened spheroidal form, measuring 1 inch 5 lines in length, and the same in breadth; the lateral muscles were each half an inch in thickness. The gizzard was lined with a moderately thick and yellow-coloured cuticle, disposed in longitudinal ridges, the extremities of which projecting into the pyloric aperture form a kind of valve, as in the gizzard of the *Ostrich*. In a *Flamingo* dissected by Col. Sykes, in which the *duodenum* was blocked up by two large *tape-worms*, the muscles of the gizzard were 1 inch in thickness.

“The duodenal fold extended towards the left side 4 inches from the *pylorus*. This intestine was 4 inches in diameter. The *pancreas*, which occupied its common situation between the two portions of the fold, had a more complete peritoneal covering than usual. The intestinal canal soon diminished in diameter to 3 and then to 2 lines. The small intestines formed an oval mass, and were disposed in twenty-one elliptical spiral convolutions, eleven descending towards the *rectum* and ten returning towards the gizzard in the interspaces of the preceding; a disposition analogous to that of the *colon* in *Ruminants*. The *villi* of the intestines were arranged in longitudinal zigzag lines. There were two *cæca*, each about  $3\frac{1}{2}$  inches in length and 5 inches in diameter.

“The *testes* were about the size of grains of wheat, and were situated on the anterior part of the renal capsules. The latter bodies were about the size of hazel-nuts. Both these glands were of a bright yellow colour. The fat of this bird is of a remarkable orange tint.

“The principal diseased appearances were in the lungs, which were filled with tubercles and *vomicæ*. I was much struck with finding the inner surface of the latter cavities, and that of most of the smaller ramifications of the bronchial tubes, covered over with a green vegetable mould or *mucor*. As the individual was examined within 24 hours after its death, it seemed reasonable to conclude this *mucor* had grown there during the life-time of the animal. Thus it would appear that internal parasites are not exclusively derived from the animal kingdom, but that there are *Entophyta* as well as *Entozoa*.

“The tongue of the *Flamingo* is remarkable for its texture, magnitude and peculiar armature. It is almost cylindrical, but slightly flattened above, and obliquely truncate anteriorly, so as to correspond

with the form of the inferior mandible. The lower part of the truncated surface is produced in a pointed form, and is supported beneath by a small horny plate. The whole length of the tongue is 3 inches; its circumference  $2\frac{1}{2}$  inches. Along the middle of the flattened superior surface there is a moderately deep and wide longitudinal furrow, on either side of which there are from twenty to twenty-five recurved spines, but of a soft and yielding horny texture, measuring from 1 to 3 lines in length. These spines are arranged in an irregular alternate series: the outer ones being the smallest; and these, indeed, may be considered a distinct row. At the posterior part of the tongue there are two groups of smaller recumbent spines directed towards the *glottis*. The substance of the tongue is not muscular, but is chiefly composed of an abundant yielding cellular substance with fat of an almost oily consistence. It is supported by a long and thin concave cartilage, articulated to the body of the *os hyoides* by a shallow ginglymoid joint, allowing of a free motion. Excepting the straight *hyo-glossi*, the muscles all terminate at the base of the tongue. The tendons of the former muscles run along the under part of the lingual cartilage, and expand to be inserted at its extremity, where a few fibres again proceed forwards to the extreme point of the tongue.

“No *Entozoa* were met with in the specimen dissected by me: but Col. Sykes has been so obliging as to permit me to examine the *tape-worms*, before alluded to, which he found blocking up the *duodenum* of the *Flamingo* dissected by him in Dukhun.

“One of the specimens, together with a drawing of it, is now on the table. From the marginal disposition of the *lemnisci* and its general habit, it evidently appertains to the true *Tæniæ*, and from the structure of the head ranks among the rostellate species with an armed *proboscis*. It does not accord with any of those described in the ‘*Synopsis Entozoorum*’ of Rudolphi, and is of so peculiar a form that I feel no hesitation in characterizing it as follows.

“*TÆNIA LAMELLIGERA. Tæn. incrassata, capite subgloboso; rostello cylindrico obtuso; collo nullo; articulis brevissimis, marginibus lateralibus dilatatis, rotundatis, utrinque parùm extantibus; superficie utràque lined longitudinali leviter impressâ; lemniscis lateralibus oppositis.*

“Longitudo corporis, 7 unc.; latitudo, 5 lin.; crassities, 1 lin.

“The segments are extremely numerous and short: they gradually increase in breadth and thickness for about 3 inches from the head; as they approach the opposite end of the body they slightly diminish in breadth, while they increase a little in length, but retain the same thickness. Along the middle of both the plane surfaces of the body the segments are separated by shallow indentations, and it is only towards the posterior extremity that the segments appear to overlap each other from before backwards; but at the sides of the body the posterior margins of the segments project abruptly from the surface and form a series of semicircular ridges, commencing on both sides of the body about a line's distance from the margin. On both margins of each segment immediately anterior to these ridges there is a small pyramidal eminence, perforated at the *apex*, through which perforation

a *cirrus* is protruded. A very slight impressed line traverses longitudinally the middle of both surfaces of the body; it is most distinct at the anterior half. Some of the segments at the posterior extremity of the body were partially separated from the rest and seemed about to be detached. In these alone were the traces of *ova* perceptible, which were extremely minute, and only apparent at the margins of the segments, near the base of the *cirrus* or *lemniscus*. From the thickness and opacity of the body, the nutrient vessels could not be detected. The joints or segments at the anterior part of the body were so short, that they resembled mere transverse *rugæ*; at the posterior end of the body they did not exceed half a line in length.

“The dilated margins of the segments, and the projecting *cirri* give this *tape-worm* a considerable resemblance to the *Nereis lamelligera* of Pallas.”



September 11, 1832.

Richard Owen, Esq., in the Chair.

Dr. Weatherhead communicated to the Committee several extracts from a letter which he had recently received from Lieutenant the Hon. Lauderdale Maule of the 39th Regiment, now in New South Wales. They referred to the habits and œconomy of the *Ornithorhynchi*.

“During the spring of 1831,” writes Lieut. Maule, “being detached in the interior of New South Wales, I was at some pains to discover the truths of the generally accepted belief, namely, that the female *Platypus* lays eggs and suckles its young.

“By the care of a soldier of the 39th Regiment who was stationed at a post on the Fish River, a mountain stream abounding with *Platypi*, several nests of this shy and extraordinary animal were discovered.

“The *Platypus* burrows in the banks of rivers, choosing generally a spot where the water is deep and sluggish, and the bank precipitous and covered with reeds or overhung by trees. Considerably beneath the level of the stream’s surface is the main entrance to a narrow passage which leads directly into the bank, bearing away from the river (at a right angle to it) and gradually rising above its highest watermark. At the distance of some few yards from the river’s edge this passage branches into two others which, describing each a circular course to the right and left, unite again in the nest itself, which is a roomy excavation, lined with leaves and moss, and situated seldom more than twelve yards from the water, or less than two feet beneath the surface of the earth. Several of their nests were, with considerable labour and difficulty, discovered. No eggs were found in a perfect state, but pieces of a substance resembling egg-shell were picked out of the *debris* of the nest. In the insides of several female *Platypi* which were shot, eggs were found of the size of a large musket-ball and downwards, imperfectly formed however, i. e. without the hard outer shell, which prevented their preservation.”

In another part of his letter Mr. Maule states, that in one of the nests he was fortunate enough to secure an old female and two young. The female lived for about two weeks on worms and bread and milk, being abundantly supplied with water, and supported her young, as it was supposed, by similar means. She was killed by accident on the fourteenth day after her capture, and on skinning her while yet warm, it was observed that milk oozed through the fur on the stomach, although no teats were visible on the most minute inspection: but on proceeding with the operation two teats or canals were discovered, both of which contained milk.

The body of the individual last referred to (together with several others) has been preserved in spirit to be transmitted to Dr. Weather-

head, who stated his intention of examining it anatomically on its arrival, and of laying before the Committee the result of his observations on this interesting subject.

It was remarked, that the existence of milk in the situation described by Lieut. Maule is fully confirmatory of the correctness of the deductions made by Mr. Owen from the minute dissection of several individuals (including one in the Society's collection presented by Capt. Mallard, R. N., Corr. Memb. Z. S.), that the glands discovered by M. Meckel are really mammary. This opinion, with the anatomical reasons on which it was founded, have been lately laid by Mr. Owen before the Royal Society in a paper which will be published in the forthcoming Part of the Philosophical Transactions. Mr. Owen's dissections, however, though they established the existence of numerous minute tubes leading from the glands in question through the skin where it was covered by the wool, did not enable him to detect any canals so large as would appear to be indicated in Lieut. Maule's letter.

A specimen was exhibited of a claw obtained from the tip of the tail of a young *Lion* from Barbary, recently presented to the Society's Menagerie by Sir Thomas Reade, His Majesty's Consul at Tripoli. It was detected on the living animal by Mr. Bennett, and pointed out to the keeper, in whose hands it came off while he was examining it.

Mr. Woods, to whom the specimen had been submitted for description, communicated to the Committee an enlarged representation of it, with other illustrations of the subject, and gave a detailed account of previous observations bearing upon this curious formation.

He commenced by referring to the writings of Homer, who remarked (erroneously, however,) that the *Lion* when angry lashes his sides with his tail; a remark which was repeated by many of the ancient poets both Greek and Roman, and was carried by Lucan to a yet greater extent, when he stated that the *Lion* lashes himself into rage: Pliny also indicates his belief that by this means the animal increases the anger already kindled in him. None of these writers, however, advert to any peculiarity in the tail of the *Lion* to which so extraordinary a function might, however incorrectly, be attributed. The discovery of the existence of such a peculiarity was reserved for Didymus Alexandrinus, one of the early commentators on the *Iliad*, who found a black prickle, like a horn, among the hair of the tail, and immediately conjectured, it must be allowed with some degree of plausibility, that he had ascertained the true cause of the stimulus to the animal when he flourishes his tail in defiance of his enemies, for he remarks that when punctured by this prickle the *Lion* becomes more irritable from the pain which it occasions.

For centuries after this announcement the *Lion's* tail and its mysterious prickle were consigned to oblivion, the discovery of the learned commentator being either unnoticed, or disregarded, or doubted, until about twenty years since, when M. Blumenbach, in his 'Miscellaneous Notices in Natural History,' revived the subject, having verified the accuracy as to the fact, though not admitting the induction, of Didy-

mus Alexandrinus. He describes a small dark-coloured prickle in the very tip of the Lion's tail, as hard as a piece of horn, surrounded at its base by an annular fold of the skin, and adhering firmly to a singular follicle of a glandular appearance. All these parts were however, he remarks, so minute, and the little horny *apex* so buried in the tuft of hair, that the use attributed to it by the ancient scholiast cannot be regarded as any thing else than imaginary. Blumenbach's description was accompanied by a figure, which was copied in the 'Edinburgh Philosophical Journal,' in the 8th volume of which a translation of his paper was given.

The subject appears to have again slumbered until 1829, when M. Deshayes announced; in the 'Annales des Sciences Naturelles' (vol. vii. p. 79), that he had found the prickle on both a Lion and Lioness which died in the national Menagerie of France. It was described by him as a little nail or horny production, about two lines in length, presenting the form of a small cone, a little recurved upon itself, and adhering by its base only to the skin and not to the last caudal *vertebra*, from which it was separated by a space of 2 or 3 lines.

From the period when M. Deshayes' discovery was announced Mr. Woods has suffered no opportunity to escape him of examining the tails of every Lion, living or dead, to which he could gain access; but in no instance has he succeeded in ascertaining the existence of such an organ; nor had he ever observed it until the specimen now before the Committee was placed in his hands, within half an hour after its removal from the living animal, and while yet soft at its base where it had been attached to the skin.

It is formed of corneous matter like an ordinary nail, and is solid throughout the greater part of its length towards the *apex*, where it is sharp; at the other extremity it is hollow and a little expanded. Its shape is rather singular, being nearly straight for one third of its length, then slightly constricted, (forming a very obtuse angle at the point of constriction,) and afterwards swelling out like the bulb of a bristle to its termination. It is laterally flattened throughout its entire length, which does not amount to quite  $\frac{3}{8}$ ths of an inch. Its colour is that of horn, but becoming darker, nearly to blackness at the tip. Its appearance would lead to the belief that it was deeply inserted into the skin, with which, however, from the readiness with which it became detached, its connexion must have been very slight. The slightness of its adhesion is noticed by M. Deshayes, who attributes to this its usual absence in stuffed specimens. The same cause will account for its absence in by far the greater number of living individuals; for, as Mr. Woods remarks, its presence or absence does not depend upon age, as the Lions at Paris in which it was found were of considerable size, while that belonging to the Society is very small and young; nor upon sex, for although it is wanting in the female cub of the same litter at the Society's Gardens, it existed in the Lioness at the Jardin du Roi.

Mr. Woods, considering it probable that a similar structure might exist in other species of *Felis*, had previously examined the tails of nearly the whole of the stuffed skins in the Society's Museum, but failed

in detecting it in every instance but one. This was in an adult Asiatic *Leopard*, in which the nail was evident although extremely small. It was short and straight, and perfectly conical, with a broad base. It is stated in a note in the 'Edinburgh Philosophical Journal,' that a claw or prickle had also been observed by the editor of that work on the tail of a Leopard. No such structure was however detected on a living individual in the Society's Menagerie. In the Leopard, therefore, as in the Lion, it appears to be only occasionally present. In both it is seated at the extreme tip of the tail, and is altogether unconnected with the terminal caudal *vertebra*. From the narrowness and shape of its base, the circumference of which is by far too small to allow of its being fitted like a cap upon the end of the tail, it appears rather to be inserted into the skin, like the bulb of a bristle or *vibrissa*, than to adhere to it by the margin as described by M. Deshayes. Neither the published observations of that zoologist nor the present discovery, can throw any light on the existence or structure of the supposed glandular follicle noticed by Blumenbach.

Mr. Woods concluded his communication by remarking, that it is difficult to conjecture for what purpose these minute claws are developed in so strange a situation, that of stimulating the animals to anger being of course out of the question. It is at least evident, he observes, that they can fulfil no very important design in the animal œconomy, from their smallness, their variable form, their complete envelopement in the fur, and especially from the readiness with which they are detached and consequently the majority of individuals deprived of them for the remainder of their lives.



September 25, and October 9, 1832.

William Yarrell, and Joseph Cox Cox, Esqrs., in the Chair.

Colonel Sykes resumed the exhibition of the collection of *Birds* formed by him in Dukhun. On previous evenings he had brought under the notice of the Committee the *Raptores* and *Insessores* (page 77); and on the present he submitted the remaining orders in the series adopted in the following

Catalogue of Birds (systematically arranged) of the Rasorial, Grallatorial, and Natatorial Orders, observed in the Dukhun by Lieut. Colonel W. H. Sykes, Bombay Army, F.L.S., F.Z.S., &c.&c.

ORDER III. RASORES, III.

Fam. *Columbidæ*, Leach.—Genus *Ptilinopus*, Swains.

138. *PTILINOPUS ELPHINSTONII*. *Ptil. suprâ fusco-brunneus; corpore infrâ, capite, colloque cinereis; cervice nigro, plumis ad apices guttâ albâ notatis; interscapulio rubineo; collo pectoreque smaragdino, uropygio cinereo, nitentibus; remigum 2dæ, 3tiæ, 4tæ et 5tæ pogoniis externis excavatis.*  
*Irides ochraceo-flavæ. Longitudo corporis*  $10\frac{3}{4}$  *unc., caudæ*  $5\frac{5}{8}$ .

This very fine bird, forming a link between the *Pigeons* proper and *Vinago*, has quite the figure and air of *Ptilinopus porphyreus*, figured in Stephens, vol. 14. (*Columba porphyrea*, Reinw., Temm., Pl. Col. 106.), but is much larger: it is a rare bird in Dukhun, and met with only in the dense woods of the Ghauts. Not gregarious. Stony fruit found in the stomach. Sexes alike. Flight very rapid. The lateral skin of the toes is very much developed.

Genus *Columba*, Auct. *Pigeon*.

139. *COLUMBA MEENA*. *Col. capite, collo, interscapulio, gastræoque saturatè vinaceis, ventre dilutiore; crisso, caudæque tegminibus inferioribus apiceque albis; tergo uropygioque ardosiaceis; tegminibus caudæ superioribus ad apices vinaceis; scapularibus alarumque tegminibus nigris, castaneo latè marginatis; remigibus caudæque fusco-brunneis, illis castaneo marginatis; tegminibus alarum inferioribus cinereis; collo utrinque nigro maculato, plumis cærulescenti-albido ad apices marginatis.*

*Fœm. Crisso dilutè vinaceo; tegminibus caudæ inferioribus pallidè cinereis; rectricibus 4 intermediis albo haud terminatis.*

*Irides aurantiacæ. Rostrum pedesque flavescentes. Longitudo corporis* 8 *unc., caudæ*  $5\frac{2}{3}$ .

*Brown and Chestnut Dove. Hhulgah* of the Mahrattas.

This species might be mistaken for the European *Col. Turtur*, but on comparison is found to differ in the whole head, neck, shoul-  
 [No. XXIII.] Zool. Soc. PROCEEDINGS OF THE COMM. OF SCIENCE.

ders, breast and belly being richer vinaceous ; in the back and rump being ash, and vent and under tail-coverts in the female light cinereous ; in the four upper tail-feathers in the female being red brown without white tips ; in the upper tail-coverts being tipped with faint chestnut ; in the forehead and chin not being dull white ; in orange *irides* instead of yellow ; and finally in its greater size. Gregarious, found only in the woods of the Ghauts. Webs of 2nd and 3rd quills narrowed as in the *Ptilinopus*.

140. *Columba tigrina*, Temm., Fig. Pl. 43. *Surat Turtle*.

M. Temminck's figure does not sufficiently develop the dove-coloured or ochrey tips to the feathers of the back and wing-coverts, and the tips of the centre feathers of the tail are coloured reddish instead of being white. A remarkable feature in this bird is unnoticed in the description of it, namely, the elongated and subulated tail ; unlike the last or most other species of *Dove*, instead of widening towards the tip, it is widest at the base when closed, and gradually narrows to the extremity ; in fact, each feather is subulate. *Irides* lake colour or pinkish red. Sexes exactly alike. Found on the skirts of the woods in the Ghauts. Length, inclusive of tail, 12 inches : tail 5 inches.

141. *Columba humilis*, Temm., Pl. Col. 258 et 259. *Colombe terrestre*.

M. Temminck says that this bird "vit habituellement à terre," but from long observation Colonel Sykes can testify that this supposed habit is no more characteristic of this species than of any other *Dove* in his possession. Gregarious ; not an inhabitant of the woods, but affecting mangoe-tree groves in the neighbourhood of cultivation. Length, inclusive of tail,  $9\frac{4}{5}$  inches : tail  $3\frac{1}{5}$ . Tail, as in the last species, narrower at the extremity than at the base when closed.

142. *Columba risoria*, Linn. *La Tourterelle à collier du Sénégal*, Buff., Ois. 2, 550 & 553. pl. 26. Pl. Enl. 161 & 244. Le Vaill., Ois. d'Afr. 6. pl. 268.

Length, inclusive of tail,  $13\frac{5}{8}$  inches : tail 5 inches. Gregarious, and common in the open country. Sexes alike. In spite of the proverbial gentleness of the Dove, Colonel Sykes has seen these birds fighting with the most inveterate hostility ; seizing each other by the bill and rolling upon the ground together. Outer webs of 2nd, 3rd and 4th quill-feathers hollowed.

143. *Columba Cambayensis*, Lath., Ind. Orn. 2. sp. 56. Temm., Fig. Pl. 45.

Colonel Sykes's bird is identical with the species figured in M. Temminck's plate, but it does not correspond with the description of the *Col. Cambayensis* of Shaw, vol. 11. p. 79. This species is distinguished from all other *Doves* with which Colonel Sykes has met, by the square red spots on the black patches on the side of the neck. Sexes alike. Frequents gardens and stable-yards. Length, inclusive of tail,  $11\frac{5}{8}$  inches : tail  $5\frac{5}{8}$  inches.

144. *Columba Cœnas*, Linn. *Stock Pigeon*. *Parwa* of the Mahrattas. The most common bird in the Dukhun, congregating in flocks of

scores, and a constant inhabitant of every old dilapidated building. Colonel Sykes saw the same species on board ship on the voyage to England, brought from China. *Irides* orange. Sexes alike. Length, inclusive of tail,  $14\frac{3}{10}$  inches : tail  $4\frac{3}{10}$  inches.

The Dukhun bird differs from the European species in the bill being black instead of pale red, in the utter want of white or black in the quills, the want of white in the tail-feathers, and in the legs being brown instead of black. As these differences are permanent, they might justify a specific name being applied to the *Dukhun Pigeon*.

Fam. *Phasianidæ*, Vigors.—Genus *Meleagris*, Linn. *Turkey*.

145. *Meleagris Gallopavo*, Linn.

The *Turkey* is met with only in the domestic state : it is reared in great numbers by the Portuguese.

Genus *Pavo*, Auct.

146. *Pavo cristatus*, Linn. *Peafowl*. *Mohr* of the Mahrattas.

The wild *Peafowl* is abundant in the dense woods of the Ghauts : it is readily domesticated, and many Hindoo temples in the Dukhun have considerable flocks of them. On a comparison with the bird as domesticated in Europe, the latter is found, both male and female, to be absolutely identical with the wild bird of India. *Irides* intense red brown.

Genus *Gallus*, Briss.

147. *Gallus giganteus*, Temm., Gall. Ind. 633.

Known by the name of the *Kulm Cock* by Europeans in India. Met with only as a domestic bird ; and Colonel Sykes has reason to believe that it is not a native of India, but has been introduced by the Mussulmans from Sumatra or Java. The *iris* of the real game bird should be whitish, or straw-yellow. Colonel Sykes landed two cocks and a hen in England in June 1831 : they bore the winter well. The hen laid freely, and has reared two broods of chickens. The cock has not the shrill clear pipe of the domestic bird, and his scale of notes appears more limited. A cock in the possession of Colonel Sykes stood 26 inches high to the crown of the head, but they attain a greater height. Length from the tip of the bill to the insertion of the tail 23 inches. Hen one third smaller than the male. Shaw very justly describes the habit of the cock, of resting, when tired, on the first joint of the leg.

148. *Gallus Sonneratii*, Temm., Gall. Ind. 659. *Jungle Cock*. *Rahn Komrah* of the Mahrattas.

Very abundant in the woods of the western Ghauts, where there are either two species or two very strongly marked varieties. In the valleys at 2000 feet above the sea, *Sonnerat's* species is found, slender, standing high on the legs, and with the yellow cartilaginous spots on the feathers even in the female. In the belts of wood on the sides of the mountains, at 4000 feet above the sea, there is a short-legged variety ; the male has a great

deal of red in his plumage, which *Sonnerat's* has not; the female is of a reddish brown colour, and is without cartilaginous spots at all: in fact, the female of this variety is the *Gall. Stanleyii* of Mr. Gray's 'Illustrations'. Eggs exactly like those of the domestic fowl in form and colour, but less in size. The wild hen would appear to sit on a much smaller number of eggs than the domestic, as Colonel Sykes shot a hen upon her nest in which were only three eggs, and the process of incubation had evidently commenced some days. In the craw and stomach of many birds nothing whatever was found, excepting the seeds of a stone-like hardness called *Job's tears* (*Coix barbata*). *Irides* brownish deep orange. The crow or call of this species is like that of the *Bantam Cock*.

149. *Gallus domesticus*, Ray. *Phasianus Gallus cristatus*, Linn.

The *domestic fowl* is so abundant in the Dukhun, that in parts of the country not much frequented by Europeans, Colonel Sykes has bought from eight to twelve full-grown fowls for two shillings. Many of the hens, particularly of the villages in the Ghauts, are not to be distinguished from the wild bird, excepting only in the want of the cartilaginous spot on the wing-coverts.

150. *Gallus Morio*, Temm., Gall. Ind. 660. Briss., Orn. 1. 174.

This supposed species very frequently occurs accidentally in the Dukhun. Although unsightly, the black fowl is very sweet eating.

151. *Gallus crispus*, Temm., Gall. Ind. 661. Briss. Orn. 1. 173. pl. 17.

Occurs accidentally like the last variety.

Genus *Numida*, Linn. *Pintado*.

152. *Numida Meleagris*, Linn. - *Guinea Fowl*.

Met with only in the domestic state, and bred almost exclusively by European gentlemen. Thrives as well as in its native country.

Fam. *Tetraonidæ*, Leach.—Genus *Coturnix*, Cuv.

153. *Coturnix dactylisonans*, Temm., Gall. Ind. 740. *Tetrao Coturnix*, Linn., Syst. Nat. 1. 278, 20. *Lohah* of the Mahrattas. *Large Grey Quail*.

Rare in the Dukhun, and found only in pairs in tufts of grass near water-courses and ponds. Resembles the *Quail* of Europe in size and plumage: the *irides* are dusky red or reddish brown, like those of the European bird, which by mistake are described in Shaw as yellow. Female a little larger than male: one female measured 8 inches, inclusive of tail of 2 inches, but this was a large bird. Period of incubation in the monsoon.

154. *Coturnix textilis*, Steph., 11. 365. *Perdix textilis*, Temm., Pl. 35. *Perdix Coromandelica*, Lath., Ind. Orn. 2. 654. 38. *Black speckled-breasted Quail*.

*Irides* dusky red. Length 6  $\frac{1}{10}$  inches, inclusive of tail of 1  $\frac{5}{10}$  inch.



In pairs in the monsoon; gregarious the rest of the year. Very abundant in Jowaree fields, (*Andropogon Sorghum*).

155. *COTURNIX ARGOONDAH*. *Cot. supra rufescenti-brunnea, fasciis angustis dilutè ferrugineis notata; infra sordidè alba, fasciis equidistantibus nigris; fronte mentoque ferrugineis; strigè superciliari rufescenti-albidè.*

Fœm. *Fasciis magis obscuris.*

*Irides fusco-rubræ. Rostrum nigrum. Longitudo corporis 5 unc., caudæ 1 $\frac{5}{8}$ .*

Always gregarious; frequenting only rocky places, or amidst low bushes. The covey rises with a startling whirl. Flight very short. Pugnacious, and used by the natives for combat.

156. *COTURNIX PENTAH*. *Cot. supra saturatè brunnea; infra rufescenti-albida nigro fasciata; ventre crissoque albidoferrugineis; interscapulio scapularibusque nigro maculatis, plumarum rhachibus dilutè flavis; remigibus brunneis pallidè ferrugineo maculatis; strigè superciliari sordidè albà; mento rufescente.*

Fœm. *Infrà rufescens, haud fasciata; plumarum rhachibus albis. Irides ochraceo-brunneæ. Rostrum rufescenti-brunneum.*

*Pedes flavescentes. Longitudo corporis 5 $\frac{3}{8}$  unc., caudæ 1 $\frac{7}{8}$ .*

Has the habits and somewhat the appearance of the last species, but is found only on the most elevated table-lands and slopes of the mountains, amidst reeds and grass. Colonel Sykes's specimens were shot at 4000 feet above the sea.

157. *COTURNIX ERYTHORHYNCHA*. *Cot. supra saturatè brunnea, infra dilutè castanea, nigro (præter ventrem medium) undequaque guttata maculataque, scapularium maculis maximis, pectoris guttis minimis; scapularium tegminumque alarum superiorum albo fasciatarum rhachibus albis, crucem efformantibus; remigum pogoniis externis rufescenti fasciatis maculatisque; fronte nigro; strigè frontali utrinque supra oculum productâ gulæque albis.*

Fœm. *Fronte, strigè inde ad utrumque latus ductâ, gulæque dilutè castaneis.*

*Irides obscurè flavo-ochraceæ. Rostrum rubrum. Longitudo corporis 5 unc., caudæ 1 $\frac{5}{8}$ .*

Colonel Sykes has found this very handsome bird only in the valley of Karleh, where it frequents the same ground as the black Partridge (*Perdix picta*). Gregarious and abundant. In closing his notices of the Quails, Colonel Sykes mentioned that grass seeds constitute their principal food.

#### Genus *Perdix*, Briss. Partridge.

158. *Perdix picta*, Jard. & Selby, Pl. 150.

This is called the black Partridge in Dukhun, by Europeans. It affects uncultivated tracts in the country, covered with tufts of rank grass and low bushes, where it is abundant. Colonel Sykes has never met with it in gardens. The call of the male is a kind of broken crow. Sexes exactly alike. *Irides* reddish dark brown. Length, inclusive of tail, 10 inches: tail 2 $\frac{5}{8}$  inches. Does not roost on trees.

Genus *Fracolinus*, Steph. *Fracolin*.

159. *Fracolinus Ponticerianus*, Steph., 11. 321. *Perdix Ponticeriana*, Lath., Ind. Orn. 2. 649. 18. Temm., Pl. Col. 213.  
*Ferruginous and Grey Francolin*. Teetur of the Mahrattas.

Called a partridge in the Dukhun, where it is one of the most common birds, frequenting gardens and cultivated lands. Irides intense red brown. Length, inclusive of tail, 14 inches: tail  $3\frac{6}{10}$  inches. Not met with in the Ghauts, unless in well cultivated valleys, and not at all on the mountains. Roosts on trees; and Colonel Sykes has on more than one occasion shot them on trees during the daytime; but this is a rare occurrence.

160. *FRACOLINUS SPADICEUS*. *Franc. castaneus, supra fusco tinctus, plumarum marginibus dilutioribus; capite, collo, ventre, crisso, tegminibusque caudæ inferioribus fusco-brunneis; vertice nigrescenti-brunneo; plumarum ventris crissique rhachibus elongatis, acutis.*

Fœm. *Suprà nigro castaneoque varius; pectoris abdominisque plumis castaneis ad apices lunulâ latâ nigrâ notatis.*

Pullus. *Fusco-ferrugineus, vittis tribus dorsalibus latis, intermediâ saturatè rufo-brunneâ, lateralibus flavescenti-albidis.*

Irides rufo-brunneæ. Rostrum pedesque rufescenti-cornei.  
 Longitudo corporis  $9\frac{7}{10}$  unc., caudæ 5.

*Perdix spadicea*, Lath., Ind. Orn. 2. 644. 4. Temm., Gall. Ind. 719. *Tetrao spadiceus*, Gmel., Syst. Nat. 1. 759. 29. *Le Perdrix rouge de Madagascar*, Sonn., Voy. Ind. 2. 169. *Fracolin spadice*, Temm., Fig. et Gall. 3. 315. *Koku-tree* of the Mahrattas.

The male only of this bird, which is very common in the thick brushwood of the Ghauts, appears to have been known to the writers quoted. Colonel Sykes has had both sexes alive in his possession for some time, and has no doubt they might be successfully introduced into Europe. They are excellent eating. Rarely take to wing or perch. Male has a harsh call of three syllables, *Kot-kut-ree*, whence the Mahratta name; female in confinement uttered little notes like the twittering of a chicken. A male in Col. Sykes's collection has three large spurs on one leg, and two on the other.

Genus *Pterocles*, Temm. *Ganga*.

161. *Pterocles exustus*, Temm., Pl. Col. 354 & 360. *Rock Pigeon* of Europeans in the Dukhun.

A very common bird in the Dukhun; gregarious; frequenting open stony plains only. Characterized by the height at which it flies, the rapidity of its flight, and its peculiar and piercing note announcing its approach ere it can be well seen. It feeds on a quadrangular hard small seed, which Colonel Sykes has found in the stomach of only one other bird.

Irides reddish brown. Sexes of the same size. The male has two of the tail-feathers linear and elongated, which is not the case with the female. Male, inclusive of tail,  $14\frac{1}{10}$  inches: tail 5 inches.

162. *Pterocles quadricinctus*, Temm., Gall. 3. 252. *Painted Rock Pigeon* of the Dukhun.

Rare, and met with only in pairs, on open ground at the foot of hills. *Irides* reddish brown. Sexes of the same size. Length, inclusive of tail,  $13\frac{1}{2}$  inches : tail 3 inches.

Genus *Hemipodius*.

163. *Hemipodius pugnax*, Temm., Pl. Col. 60. fig. 2.

Common in the Dukhun, and called the *Bustard Quail* by Europeans. Its reputed pugnacious qualities are not known. Solitary or in pairs, and mostly found in *Chillee* fields (*Cap-sicum annuum*). *Irides* light yellow. Length, inclusive of tail,  $7\frac{5}{8}$  inches : tail  $1\frac{5}{8}$  inch. Habits, tongue and internal organization of *Coturnix textilis*. M. Temminck describes the female as differing in plumage from the male ; but in Colonel Sykes's specimens the sexes are exactly alike.

164. *HEMIPODIUS TAIGOOR*. *Hem. suprâ castaneus, plumis stramineo marginatis, nigroque undulatim fasciatis ; tegminibus alarum stramineis nigro fasciatis ; remigibus fuscis ; mento gulâque albis ; pectore nigro alboque fasciato ; ventre crissoque dilutè ferrugineis.*

*Irides pallidè flavæ. Rostrum nigrescens. Longitudo corporis*  $4\frac{8}{10}$  unc., *caudæ*  $1\frac{2}{10}$ .

Closely resembles the female of *Hem. pugnax* as described by M. Temminck, but the bill is longer and more slender, and Colonel Sykes has specimens of both sexes. Sexes alike.

165. *Hemipodius Dussumier*, Temm., Pl. Col. Called the *Button Quail* by Europeans.

Colonel Sykes never met with this bird otherwise than solitary : frequents thick grass or pulse fields, and sits so close as to expose itself to be trod upon. Flight so abrupt and short, that ere the gun is well up to the shoulder, the bird is down again. *Irides* straw-yellow. Length, inclusive of tail,  $5\frac{2}{10}$  inches : tail  $1\frac{4}{10}$  inches.

Fam. *Struthionidæ*, Vigors.—Genus *Otis*, Linn. *Bustard*.

166. *Otis nigriceps*, Gould's Cent. Himal. Birds.

This noble bird is so common in the Dukhun, that one gentleman has shot nearly a thousand. Gregarious. Egg, a perfect oval, brown olive, with obscure blotches of darker brown olive. Length  $3\frac{4}{10}$  inches, diameter  $2\frac{2}{10}$  inches. One only found in a hole in the earth on the open plain, and that considerably advanced in the process of incubation. *Irides* deep brown. Length, male, inclusive of tail,  $56\frac{1}{2}$  inches : tail  $13\frac{1}{2}$  inches. Female  $41\frac{1}{2}$  inches, inclusive of tail of  $10\frac{1}{2}$  inches. Male supplied with the remarkable gular pouch common to the *Otis tarda*.

167. *OTIS FULVA*. *Ot. suprâ cacaotico-brunnea, plumis fulvo marginatis variegatisque ; tegminibus alarum, collo, pectoreque fulvis, punctis lineisve brunneis parçè notatis ; ventre, uropygio, femoribus, tegminibusque caudæ inferioribus fulvo-albis ; teg-*

*minibus alarum inferioribus lateribusque cacaotico-nigris; caudá fulvá fasciis quatuor cacaotico-brunneis notatá; mento guláque albis; vertice brunneo, strigá medid longitudinali albd. Irides rufescenti-lutescentes, radiis a pupillâ pallidè lutescentibus. Pedes flavescentes. Longitudo corporis ♂, 15 $\frac{1}{4}$  unc., caudæ 3 $\frac{1}{4}$ σ; corporis ♀, 17 $\frac{1}{4}$ σ, caudæ 3 $\frac{1}{4}$ σ.*

The wings are of unequal length in the sexes; and the quills are singularly acuminate.

Col. Sykes gives the following detailed description of the *Otis fulva*: Forehead, crown, back, scapulars, and first three quills rich chocolate brown; feathers of the back and scapulars triangular at the point, edged with fulvous, and barred in the centre and near the base with a broad bar of fulvous mottled with chocolate. Round the eyes, a streak down the centre of the crown, whole neck, breast, wing-coverts, and tail buff or fulvous; the back neck closely speckled with minute dots of brown. On the wing-coverts a few scattered lines and specks of brown. Tail with 4 distant fuscous bars, the intermediate spaces beautifully barred with flexuose lines of fuscous. The fourth and following quills and secondaries marked like the tail. Two irregular fuscous streaks down the fore neck. Breast fulvous, with a few faint lines and spots of brown. Belly, vent, under tail-coverts, and thighs yellowish white. Under wing-coverts and sides of the body fine chocolate brown. Occasionally a feather is tipped with white on the wing-coverts. Upper mandible fuscous, lower yellowish. Chin and throat white extending up towards the ears. Sexes exactly alike in plumage. The down at the base of all the feathers pink. Primary quills singularly acuminate, particularly in the male, terminating in a point as fine as that of a needle; less so in the female, and the wings of the latter are from one to two inches longer than those of the male. This difference is constant.

Col. Sykes stated that his description was written from eight specimens lying before him, and that he had transmitted three similar to the India House.

Some of Col. Sykes's sporting friends in India having expressed a belief that the *Otis fulva* was the female of the *black Floriken* of the Dukhun, (a comparatively rare bird, the *Otis fulva* being common,) he was induced to pay particular attention to the organs of sex, and never found the *testes* and *ova* otherwise than fully developed. If therefore it be referable as an immature bird to a known species, (*Otis Bengalensis*, *Otis aurita*, or *Otis Indica*,) it appears in the Dukhun in hundreds, with all the indications of puberty, at a time when the supposed parents are rarely, if at all, to be met with. Col. Sykes's birds are identical with a specimen laid before the Society by Major Franklin on the 9th of August 1831, under the name of *Otis Indica*; Major Franklin at the same time expressing doubts of it being the *white-chinned Bustard* of Dr. Latham. The description of the *Otis Indica* has only two features common



to the *Otis fulva*, "chin white," and "under parts dusky yellowish cream colour;" as they differ in all other particulars, the birds cannot be identical; and a reference to a figure of the *Otis Indica*, which is only to be met with in J. H. Miller, confirms the impression. Col. Sykes believes with Major Franklin that the present species has been usually mistaken for the female of *Otis aurita*.—A correspondent in the Magazine of Natural History, No. 16, for November 1830, under the signature of "A Subscriber," page 517, confirms Col. Sykes's opinion, stating that the *Churj* or *ochreous Floriken* (*small Bustard* of India) is not the *Otis Indica* (*white-chinned Bustard*), nor the *Otis Bengalensis*, nor the *black Floriken* (*Otis aurita*) or *Leek* of Hindostan.

Col. Sykes stated the food of the *Otis nigriceps* and the *Otis fulva* to be almost exclusively grasshoppers; and he pointed out the absence of a gizzard (the stomach being simple), combined with the remarkable shortness of the intestinal canal, scarcely exceeding the length of the body, as distinguishing these birds from all others that had come under his observation.

#### ORDER IV. GRALLATORES, Ill.

Fam. *Gruidæ*, Vigors.—Genus *Grus*, Pallas. Crane.

168. *Grus Antigone*, Steph., 11. 531. *Grus orientalis Indica*, Briss., Orn. 5. 378. 7. *Kullum* of the Mahrattas.

Appear in flocks of hundreds in Dukhun during the cold season.

Fam. *Ardeidæ*, Leach.—Genus *Ardea*, Auct.

##### Section A. *Tarsi* long.

169. *Ardea Egretta*, Gmel., 1. 629. *Ardea Torra*, Buch. Franklin, Zool. Proceedings. *La Grand Egrette*, Buff., Ois. 7. 377. Pl. Enl. 925. *Large white Heron with yellow bill*.

Length, inclusive of tail, 35 to 36 inches: tail 5  $\frac{1}{2}$  inches. Length of the European bird 42 inches. *Irides* bright yellow. Solitary.

170. *Ardea Garzetta*, Linn., 1. 937. *L' Aigrette*, Buff., Ois. 7. 372. Pl. Enl. 901. *Little Egret Heron*.

Length, inclusive of tail, 24 to 25 inches: tail 4 inches. Length of the European bird 24 inches. *Irides* light yellow.

Gregarious. Toes, as in the European bird, yellowish green or apple green, exhibiting a curious contrast to the greenish black of the legs.

171. ARDEA ASHA. *Ard. suprà ardosiaceæ, dorso brunnescente; mento, gulâ, lineâ longitudinali jugulari, corpore subtus, tegminibusque caudæ inferioribus albissimis; tegminibus alarum tertiaris albo angustè marginatis.*

*Irides* dilute flavæ. *Rostrum* corneum. *Tarsi* virescenti-nigri. Longitudo corporis 20  $\frac{1}{4}$  unc., caudæ 3  $\frac{3}{4}$ .

*Slate-coloured Heron.*

A very rare bird in Dukhun. Has a good deal the aspect of

*Ard. Novæ Hollandiæ*, and several points of resemblance to *Ard. gularis*, *Ard. jugularis*, and the young of *Ard. cœrulea*; but differs from all.

172. *Ardea cinerea*, Lath., Ind. Orn. 2. 691. 54. *Le Heron huppé*, Buff., Ois. 7. 342. Pl. Enl. 787.

*Irides* bright light yellow. Length, inclusive of tail, 38 inches: tail 6 inches.

Identical with European specimens. Solitary.

173. *Ardea nigrirostris*, Gray, Zool. Misc. 20. Fig. Ind. Zool. Part 12th. *Large white Heron with black bill*.

Differing only in having a black bill from *Ard. Egretta*; otherwise identical in size, form, colour, and internal organization; nevertheless as Col. Sykes has adult birds preserving the black bill, he considers Mr. Gray's specific distinction valid. *Irides* bright yellow.

#### Section B. *Tarsi* short.

174. *Ardea Malaccensis*, Gmel., 1. 643. *Crabier blanc et brun de Malacca*, Buff., Ois. 7. 394. Pl. Enl. 911. *Buglah* of the Mahrattas.

*Irides* light bright yellow. Length, inclusive of tail, 19 inches: tail 3 to  $3\frac{1}{2}$  inches. One male bird measured 21 inches.

White capillary worms found on the mesentery.

175. *Ardea Caboga*, Penn., Hindoos. 2. 158. *Gibraltar Heron*, Lath., var. A. *Small pure white Heron*. *Batty* bird of Europeans in Dukhun.

Attend oxen while grazing, and pick insects from them. Gregarious. Length, inclusive of tail,  $19\frac{1}{2}$  to 21 inches: tail  $3\frac{1}{2}$  inches. *Irides* bright yellow. A shade of yellow ochre on the forehead in some individuals.

176. ARDEA GRAYII. *Ard. alba*; *dorso atro-rubente*; *capite, collo, pectore, scapularibusque sordidè flavescenti-albidis*; *occipitis plumis 3—5 longis, linearibus, albissimis*.

*Irides* nitidè flavæ. *Rostrum* ad apicem nigrum, ad basin flavescens. *Tarsi* fuscescenti-carnei. Longitudo (caudâ inclusâ)  $18\frac{1}{2}$ — $19\frac{3}{4}$  unc., *caudæ* 3.

*Marone-backed Heron*.

The deep chestnut or marone feathers of the back are decomposed, and extend nearly to the end of the tail. The immature bird bears a very close resemblance to the *Ard. Malaccensis*.

177. *Ardea Javanica*, Horsf., Linn. Trans. 13. 190. *Indian green Heron* of Dr. Latham, No. 74.

Col. Sykes's specimens are identical with those from Java, and on comparing them with the descriptions of *Ard. virescens*, Ill., and the plate of Buffon (Pl. Enl. 908, *Crabier de Cayenne*), they differ in wanting the red stripes down the throat and neck, and in the tail being dark metallic green instead of black, and in smaller size. Dr. Horsfield's trivial name is therefore valid. *Irides* bright light yellow, surrounded by a very narrow red ring. Length, inclusive of tail,  $16\frac{1}{2}$  inches: tail  $2\frac{1}{2}$ . Sexes

alike in size and plumage. Solitary on the woody banks of small streams.

178. *Ardea cinnamomea*, Gmel., 1. 643. *Entire Chestnut Heron*. Identical with specimens in the British Museum and India House. Length, inclusive of tail,  $15\frac{1}{2}$  inches: tail  $2\frac{1}{4}$  inches. *Irides* bright yellow. Rare in Dukhun. Mostly solitary; never gregarious. Remarkably wary.

Genus *Botaurus*, Briss. *Bittern*.

179. *Botaurus stellaris*, Briss., Orn. 5. 444. *Ardea stellaris*, Linn., 1. 239. 21. *Le Butor*, Buff., Ois. 7. 411. Pl. Enl. 789. *Common Bittern*. Identical with the European bird. Rare in Dukhun.

Genus *Nycticorax*, Steph.

180. *Nycticorax Europæus*, Steph., 11. 609. *Ardea Nycticorax*, Linn., 1. 235. 9. *Le Bihoreau*, Buff., Ois. 7. 435. Pl. Enl. 758. *Night Heron*. *Irides* broad, crimson. Length, inclusive of tail, 24 inches: tail  $4\frac{2}{5}$  inches. Length of the European bird about 22 inches. *Irides* and legs of the same colour as those of the Asiatic bird.

Genus *Phænicopterus*, Linn. *Flamingo*.

181. *Phænicopterus ruber*, Linn., 1. 230. *Le Flammant*, Buff., Ois. 8. 475. Pl. Enl. 63. *Red Flamingo*. *Rajah Huns* of the Hindoos. *Irides* light yellow. Length, inclusive of tail,  $43\frac{1}{2}$  inches: tail 6 inches. In the *duodenum* of a female were found two thick, remarkable white worms composed of *annuli*; one 7 inches long, the other  $4\frac{1}{2}$  inches; and filling up the intestinal canal, so that liquid food only could have passed; nevertheless the bird appeared quite healthy.

Genus *Platalca*, Linn. *Spoonbill*.

182. *Platalca leucorodia*, Linn., 1. 231. 1. *La Spatule*, Buff., Ois. 7. 448. Pl. Enl. 405. *Crested white Spoonbill*. *Irides* crimson. Length, inclusive of tail,  $35\frac{1}{2}$  inches: tail  $5\frac{1}{2}$  inches. Although a little larger in size, it is otherwise absolutely identical with the European bird even to the colour of the *irides* and legs.

183. *Platalca junior*. The feathers with black shafts. Mr. Stephens describes these birds as rarely occurring inland. Col. S.'s specimens were obtained 100 miles from the sea, and at an elevation of 2000 feet.

Genus *Ciconia*, Ray. *Stork*.

184. *Ciconia leucocephala*. *Ardea leucocephala*, Gmel., 1. 642.

Lath., Ind. Orn. 2. 699. 78. *Le Heron Violet*, Buff., Ois. 7. 370. *Heron de la côte de Coromandel*, Buff., Pl. Enl. 906. *Violet Heron*. Kandehsur or Kowruw of the Mahrattas.

It is singular that this well-marked bird should have been classed as a *Heron* for a long period, and remain as such at the present moment in Shaw. Length, inclusive of tail, 33 to 34½ inches: tail 8 inches.

Mostly seen on open stony plains or in ploughed fields. Food chiefly grasshoppers. Monogamous. *Irides* scarlet, margined with a narrow circle of black and an exterior circle of yellowish.

185. *Ciconia Argala*, Steph., vol. 11. p. 622. *Ardea dubia*, Gmel., 1. 624. *Ardea Argala*, Lath.

Is met with in Dukhun; but Col. Sykes has not a specimen. Called the *Adjutant* by Europeans, from its stiff soldier-like strut.

#### Genus *Anastomus*, Ill. *Courly*.

186. *Anastomus Typus*, Temm. *An. Coromandelianus*, Steph., 11. 632. *Ardea Coromandelica* (l'adulte) et *Ponticeriana* (le jeune), Temm. *Le bec ouvert des Indes*, Sonn., Voy. 2. pl. in p. 219. Buff., Ois. 7. 409. Pl. Enl. 932. *Cinereous Musc-catcher*.

*Irides* bright yellow. Length, inclusive of tail, 32 to 33 inches: tail 6¼ to 6¾ inches.

Buffon's figure is excellent. Lives on the animals of a new and large species of *Unio*. The stomach of this bird is not less remarkable than its bill: the last exhibiting a beautiful adaptation of means to their end; the form of the mandibles enabling the bird to hold and open the bivalve shell of the *Unio*. Solitary.

The proportional length of the intestinal canal exceeds that of any other bird in the order *Grallatores*, in one specimen being five times the length of the body, neck and bill inclusive.

#### Genus *Tantalus*, Linn.

187. *Tantalus leucocephalus*, Lath., Ind. Orn. 2. 706. *Le Tantalé de Ceylon*, Cuv., Règne Anim. 1. 481. *White-headed Ibis*.

*Irides* yellow. Length, inclusive of tail, 40¼ to 43 inches: tail 6½ inches.

A large diaphanous spot on each side of the base of the upper mandible before the eyes does not appear to have been noticed in the description of the bird.

The generic characters, if this bird be made the type, require modification. The stomachs of three birds were distended with fibrous vegetable matters in a comminuted state. A fourth had the same vegetable matters and the half of a carp 9 inches long.

#### Genus *Ibis*, La Cép. *Ibis*.

188. *Ibis religiosa*, Cuv., Règne Anim. 1. 483. *Sacred Ibis*. *L'Ibis sacré*, Cuv., Recherches sur les Ossements Fossiles, 1. 161.



*Tantalus Æthiopicus*. *Ibis Macei*, Cuv., Ann. Mus. 11. 125.  
*White Ibis with purple black secondary quill decomposed feathers*, Ind. Orn. 2. 706.

Col. Sykes carefully compared the descriptions and measurements of the larger *Mummy Ibis* of Cuvier; and is induced to believe the present bird is the same. Col. Sykes puts into juxtaposition the measurements of Cuvier's *Mummy Ibis* from Thebes and one of his own birds:

	<i>Mummy Ibis</i> .	<i>Dukhun Ibis</i> .
	Inches.	Inches.
Length of beak and head together.....	8·27.....	8·15
Head .....	1·85.....	1·80
<i>Tibia</i> .....	5·90.....	5·80
<i>Tarsus</i> .....	4·01.....	3·80
Middle toe.....	3·81.....	3·50
<i>Ulna</i> .....	6·01.....	5·95
Hand .....	4·92.....	4·80

The individual of which the measurements are given has the two first quills tipped with violet, their shafts of the same colour, and four of the secondary quills are also violet and with their webs decomposed, according with Cuvier's description. The violet colour is not so deep as in the *Æthiopian Ibis*; but as in all Col. Sykes's specimens (nine in number) the violet feathers are in progress of development, the colour would no doubt subsequently be darker. Cuvier mentions that the *Mummy Ibis* varied a little in size. Col. S. has birds larger and smaller than that of which the measurements are given.

Appear in Dukhun in the cold weather only. Gregarious.

*Irides* narrow, lake colour. Food water-crickets, crabs, beetles, shrimps. Length, inclusive of tail, 30 to 35½ inches: tail 5 $\frac{3}{10}$  to 5 $\frac{7}{10}$ . Bill and head to occiput 7 $\frac{9}{10}$  to 9 $\frac{6}{10}$  inches. Bill to the gape 6 $\frac{4}{10}$  to 7 $\frac{9}{10}$  inches.

189. *Ibis ignea*. *Tantalus igneus*, Lath., Ind. Orn. 2. 708. 12. *Ibis falcinellus*, Temm., Man. d'Orn., 2nd Edit. 2. 596.

Col. Sykes's birds, male and female, are identical with two European specimens in the British Museum labelled *Ibis ignea*, and viewed as the immature birds of *Ibis falcinellus*. Col. Sykes however has seen so many of both in India, appearing in different flocks at the same period of the year, and not having, as M. Temminck describes the birds before they are three years old, "partie inferieure du cou, poitrine, ventre, et cuisses d'un noir cendré; haut du dos et scapulaires d'un cendré brun," but of a rich fuscous brown, with brilliant metallic reflections; differing also in the proportions of the internal organization; and Dr. Latham moreover describes even the youngest birds of *Ibis falcinellus* as characterized by reddish brown. Herodotus speaks of the *smaller Ibis* as entirely black, a description inapplicable to the *Ibis falcinellus*, but applicable to the present species, which at a short distance appears entirely black. Col. Sykes is therefore induced to adopt the opinion of those writers who considered the bird distinct from *Ibis falcinellus*. Its

measurements correspond with those of the smaller species of *Mummy Ibis* given by Cuvier; and it agrees in plumage (intense blackish brown with metallic reflections, without any mention of chestnut or marone, the livery of the *Ibis ignea*,) with the descriptions of the ancients; it is therefore very probable, as M. Temminck suggests, that it is the sacred species worshiped and embalmed by the Egyptians.

Length (male), inclusive of tail,  $25\frac{1}{2}$  inches: tail  $4\frac{1}{4}$  inches. Female  $23\frac{1}{2}$  inches: tail 4 inches.

Black beetles, *larvæ* of water insects, and numerous univalve shells found in the stomachs of these birds.

190. *Ibis papillosa*, Temm., Pl. Col. 304. *Black screaming Ibis*.  
*Indian variety of Bald Ibis*, Lath., 9. 156.

Soar high in the air in circles, uttering melancholy screams. Monogamous. Found in the stomach of several birds aquatic insects, multitudes of black beetles, *Jowaree* seeds, *Gryllotalpæ*, and vegetable matters. Col. Sykes's birds are much less brilliant in plumage than the specimen described and figured by M. Temminck.

*Irides* pale red. Length, inclusive of tail, 25 to  $28\frac{1}{2}$  inches: tail  $7\frac{1}{2}$  inches.

191. *Ibis falcinellus*, Temm., Man. d'Orn. 2nd Edit. 2. 599. *Tantalus falcinellus*, Linn., 1. 241. Gmel., 1. 648. *Le Courlis verd*, Buff., Ois. 8. 29. *Courly d'Italie*, Buff., Pl. Enl. 819. *Marone Ibis*.

Sexes do not differ in plumage; but the female is somewhat smaller than the male.

Length, inclusive of tail, 26 to  $26\frac{1}{2}$  inches: tail  $4\frac{1}{4}$  inches. Multitudes of black beetles and grasshoppers, and univalve fresh-water shells, found in the stomach. An immature bird in possession of the Zoological Society, unlike the supposed immature bird (*Ibis ignea*), is characterized by the marone livery of the *Ibis falcinellus*.

Fam. *Scolopacidæ*, Vigors.—Genus *Totanus*, Bechst. *Sandpiper*.

192. *Totanus ochropus*, Temm., Man. d'Orn. 420. *Tringa ochropus*, Linn., 1. 250. *Green Sandpiper*.

Absolutely identical in plumage with a specimen from Hudson's Bay in the British Museum, and with English specimens.

*Irides* fuscous brown. Length, inclusive of tail,  $9\frac{1}{2}$  to 10 inches: tail  $2\frac{1}{2}$  inches.

For the most part solitary. The stomach approximates to a gizzard. Sexes alike. Cry, *Cheet, Cheet, Cheet*.

193. *Totanus Glareola*, Temm., Man. d'Orn. 2nd Edit. 2. 654. *Tringa Glareola*, Linn., 1. 250. *Wood Sandpiper*.

Differs from one specimen of *Tringa Glareola* in the British Museum in a defined white line over the eyes to the bill, more white on the throat and less brown speckled on the breast, and slightly longer bill; but is identical in plumage with another specimen.

- Irides* fuscous brown. Length, inclusive of tail, 9 to  $9\frac{1}{2}$  inches : tail  $2\frac{2}{5}$  inches. Sexes alike. In April as delicate eating as the common Snipe. Cry, *Chit, Chit, Chit, Chit* ; but the alarm cry is like the grating of a rusty hinge.
194. *Totanus hypoleucos*, Temm., Man. d'Orn. 424. *Tringa hypoleucos*, Linn., 1. 250. Common Sandpiper. *Tringa Guinetta*, Brit. Mus. *La petite Alouette de Mer*, Buff., Pl. Enl. 850.
- Irides* fuscous brown. Length, inclusive of tail,  $8\frac{1}{2}$  to 9 inches : tail  $2\frac{4}{5}$  inches.
- Cry, a sharp whistle like *Wheet, Wheet, Wheet*. Jerk the tail in a curious manner. Sexes alike. Generally solitary.

Genus *Limosa*, Briss. Godwit.

195. *Limosa Glottoides*. *Totanus Glottoides*, Gould's Century of Himalayan Birds.
- Col. Sykes agrees with Mr. Gould in the propriety of separating this bird from the *Totanus Glottis* (*Scolopax Glottis*), or *Green-shanks* of Europe.
- Irides* fuscous red brown. Length, inclusive of tail, 14 to  $14\frac{1}{2}$  inches : tail 3 inches.
- Sexes do not differ in plumage or size. Cry in flight, a sharp, shrill *Queek, Queek*. Very wary birds. Commonly seen alone ; rarely three or four together. Minute fish, *larvæ* of water insects, and univalve shells found in the stomach.
196. LIMOSA HORSFIELDII. *Lim. supra brunnea, plumarum rhachibus lineisque transversis angulatis nigris ; mento, corpore infra, uropygio, dorsi dimidio, caudâ, marginibusque plumarum superiorum albis ; remigibus fuscis rhachibus albis ; caudâ lineis plurimis angulatis angustis nigris notatâ.*
- Irides* intensè rufo-brunneæ. *Rostrum pedesque* (hi gracillimi) nigri. *Longitudo corporis* 8— $8\frac{1}{4}$  unc., *caudæ*  $2\frac{1}{2}$ .
- This is a miniature likeness of the preceding, but quite distinct, although similar in habits, manners, flight, and cry ; but with a permanent difference in size and some markings. It is comparatively a rare bird. Col. Sykes had at first considered it a young bird of *Tot. Glottoides*, until an observation of some years convinced him of his mistake. So wary as to be rarely within reach of the gun. Female with the spots and markings fainter than in the male. Bill  $1\frac{2}{5}$  inch long.

Genus *Gallinago*, Ray. Snipe.

197. *Gallinago media*, Ray. *Scolopax Gallinago*, Linn., 1. 244. *Becassine*, Buff, Ois. 7. 483. Pl. Enl. 883.
- Appears only from November until March in Dukhun. Same as the European bird, with trifling exceptions, resulting probably from age. *Irides* intense brown. Size of common Snipe. Found in the stomach, vegetable matter, minute univalve shells, earth-worms, *larvæ* of water insects, and fine gravel. Sexes alike.
198. *Gallinago minima*, Ray, Syn. 105. A. *Scolopax Gallinula*,

Linn., 1. 244. 8. *Becassine sourde*, Temm., Man. d'Orn. 440.  
*Jack Snipe*.

Appears and disappears with the preceding species. Identical with the European bird and precisely similar in its habits. *Irides* intense brown. Length, inclusive of tail,  $8\frac{2}{3}$  inches: tail  $2\frac{3}{4}$  inches. Food the same as that of the *common Snipe*. Sexes alike.

Genus *Rhynchæa*, Cuv.

199. *Rhynchæa picta*, Gray, Proc. Zool. Soc. *Rhynch. Capensis*, Steph., 12. 65. *Scolopax Capensis*, Linn., 1. 246.

Col. Sykes has specimens in such states of plumage as to correspond with the above species, shot on the same ground. Migratory. *Irides* red brown. Length, inclusive of tail, 10 inches: tail  $1\frac{3}{4}$  inches. Sexes alike. Feed like *Snipes*.

Genus *Pelidna*, Cuv. *Dunlin*.

200. *Pelidna Temminckii*, Steph., 12. 103. *Tringa Temminckii*, Leisl. Temm., Man. d'Orn. 401. *Small Dunlin*.

Identical with the European bird. *Irides* dark brown. Length, inclusive of tail, 6 to  $6\frac{1}{2}$  inches: tail 2 inches. Feed like *Snipes*. Gregarious. Excellent eating.

Fam. *Rallidæ*, Leach.—Genus *Parra*, Linn. *Jacana*.

201. *Parra Sinensis*, Gmel., 1. 709. *Yellow back-necked Jacana*.  
Fig. in Gould's Century of Birds.

The immature bird is the *Parra Luzoniensis*. Dive remarkably well despite their long toes. *Irides* fuscous brown. Length, inclusive of tail, 18 to 19 inches: tail 9 to 10 inches. Found in the stomach of many birds vegetable matter, two species of univalve shells, bugs (*Cimex annulatus*), and fine gravel. Gregarious, and common on the rivers in Dukhun.

Genus *Gallinula*, Ray. *Gallinule*.

202. *Gallinula Javanica*, Horsf., Linn. Trans. 13. 196. *Poule Sultane de la Chine*, ou *Poule Sultane brune*, Pl. Enl. 896. *Pan Komree* of the Mahrattas.

This is the Variety  $\beta$  of the 'Index Ornithologicus.' Dr. Horsfield has judiciously separated it from the *Gall. phœnicura*. Col. Sykes's specimens differ from Dr. Horsfield's only in being a little larger. *Irides* fuscous red. Length, inclusive of tail,  $11\frac{1}{2}$  to  $12\frac{1}{2}$  inches: tail  $2\frac{3}{4}$  to 3 inches. *Larvæ* of water insects found in the stomach. Legs very long.

Genus *Rallus*, Auct. *Rail*.

203. RALLUS AKOOL. *Rall. corpore supra lateribusque olivaceo-fusco-brunneis; alis caudæque fuscis; gutture, pectore, ventre, uropygioque cinereo-brunneis; tegminibus alarum caudæque inferioribus saturatè brunneis; mento albo.*

*Rostrum* virescenti-nigrum. *Pedes* carneo-brunnei. *Longitudo corporis* 8—9 unc., *caudæ*  $2\frac{1}{2}$ .



The only spot of white on the bird is at the chin. Wings and tail short. This bird appears quite distinct from any described species of *Rallus* or *Gallinula*. The nearest approach to it is the *Rall. niger* of Gmelin from the Cape of Good Hope. Sexes alike. Frequents sedgy and marshy places amidst low bushes. Shuns observation.

Genus *Porphyrio*, Briss.

204. *Porphyrio smaragnotus*, Temm., Man. d'Orn. 2nd Edit. 2. 700.  
*Fulica Porphyrio*, Linn., 1. 258. *Le Taleve de Madagascar*, Buff., Pl. Enl. 810.

These very beautiful birds are found on most of the very large tanks or ponds, the surface of which is a good deal covered with the broad leaves of the *Lotus*, on which the birds walk. Vegetable matters only found in the stomach of several birds, particularly parts of the green capsules of *Trapa bispinosa*. Sexes alike. *Irides* blood red. Length, inclusive of tail, 18 inches: tail  $3\frac{3}{4}$  inches. Stomach a true gizzard.

Genus *Fulica*, Auct. Coot.

205. *Fulica atra*, Linn., 1. 257. *Le Foulque*, Buff., Ois. 8. 211. Pl. Enl. 197.

Differs only from Javanese specimens in being larger, and a shade lighter below. Much larger than the common *Coot* of Europe, but with the same coloured *irides* (crimson), and does not otherwise differ. Length, inclusive of tail, 18 to 19 inches: tail 2 inches. It has the habits of *Podiceps*, and with the gizzard, long *cæca*, and general internal organization of a *Duck*, seems to belong to the order *Natatores*. Water weeds and coarse sand found in the stomach.

Fam. *Charadriadæ*, Leach.—Genus *Cursorius*, Lath. *Cursorer*.

206. *Cursorius Asiaticus*, Lath., Ind. Orn. 2. 751. 2. *Cour-vite de Coromandel*, Buff., Ois. 8. 129. Pl. Enl. 892.

*Irides* dark brown. Length, inclusive of tail, 10 inches: tail  $2\frac{1}{2}$  inches. Sexes alike. Numerous in Dukhun; but only on the open stony and grass plains. This bird has the shortness of intestine of the *Bustard* (equal to the length of the body), with a stomach nearly similar; feeding in the same manner on insects and their *larvæ* and with the same cursorial habits, and should therefore be placed near the *Struthionidæ*, after *Otis* and *Tetrao*.

Genus *Vanellus*, Briss. *Lapwing*.

207. *Vanellus Goensis*, Steph., 11. 514. *Tringa Goensis*, Lath., Ind. Orn. 2. 727. 7. *Parra Goensis*, Gmel., 1. 706. *Vanneau armé de Goa*, Buff., Pl. Enl. 807.

*Irides* fuscous crimson. Length, inclusive of tail, 14 inches: tail 5 inches. Affect open plains and beds of rivers. Gregarious. Water insects, shells, and corn found in the stomach. A watchful and noisy bird at night; uttering cries of *Did he doo it*, *Did he doo it*. Sexes alike.

208. *Vanellus bilobus*. *Charadrius bilobus*, Gmel. 1. 691. *Le Pluvier de la côte de Malabar*, Buff., Pl. Enl. 880.

The bird has a black bill, yellowish at the base; and not a yellow bill, as described in the 'Index Ornithologicus.' There are one or two other minor discrepancies; but no doubt it is the species figured by Buffon. Although it wants the hind toe, and is therefore, agreeably to generic characters, a *Charadrius*, its habits, figure, food, and almost its cry, are those of the preceding species. Col. Sykes has therefore classed it as a *Vanellus*. *Irides* yellowish. Length, inclusive of tail,  $11\frac{3}{4}$  to 12 inches: tail  $3\frac{1}{4}$  inches. Gregarious. Found only on the open stony and grass plains. Like the *Van. Goensis*, a restless noisy bird at night, crying *Deewit, Deewit*. Sexes alike.

Genus *Charadrius*, Auct. *Plover*.

209. *Charadrius pluvialis*, Linn., 1. 254. 7. *Le Pluvier doré*, Buff., Ois. 8. 81. Pl. Enl. 904. *Golden Plover*.

Identical with Javanese specimens. Smaller than one North American specimen and two English specimens in the British Museum; but absolutely identical with other British specimens. A rare bird in Dukhun, and appearing only in the cold weather. *Irides* almost black. Length, inclusive of tail, 10 inches: tail  $2\frac{1}{5}$  inches. Gregarious. In the stomach were found beetles, land insects, and coarse sand.

210. *Charadrius Philippensis*, Lath., Ind. Orn. 2. 745. 11. *Petit Pluvier à collier de Luçon*, Sonn., Voy. Ind. 84. pl. 46.

This little bird has the habits of *Totanus*; frequents the shores of fresh water only; and in firing into a flock of *Sandpipers* it is frequently killed in company with them. *Irides* fuscous crimson. Length, inclusive of tail,  $7\frac{1}{2}$  inches; tail  $2\frac{3}{10}$  inches. Gregarious. Sexes alike. Sonnerat, in his description, omits to mention that the margins of the eyelids are bright yellow; instead of which he calls the *irides* yellow.

Genus *Himantopus*, Ray. *Longshanks*.

211. *Himantopus melanopterus*, Horsf., Linn. Trans. 13. 194. *Charadrius Himantopus*, Linn., 1. 255. *L'Echasse*, Buff., Ois. 8. 114. Pl. Enl. 878.

There are slight discrepancies in the plumage between the birds of Java, India, and Europe; and in case of these being permanent, and not the result of nonage, specific differences might be established. *Irides* narrow, lake or crimson colour. Length, inclusive of tail, 16 inches; tail  $3\frac{1}{2}$  inches; to the end of the toes  $22\frac{1}{2}$  inches. Gregarious. Vegetable matters, *larvæ* of water insects, and minute univalve shells found in the stomach. These birds are strangely polluted with visceral worms of the tape and capillary kinds.

Genus *Ædicnemus*, Cuv. *Thick-knee*.

212. *Ædicnemus crepitans*, Temm., Man. 322. *Otis Ædicnemus*, Lath., Ind. Orn. 2. 661. 11. *Charadrius Ædicnemus*, Linn.,

1. 255. *Le grand Pluvier*, Buff., Pl. Enl. 919. *Great-headed Thick-knee*.

There is no visible difference between the Dukhun and British species. Eyes of very great size. *Irides* very broad, of a greenish yellow. Length, inclusive of tail, 17 to 18 inches; tail  $4\frac{3}{4}$  inches. Gregarious. Frequents bushy wilds as well as grass plains. Not met with in woods. Land insects and seeds found in the stomach. Sexes do not differ in size or plumage. This bird rests on the first joint of the leg like the *Gallus giganteus*.

#### ORDER V. NATATORES, Ill.

Fam. *Anatidæ*, Leach.—Genus *Plectropterus*, Leach.

213. *Plectropterus melanotos*, Steph., 12. 8. *Anas melanotos*, Gmel., 1. 503. *L'Oie bronzée de Coromandel*, Buff., Pl. Enl. 937. *Black and white Plectropterus*. *Nukta* of the Mahrattas.

The very large vertical compressed process on the upper mandible; the white lower part of the back; cinereous rump; and rudimentary black mane down the back neck are not noticed in descriptions of this species. This noble and splendid bird is not common in the Dukhun. Female considerably less in size than the male, and with the metallic reflections much less brilliant; destitute also of the comb or crest on the upper mandible. Seen in pairs. Horny process on the bend of the wing obtuse. Length, inclusive of tail, 30 to  $3\frac{1}{2}$  inches; tail  $5\frac{1}{2}$  to 6 inches. Seeds of water-grasses, and the remarkable quadrangular hard seeds met with in the stomach of the *Pterocles exustus* found also in the stomach of the *Plectropterus*. Digastric muscle of the remarkable thickness of  $1\frac{2}{10}$  inch.

Genus *Anser*, Briss.

214. *Anser Girra*. *Anas Girra*, Gray, Indian Zool. Illust. No. 4. fig. 6. *Girra Teal*, Lath. *Cotton Teal* of Europeans in Dukhun, from the quantity of white in the plumage.

*Irides* bright crimson.

This handsome bird is one of the smallest of the *Anatidæ*. Length, inclusive of tail,  $12\frac{1}{2}$  to 14 inches; tail 3 to  $3\frac{1}{4}$  inches. Sexes exactly alike. Monogamous. Vegetable matter and gravel found in the stomach. These birds, when wounded, dive, and on returning to the surface show only the bill above water, keeping the body below at pleasure.

Genus *Tadorna*, Leach.

215. *Tadorna rutila*, Steph., 12. 71. *Anas Casarca*, Linn., App. 3.

224. *Shieldrake*. *Bruhmuny Duck* of Europeans in Dukhun.

*Irides* yellowish brown. Length, inclusive of tail, male 28 inches, female 25 to 26 inches; tail  $5\frac{1}{2}$  inches. For the most part of the year these birds are in pairs; but on the Nerbudda river in Guzerat, Colonel Sykes has seen them congregated in hundreds in April. Found in the stomachs of many birds, grass seeds and vegetable matters only. The female is destitute of

the black ring round the neck ornamenting the male. The intestinal canal twice the proportional length of that of the *Plectropterus*.

Genus *Anas*, Auct.

216. *Anas strepera*, Linn., 1. 200. *Chipeau*, Buff., Pl. Enl. 958.  
*Chestnut lesser wing-covert Duck*.

Males identical with specimens in the British Museum from Kent. No females for comparison. Length, inclusive of tail, male 24 to 25 inches, female 22 inches; tail 4 inches. Numerous in Dukhun. Gregarious. A tape-worm was found protruding through the coat of the intestine in one bird, without affecting its health or flesh.

Genus *Rhynchaspis*, Leach, MSS.

217. *Rhynchaspis virescens*, Leach, MSS. *Anas clypeata*, Linn., 1. 200. *Souchet*, Buff., Ois. 9. 191. Pl. Enl. 971, 972. *Black-headed Shoveler*.

Identical with British specimens of the *common Shoveler*; but differing from the description of that bird in Shaw. Irides yellowish brown. Length, inclusive of tail, 20 to 21 inches; tail 4 inches. Grass seeds, vegetable matters, pulse-like seeds, and gravel found in the stomach. Gregarious. The intestinal canal is more than seven times as long as the body, neck, and bill included; and in this particular is not approached within nearly two-sevenths by any other bird of the order *Natatores*.

Genus *Mareca*, Steph. *Wigeon*.

218. *Mareca pœcilorhyncha*, Steph., 12. 134. *Anas pœcilorhyncha*, Gmel., 1. 535. *Spotted-billed Duck*, Lath.

Irides red fuscous brown. Length, inclusive of tail, 22 to 25 inches; tail 4 to 4½ inches. Sexes alike in plumage. Grass seeds, vegetable matters, and small stones found in the gizzard. Colonel Sykes's birds identical with a specimen in the British Museum, from the Himalayan mountains. The spot at the end of the bill invariably yellow, but in books it is stated to be white. The digastric muscle thicker than the diameter of the cavity of the gizzard. Colonel Sykes does not consider this species a true *Mareca*.

219. *Mareca fistularis*, Steph., 12. 131. *Anas Penelope*, Linn., 1. 202. *Canard Siffleur*, Buff., Ois. 9, 169. Pl. Enl. 825.  
*Wigeon*.

Irides red fuscous brown. Length, inclusive of tail, 19 to 20 inches (males), 18½ to 19 inches (females); tail 3½ to 3¾ inches. Gregarious. Absolutely identical with specimens from Devonshire. Contents of the gizzard as in the preceding species.

220. MARECA AWSUREE. *Mar. nigrescenti-brunnea*; *plumarum scapularium dorsique apicibus flavescenti-brunneis*; *tegminibus alarum minoribus caudæque superioribus saturatè castaneis*; *vertice lineâque cervicali fuscis*; *capite, collo, pectoreque pallidè flavescenti-brunneis, ventre uropygioque saturatioribus*



*ferrugineis; mento tegminibusque caudæ inferioribus sordidè albis.*

*Rostrum pedesque nigri.* Longitudo (caudâ inclusâ)  $18\frac{1}{2}$ —20 unc., caudæ  $2\frac{1}{2}$ . *Whistling Teal.*

This bird, of which Colonel Sykes has many specimens, is identical with a bird in the British Museum, from Africa; one in the Zoological Society, from Bengal; and one in the India House, from Java. In the whole of these, the lunules on the breast, neck, and upper part of the back, and the strong black short mane of the *Anas arcuata* are wanting. It is also larger than that bird, and Colonel Sykes is therefore led to believe this to be a distinct species, although strongly resembling it.

Gregarious, and abundant in Dukhun. Sexes alike in plumage. These birds are characterized by a very peculiar whistle when disturbed, by a proportionate length of intestine one-third shorter than that of any other species of the *Anatidæ*, and by the inferior *larynx* being dilated into two oblong chambers, placed rather in front of, than lateral to the *trachea*.

Genus *Querquedula*, Ray. *Teal.*

221. *Querquedula Circia*, Steph., 12. 143. *Anas Circia*, Linn., 1. 204. *Sarcelle d'été*, Buff., Ois. 9. 268. Pl. Enl. 946. *Gargany Teal.*

Length, inclusive of tail,  $16\frac{1}{2}$  to  $17\frac{1}{2}$  inches; tail 3 to  $3\frac{1}{5}$  inches. Female the smaller bird, and quite dissimilar in plumage. Identical with British specimens. Gregarious. In addition to similar contents of the gizzard in other species, rice in the husk was found.

222. *Querquedula Crecca*, Steph., 12. 146. *Anas Crecca*, Linn., 1. 204. *Pelite Sarcelle*, Buff., Ois. 9. 265. Pl. Enl. 947. *Common Teal.*

Identical with male and female British specimens. Length, inclusive of tail,  $15\frac{1}{2}$  to 16 inches; tail 3 inches. Water-weed and gravel in the stomach. Colonel Sykes has in his possession specimens (male and female) resembling the female of *Querq. Crecca*; but in which the proportional length of the intestinal canal differs so much from that of *Querq. Crecca* ( $3\cdot30$  to 1, and  $5\cdot57$  to 1), that he is induced to believe they may belong to a distinct species. It will be observed that the proportional length of the intestine ( $5\cdot57$  to 1) closely approximates to that of a widely-different bird, the carrion-devouring *Pernopterus*.

Genus *Fuligula*, Steph. *Pochard.*

223. *Fuligula rufina*, Steph., 12. 188. *Anas rufina*, Pall. *Le Canard Siffleur huppé*, Buff., Ois. 9. 282. Pl. Enl. 928. *Red-headed Pochard.*

Length, inclusive of tail, 25 inches; tail  $3\frac{1}{2}$  inches. Digastric muscle remarkably thick. Rare in Dukhun. Vegetable matters and gravel in the stomach.

224. *Fuligula* ———. *Ash-brown Pochard with white speculum.*

This bird has a considerable resemblance to the female of *Ful. ru-*

*fina*, as described by Mr. Stephens, but it has a black bill; and Colonel Sykes is not able to meet with a specimen to institute a rigid comparison; he therefore leaves the bird for future consideration. Length, inclusive of tail, 24 inches; tail  $3\frac{1}{2}$  inches. A coloured figure in Hunt's British Ornithology (Norwich) represents the female of *Ful. rufina* with a red bill, red legs, and reddish-brown plumage, which militate against its identity with the present bird.

225. *Fuligula cristata*, Steph., 12. 190. *Anas Fuligula*, Linn., 1. 207. Morillon, Buff., Ois. 9. 227. Pl. Enl. 1001. *Tufted Duck*.

Differs only in the more pronounced amethyst reflection of the back neck in the male from British specimens. Female identical. *Irides* bright yellow. Length, inclusive of tail, 18 to 19 inches; tail  $2\frac{5}{8}$  to  $2\frac{7}{8}$  inches. Female the smaller bird.

Fam. *Colymbidæ*, Leach.—Genus *Podiceps*, Lath.

226. *Podiceps Philippensis*, Steph., 13. 16. *Indian Grebe*, Lath., 10. 29. described from drawings of Sir John Anstruther. *Le Castagneux des Philippines*, Buff., Ois. 8. 246. Pl. Enl. 945. Buffon's plate is excellent.

*Irides* broad, of an ochry yellow; they dilate and contract. Length, from the bill to the rump,  $9\frac{1}{2}$  to  $9\frac{3}{4}$  inches; tail none. Common in Dukhun, where their unceasing habit of diving occasions their being called *Divers* by Europeans, although quite distinct from the genus *Colymbus*. From their remarkable quickness of eye, Colonel Sykes has known a dozen unsuccessful shots fired at the same individual, which constantly disappeared under water ere the shot reached him. Gregarious. Stomach simple, resembling that of *Hérons*, and wholly unlike that of *Ducks*. Found in the stomach *larvæ* of water insects and shrimps, aliments common to the *Heron* tribe, and not found by Colonel Sykes in the gizzard of *Ducks*.

Fam. *Pelecanidæ*, Leach. Genus *Phalacrocorax*, Briss. *Cormorant*.

227. *Phalacrocorax Javanicus*, Steph., 13. 90. *Carbo Javanica*, Horsf., Linn. Trans. 13. 197. Figured in *Illust. Ind. Zool.*, part 10. fig. 9. *Shag* of Europeans in Dukhun.

Absolutely identical with Dr. Horsfield's specimens from Java. Differs from *Pelecanus Africanus* (*Phal. Africanus*), with which it has been confounded, in the scapulars and wing coverts being reddish-fuscous-brown instead of blue-gray, and being margined and tipped with lighter brown instead of black; in the first three quill-feathers being black instead of pale brown; in the secondaries not being so long as the quills; tail graduated instead of cuneiform; in the front of the neck being reddish and fuscous instead of black and white; finally, in the belly being rusty black instead of white varied with dusky. There can be no question, therefore, of the propriety of its being considered a distinct species by Dr. Horsfield. Colonel Sykes has seen hundreds of them, and notes these differences with several specimens lying before him. *Irides* remarkably nar-

row, crimson. Length, inclusive of tail, 22 to 23 inches; tail 6 inches. Sexes alike. The only spot of white on the bird is at the chin. Very numerous in Dukhun, appearing in the rivers in flocks of hundreds. Fish (some 3 inches long) and prawns found in the stomach of many birds; also capillary worms. Colonel Sykes remarks, that the generic character, "Face and throat naked" is inapplicable to this species.

Genus *Plotus*, Linn. *Darter*.

228. *Plotus melanogaster*, Gmel. 1.580. *Anhinga noir du Senegal*, Buff., Ois. 8.453. Pl. Enl. 960 & 107. *Black-billed Darter*, called the *Snake-bird* in Dukhun.

*Irides* bright yellow. Length, inclusive of tail,  $37\frac{1}{2}$  inches; tail  $9\frac{1}{2}$  inches. Solitary. Rare in Dukhun, but frequently met with below the Ghauts. This bird has the singular faculty of being enabled to swim with the whole of its body under water, the long neck and head alone being visible, looking like a snake. Colonel Sykes's limits do not permit him to enlarge on the very peculiar formation of the stomach, more resembling that of a ruminant than a bird. Seven small carp and much deep-green vegetable fibre were found in the stomach of a female.

Fam. *Laridæ*, Leach.—Genus *Sterna*, Linn. *Tern*.

229. *Sterna acuticauda*, Gray, Illust. Ind. Zool., part 6. fig. 3. *Small yellow-billed Tern*. *Sterna melanogaster*, Temm., Pl. Col. 434?

*Irides* reddish deep brown. Length, inclusive of tail,  $13\frac{1}{2}$  to  $14\frac{1}{2}$  inches; tail  $6\frac{3}{4}$  to 7 inches, very forked and acute; the lateral feathers being subulate. Fish found in the stomach. Although the wings are so long, the flight is slow and with a good deal of flapping. Take their prey while on the wing by darting obliquely upon it. Do not dip under water, nor dart perpendicularly, like *Alcedo rudis*. This elegant and slender species Colonel Sykes shot 160 miles inland, and at an elevation of 1800 feet above the sea. Gregarious. Common in Dukhun.

230. *Sterna similis*, Gray, Illust. Ind. Zool., part 6. plate 8. fig. 2. *Tern with a fuscous lake-coloured bill*.

Length, inclusive of tail,  $11\frac{1}{2}$  to 12 inches; tail  $3\frac{3}{8}$  to  $3\frac{5}{8}$  inches; slightly forked, and without the lateral, elongated, and subulate feathers of *Sterna acuticauda*. Fish only found in the stomach. Gregarious. Habits and locality of the last species. Colonel Sykes states it as curious, that all his specimens, seven in number, of *Sterna acuticauda* and *Sterna similis* proved to be females. Common in Dukhun.

231. STERNA SEENA. *Sterna supra cinerea; fronte, vertice, cervicæque saturatè nitidè atris; corpore infrà albo, hypochondriis parùm cinereo tinctis; rectricibus lateralibus albis.*

*Irides* saturatè rufescenti-brunneæ. *Rostrum* forte, flavum.

*Pedes* rubri. *Longitudo* (caudâ inclusâ)  $17-17\frac{1}{2}$  unc., *caudæ*  $8-8\frac{1}{4}$ , *rectus*  $2\frac{5}{8}$ .

This species differs from *Sterna affinis* of Ruppell, tab. 14. p. 23, in its smaller size, and having red instead of black legs; in the

white not being so brilliant, and in a stronger bill. Ruppell's *Sterna velox* appears to correspond in size with it. In the numerous species in the British Museum there is not one with which it can be identified. Proportionably to the shortness of the legs the claws are long, much arched, slender and sharp, and turn outwards. Hind claw never touches the ground. Same locality and habits as the preceding species, although rare in Dukhun. In the stomach and *oesophagus* of one bird were found the extraordinary number of thirteen *Cyprini*, one of them  $2\frac{1}{2}$  inches long. Tail very much forked; lateral tail-feathers subulate, white, 8 inches long. Wings very narrow and long, reaching nearly to the end of the tail.

Genus *Viralva*, Leach.

232. *Viralva Anglica*, Steph., 13. 174. *Sterna Anglica*, Mont., Orn. Dict. *Sterna aranea*, Wils., Amer. Orn. 8. 143. pl. 72. fig. 6? *Marsh Tern*, Lath. *Gull-billed Viralve*.

Colonel Sykes's specimens correspond exactly with specimens of this rare British bird in the British Museum, both in their winter and summer plumage. *Irides* deep red brown. Length, inclusive of tail,  $14\frac{1}{2}$  to  $16\frac{1}{2}$  inches; tail  $4\frac{1}{2}$  to  $5\frac{3}{4}$  inches. Sexes alike in plumage, but the female somewhat smaller than the male. Numerous fish found in the stomach of many birds. With the aspect, length of wing, lazy flight, and habits of the *Tern*, this bird has a bill approximating to that of the *Gull*, not quite identical with the bill of the *Viralve*.

Colonel Sykes states, that the *domestic Duck* (*Anas Boschas*) is extensively bred by the Portuguese in Western India, and that it is subject to a kind of apoplexy, which carries it off in a few minutes, although previously in apparent health. He has known a trader lose a flock of more than thirty in the course of one day; and he has himself had ten ducks struck simultaneously, stagger about for a short time as if drunk, run round in circles, fall on their backs, and die. He has not been able to discover any morbid appearances in the brain. In no instance, in the stomachs of the *Anatidæ*, were animal matters met with; the contents consisted of grains, seeds, vegetables, and gravel.

Colonel Sykes, in closing his Catalogue of the birds of Dukhun, mentioned that the details he had given resulted from personal observation of the specimens, in a living or recent state. With few exceptions, the whole were shot by himself; and, to guard against false impressions, he accumulated several individuals of the same species and of both sexes, and was rarely confined to a solitary bird.



October 23, 1832.

Lieutenant-Colonel Sykes in the Chair.

The exhibition was resumed of the collection of *Shells* formed by Mr. Cuming on the western coast of South America, and among the islands of the Southern Pacific Ocean. The new species were accompanied, as on the previous occasions, by descriptions from the pens of Mr. Broderip and Mr. G. B. Sowerby.

Genus CANCELLARIA.

CANCELLARIA UNIPLICATA. *Canc. testá oblongá, utrinque acuminatá, fuscá; anfractibus 5—6 decussatis, prope suturam crenulatis, et posticè unicarinatis, cariná granosá; aperturá oblongá in canalem anticè productá; labio externo intùs denticulato, margine crenulatá; columellá uniplicatá: long. 0·75, lat. 0·35 poll.*

*Hab.* in Americâ Meridionali prope Panamiam.

This is the only species known to Mr. Sowerby with a single fold on the *columella*: two specimens were dredged in sand at a depth of ten fathoms, near Panama, by Mr. Cuming.—G. B. S.

Genus OVULUM.

OVULUM RUFUM. *Ov. testá oblongá, posticè acuminatá, rufá; labio externo incrassato, pallidiore; aperturá angustá, anticè latiore; columellá intùs lineá longitudinali depressá, plicáque subspirali: long. 0·50, lat. 0·15 poll.*

*Var.* testá totá pallidá.

*Hab.* ad Columbianam Occidentalem.

A few specimens were dredged in sandy mud at a depth of seven fathoms in the Bay of Caraccas.—G. B. S.

OVULUM AVENA. *Ov. testá oblongá, rufá, extremitatibus subacuminatis; dorso subgibboso, transversim tenuissimè striato; labio externo incrassato, pallidiore; aperturá angustá, anticè latiore, posticè emarginatá; columellá posticè uniplicatá: long. 0·55, lat. 0·22 poll.*

*Hab.* in Americâ Centrali. (Conchagua.)

This species varies much in the intensity of its colouring.—G. B. S.

OVULUM INFLEXUM. *Ov. testá oblongá subcylindricá, lævi, pallidá, posticè subrostratá, inflexá; aperturá anticè subeffusá; labio externo incrassato, columellari intùs carinato; columellá posticè uniplicatá: long. 0·70, lat. 0·25 poll.*

*Hab.* in Americâ Centrali. (Gulf of Dulce.)

A single specimen only was found; Mr. Sowerby possesses two others, which were in G. Humphrey's collection.—G. B. S.

**OVULUM ÆQUALE.** *Ov. testâ oblongâ, subcylindricâ, rufâ; labio externo incrassato; extremitatibus obtusiusculis; aperturâ latiusculâ, utrâque extremitate æquali; columellâ carinâ internâ distinctâ: long. 0.45, lat. 0.18 poll.*

*Hab.* ad Panamam.—G. B. S.

Genus MUREX.

**MUREX RUBESCENS.** *Mur. testâ subrhomboided, trifariam varicosâ, varicibus subfrondescentibus, tuberculo interstitiali magno, transversim sulcatâ et striatâ; canali mediocri subrectâ, roseâ; varicibus tuberculis frondibusque nigricantibus: long. 1 $\frac{2}{3}$ , lat.  $\frac{2}{3}$  poll.*

*Hab.* ad insulam Taheiten.

Found on the coral reefs.—W. J. B.

**MUREX PINNIGER.** *Mur. testâ fusiformi, sordidè purpureo-albidâ, transversim substriatâ, tripinnatâ, pinnis elevatis, laciniatis, tuberculo interstitiali majusculo; aperturâ ovali; canali tubulari: long. 2 circ., lat. 1 $\frac{1}{2}$  (pinnis inclusis) poll.*

*Hab.* in Americâ Meridionali. (Xipixapi.)

Found in sandy mud at the depth of eight fathoms.—W. J. B.

**MUREX RECURVIROSTRIS.** *Mur. testâ ventricosâ, trifariam spinosâ, spinis brevibus magnis, interstitiis 3- vel 4-seriatim tuberculosis, tuberculis parvis subasperis, subcancellatâ, sordidè albâ transversim castaneo lineatâ; canali longâ recurvâ, basin versus spinosâ; operculo rugoso: long. 3, lat. 1 $\frac{2}{3}$  poll.*

*Obs.* testa junior tantum non inermis.

*Hab.* in Americâ Centrali. (Gulf of Nicoiyo.)

Found in sandy mud at the depth of nine fathoms.—W. J. B.

**MUREX TETRAGONUS.** *Mur. testâ pyramidali, albidâ, quadrifariam varicosâ, transversim costatâ, subcancellatâ; aperturâ violaccâ, prominente; labii limbo unduloso-crenulato; canali brevi, recurvâ: long. 1 $\frac{1}{2}$ , lat.  $\frac{2}{3}$  poll.*

*Hab.*?

Mus. Sowerby.

This specimen, the only one I ever saw, is very much water-worn, but the leading characters of the species are uninjured.—W. J. B.

**MUREX MAURUS.** *Mur. testâ rhomboideâ, ponderosâ, quadrifariam varicosâ, tuberculo interstitiali unduloso, transversim creberrimè granuloso-striatâ et sulcatâ, roseâ, sulcis strisique nigricantibus; labri intus crenulati limbo denticulato, rosco; aperturâ albâ: long. 1 $\frac{1}{2}$ ; lat. 1 $\frac{2}{3}$  poll.*

*Hab.* ad insulam Annaan in Oceano Pacifico.

Found on the reefs.

The rosy ground colour of this species is almost entirely obscured by the blackish granulose elevated transverse ridges and lines.—W. J. B.

**MUREX EROSUS.** *Mur. testâ fusiformi, quinquefariam varicosâ, transversim sulcatâ, sulcis approximatis, crenulatis; canali brevi subrecurvâ: long. 1 $\frac{7}{8}$ , lat. 1 $\frac{1}{5}$  poll.*

*Hab.* ad Panamam.

Found under stones.—W. J. B.

**MUREX EXIGUUS.** *Mur. testâ quinquefariam frondosâ, frondibus brevissimis, planiusculis, transversim altissimè sulcatâ, sordidè albâ; spirâ brevi; canali mediocri, recurvâ: long.  $\frac{3}{8}$ , lat.  $\frac{2}{8}$  poll.*

*Hab.* ad Salango.

Found on a sandy bottom at the depth of ten fathoms.—W. J. B.

**MUREX HUMILIS.** *Mur. testâ ovato-fusiforâ, albido-castaneâ, quinque- vel sex-fariam varicosâ, varicibus submuricatis, transversim sulcatâ et striatâ; operculo rugoso: long.  $1\frac{1}{8}$ , lat.  $\frac{5}{8}$  poll.*

*Hab.* ad portum Sanctæ Elenæ.

Found in sandy mud at the depth of seven fathoms.—W. J. B.

**MUREX PUMILUS.** *Mur. testâ rhomboideâ, quinquefariam subfrondosâ, frondibus brevibus, planiusculis, subrecurvis, a latere crenulatis, nigro-fuscâ albo subfasciatâ; canali mediocri, subrecurvâ; labri limbo crenulato: long.  $\frac{1}{2}$ , lat.  $\frac{1}{3}$  poll.*

*Hab.* ad Insulas Gallapagos.

Found under stones.—W. J. B.

**MUREX LUGUBRIS.** *Mur. testâ subovatâ, transversim costatâ, subatropurpureâ, sexfariam frondosâ, frondibus brevibus recurvis fasciâque basali albidis; canalis medio clauso: long.  $1\frac{2}{8}$ , lat.  $\frac{7}{8}$  poll.*

*Hab.* in Americâ Centrali. (Puerto Portrero.)

Found in the coral rocks.—W. J. B.

**MUREX PRINCEPS.** *Mur. testâ subrhomboideâ, ventricosâ, sexfariam frondosâ, frondibus longioribus laciniatis, transversim substriatâ, albâ rufo-purpureo fasciatâ; operculo crasso, parvo: long.  $5\frac{5}{8}$ , lat.  $3\frac{3}{8}$  poll.*

*Hab.* in Americâ Centrali. (Puerto Portrero.)

Found in coral reefs.—W. J. B.

**MUREX CARDÛS.** *Mur. testâ ovato-acutâ, sexfariam varicoso-spinosâ, transversim sulcatâ et striatâ, albâ fasciis rufo-castaneis: long.  $1\frac{2}{8}$ , lat.  $\frac{1}{2}$  poll.*

*Hab.* in oceano juxtâ Pácosmayo Peruvix.

From a coral reef twelve miles from the land, at the depth of twenty-five fathoms.—W. J. B.

**MUREX NUCLEUS.** *Mur. testâ subrhomboideâ, septemfariam subvaricosâ, transversim rugoso-sulcatâ, sulcis creberrimis, sordidè albâ; canali brevissimâ subrecurvâ: long.  $\frac{1}{2}$ , lat.  $\frac{1}{3}$  poll.*

*Hab.* ad Insulas Gallapagos.

Found in fine coral sand at the depth of eight fathoms.—W. J. B.

**MUREX VIBEX.** *Mur. testâ turritâ, septemfariam varicosâ, varicibus subnodosis, transversim sulcatâ, subluteâ; aperturâ albâ, internè sulcatâ; labri limbo crenulato; canali brevissimâ; epidermide fuscâ, rugosâ: long.  $1\frac{5}{8}$ , lat. 1 poll.*

*Hab.* ad Sanctam Elenam et ad Panamam.

This shell appears to be intermediate between *Murex* and *Turbi-*

*nella*. It has the *varices* of the former, and the *plaits* on the *columnella* which distinguish the latter.

Found in sandy mud, from six to twelve fathoms.—W. J. B.

**MUREX INCISUS.** *Mur. testá ovatá, septemfariam varicosá, varicibus rotundatis elevatis, transversim creberrimè carinatá et striatá, carinis striisque crenulatis; albidd, carinis subcastaneis: long.  $1\frac{1}{8}$ , lat.  $\frac{7}{8}$  poll.*

*Hab.* ad portum Sanctæ Elenæ.

Found on a rocky bottom at the depth of eight fathoms.—W. J. B.

**MUREX VITTATUS.** *Mur. testá ovato-acutá, septemfariam varicoso-spinosá, spinis brevibus, transversim sulcatá, albá, nigro fasciatá: long.  $\frac{7}{8}$ , lat.  $\frac{7}{12}$  poll.*

*Hab.* ad Guayaquil. (Isle of Muerte Bay.)

From sandy mud at the depth of eleven fathoms.—W. J. B.

**MUREX OXYACANTHA.** *Mur. testá pyriformi, transversim striatá, septemfariam spinosá, spinis canaliculatis, albá, epidermide fuscá; spirá brevi; canali longiusculá, subrecurvâ: long.  $2\frac{1}{2}$ , lat.  $2\frac{1}{2}$  (spinis inclusis) poll.*

*Hab.* in Americâ Centrali. (Real Lleijos.)

Found in sandy mud at the depth of eight fathoms.—W. J. B.

**MUREX NITIDUS.** *Mur. testá subrhomboideá, octofariam spinoso-varicosá, transversim striatá; anfractu basali ventricoso, albo vittis lineatis nigro-castaneis 3-fasciato, et spinis magnis, canaliculatis, sublaciniatis coronato; spirá brevi; canali mediocri, spinosá, ad apicem nigricante; aperturá albá; labro intus denticulato: long.  $1\frac{1}{8}$ , lat.  $\frac{5}{8}$  (spinarum coroná inclusá) poll.*

*Hab.* in Americâ Centrali. (Real Lleijos.)

This pretty shell was found in the cleft of a rock. No other individual was obtained, and it is believed to be unique.—W. J. B.

**MUREX HORRIDUS.** *Mur. testá subrhomboideá, novem-ad decemfariam varicosá, sulcis striisque interstitialibus transversis creberrimis, aspero-rugosis, sordidè albidd; aperturá glabrá, albá: long.  $1\frac{1}{8}$ , lat.  $\frac{5}{8}$  poll.*

*Hab.* ad Sanctam Elenam et ad Panamam.

Found in sandy mud at the depth of from eight to twelve fathoms.—W. J. B.

**MUREX CRISPUS.** *Mur. testá subovatá, multifariam frondosá, frondibus brevibus, striatis, crispis, transversim costatá, albá, costis frondibusque albido-brunneis; anfractibus supernè complanatis: long.  $2\frac{1}{2}$ , lat.  $1\frac{1}{2}$  poll.*

*Hab.* in pelago juxta Peruviam.

Taken from a coral reef twelve miles from Pacosmayo, in twenty-five fathoms water.—W. J. B.

**MUREX SQUAMOSUS.** *Mur. testá sordidè albidd, ovato-pyriformi, ventricosá, multifariam varicosá, (varicibus rotundatis,) striis transversis elevatis squamosis asperá; anfractibus angulatis; columellâ leví; labri limbo intus substriato; canali valdè apertá, breví, subrecurvâ: long.  $1\frac{1}{2}$ , lat. 1 poll.*



*Hab. ad Peruvianam. (Payta.)*

The transverse scaly *striae* are so arranged as to present three and sometimes four smaller interstitial ones between the more elevated. The scales on the *striae* are suberect, and very numerous and minute. The abrupt descent from the angle to the suture gives the whorls, more especially the last, a coronated appearance. Found in sandy mud, at the depth of six fathoms.—W. J. B.

**MUREX MARGARITICOLA.** *Mur. testá ovato-acutá, multifariam subvaricosá, aspero-rugosá, nigricante; aperturá albido-purpureá, columellá crenulatá, labro intus dentato; canali apertá, subrecurvá: long.  $1\frac{3}{8}$ , lat.  $\frac{7}{8}$  poll.*

*Hab. in Oceano Pacifico, (Lord Hood's Island,) Meleagrinae margaritiferae adhærens.—W. J. B.*

**MUREX LAPPA.** *Mur. testá subrhomboidéá, albá, nodulis acutis, spinulisque horridá, anfractu basali spinis longioribus coronatá; labro crenulato intus altè striato, striis distantibus; umbilico magno; spirá productá: long.  $1\frac{1}{2}$ , lat.  $\frac{7}{8}$  poll.*

*Hab. ad Sanctam Elenam.*

Found on a rocky bed at the depth of twelve fathoms.—W. J. B.

#### Genus TYPHIS, De Montfort.

De Montfort, after referring to *Murex pungens*, Brander, as the type of this genus, adds: "La coquille qui nous sert de type pour l'établissement de ce genre n'est encore bien connue qu'à l'état fossile; quoique Bruguière dise très-positivement que son analogue marin existoit à Londres dans le cabinet du Docteur Hunter, fait que malheureusement nous ne pouvons point vérifier, mais que cependant nous devons adopter d'après les profondes connoissances et la perspicacité qui distinguèrent si éminemment ce conchyliologue français." In the *Dictionnaire des Sciences Naturelles* the statement of Bruguière is noticed; but M. Blainville observes, that he was not fortunate enough to find the shell. I have examined the Hunterian Collection in London, with the assistance of Mr. Clift and Mr. Owen, with no better success. It may, perhaps, have been in the cabinet of Dr. William Hunter, now at Glasgow; but on consulting Captain Laskey's 'General Account of the Hunterian Museum' there, I find no mention of the shell. Be this as it may, I am now enabled to lay before the Zoological Society five recent species of *Typhis*; having been led to the inquiry by finding two species in Mr. Cuming's collection, and having been supplied with one from this Society's Museum, and with two by the liberality of Mr. James Sowerby and Mr. George Sowerby.—W. J. B.

**TYPHIS CUMINGII.** *Typhis testá subpyriformi, subventricosá, quadrifariam varicosá, spinosá, varicibus spiram versus in spinam cavam desinentibus, longitudinaliter substriatá; aperturá integrá, ovatá; labri limbo externo subspinoso; canali longissimá, gracillimá, subrecurvá: long.  $1\frac{1}{2}$ , lat.  $\frac{5}{8}$  poll.*

Mus. Cuming.

*Hab. ad Caraccas.*

A single specimen was found by Mr. Cuming in sandy mud at the depth of seven fathoms.—W. J. B.

**TYPHIS CORONATUS.** *Typhis testá pyriformi, albida, subventricosa, quinquefariam varicosa, varicibus magnis, rotundatis, in spinam subtilem subincurvam spiram versus desinentibus, transversim substriatá, striis subremotis; canali elongatá: long. 1, lat.  $\frac{1}{2}$  poll.*

*Hab.* ad Colombiam Occidentalem. (Salango.)

*Mus.* Cuming.

The short, sharp, incurved spine which forms the termination of each *varix* overhangs that part of the spire which is immediately opposite to it. The suture of the spire between each *varix* is deeply excavated into a succession of little pits or wells. Found by Mr. Cuming in sandy mud at the depth of six fathoms.—W. J. B.

**TYPHIS BELCHERI.** *Typhis testá subovatá, albida, ventricosa, transversim substriatá, tubulis recurvis, quinquefariam varicosa, varicibus laminatis sublaciniatis in frondem crispam spiram versus desinentibus; canali elongatá, subrecurvá, gracili: long.  $\frac{1}{2}$ , lat.  $\frac{1}{2}$  poll.*

*Hab.* ad Africam Occidentalem. (Cape Blanco.)

*Mus.* Zool. Soc.

Found by Captain Belcher, R N., whose name this species, which approaches nearly to *Typhis frondosus* (J. Sowerby), bears. *Typhis frondosus* is a Grignon fossil.—W. J. B.

**TYPHIS SOWERBII.** *Typhis testá subovatá, albida, quadri-vel quinquefariam varicosa, varicibus laminatis subfrondentibus; tubulis subrectis; canali brevi, subrecurvá, gracili: long.  $\frac{2}{3}$ , lat.  $\frac{1}{2}$  poll.*

*Hab.* in Mari Mediterraneo.

*Mus.* Jac. Sowerby, Georg. Sowerby.

Named after Mr. James Sowerby, who kindly placed at my disposal his fine collection of fossil species, and who also furnished me with the most perfect individual which I have seen of *Typhis Sowerbii*.—W. J. B.

**TYPHIS PINNATUS.** *Typhis testá alba, fusiformi, trifariam pinnatá, transversim striatá, striis frequentibus, interstitiis punctatis; labri limbo crenulato: long.  $\frac{3}{4}$ , lat.  $\frac{2}{3}$  poll.*

*Hab.*

*Mus.* Jac. Sowerby.

*Obs.* The sides of the canal in the specimen are broken, but the canal does not appear to have been entire close to the aperture, though the sides of it approximate there very nearly.—W. J. B.

The fossil analogues of this genus have been hitherto found in the London clay, calcaire grossier, and subapennine beds.—W. J. B.

#### Genus RANELLA.

**RANELLA VENTRICOZA.** *Ran. testá ovato-acutá ventricosissima, tuberculatá, transversim striatá, subgranosa, albida, fasciis angustis castaneis; aperturá alba, crenatá: long.  $3\frac{1}{2}$ , lat.  $2\frac{1}{4}$  poll.*

*Hab.* ad Peruviam. (Bay of Callao.)

*Obs.* Tubercula seriatim disposita, elevata, magna, subacuta, ut plurimum serie unicâ in quoque anfractu, ultimo excepto.

Found in sandy mud from seven to ten fathoms.—W. J. B.

**RANELLA NITIDA.** *Ran. testâ subrhomboideâ, valdè depressâ, transversim tuberculato-striatâ, (tuberculis subacutis), nigro-purpureâ; interdum albo fasciatâ, varicibus latis, pinnatis, laciniatis, albis; columellâ lævi; labri limbo intùs denticulato; canali subelongatâ: long. 1, lat.  $\frac{2}{3}$  poll.*

*Hab.* ad Columbianam Occidentalem. (Bay of Caraccas.)

Found under stones in the bay.—W. J. B.

**RANELLA MURICIFORMIS.** *Ran. testâ subpyriformi, fuscâ, fulvâ vel sordidè albâ, transversim striatâ (striis subremotis), varicibus pinnatis, latiusculis, albidis, interstitialiter tuberculatâ vel subfoliatâ; columellâ lævi; labri limbo intùs denticulato; canali elongatâ, subrecurvâ: long.  $1\frac{1}{2}$ , lat.  $\frac{2}{3}$  poll.*

*Hab.* ad Columbianam Occidentalem. (Bay of Montija.)

This species, which approaches very closely to *Murex*, was found in loose gravel at the depth of seven fathoms.—W. J. B.

**RANELLA AFFINIS.** *Ran. testâ pyramidali, depressâ, ponderosâ, striis transversis frequentibus tuberculato-granosis, albido-rubente maculis fasciisque castaneis; columellâ valdè rugosâ; labri crenulati, subfimbriati limbo intùs dentato: long.  $2\frac{1}{2}$ , lat.  $1\frac{1}{2}$  poll.*

*Hab.* in Oceano Pacifico. (Annaa.)

This differs from *Ran. granifera* of Lamarck in having a much more ponderous shell, with its *varices* much thicker and wider in proportion, and the border of the outer lip much wider. It is also much more depressed and broader in proportion to its length.

Found on the reef.—W. J. B.

**RANELLA CÆLATA.** *Ran. testâ pyramidali, subponderosâ, castanè, costis striisque transversis granoso-moniliformibus, nigricantibus; aperturâ rugoso-granosâ, fulvâ, dentibus rugisque albidis; labri limbo fimbriato, lato, fusco, albo radiato: long.  $1\frac{1}{2}$ , lat.  $1\frac{1}{3}$  poll.*

*Hab.* ad Panamam.

This handsome species reminds the observer of some of the antique carved ornaments in oak and chestnut. The *apex* of the spire is generally eroded.

Found under stones.—W. J. B.

**RANELLA TUBERCVLATA.** *Ran. testâ pyramidali, seriatim tuberculatâ, transversim striatâ, subfulvâ albo fasciatâ, tuberculis subæqualibus nigricantibus; aperturâ albidâ; columellâ subrugosâ; labri limbo intùs dentato, dentibus subremotis: long.  $1\frac{1}{2}$ , lat. 1 poll.*

*Hab.* in Oceano Pacifico. (Taheite.)

Only one individual of this pretty species was found, and that was on the reef.—W. J. B.

Mr. Owen exhibited a preparation of the mammary gland of *Echidna Hystrix*, Cuv.; and read the following Notes:—

“It is well known that the idea of constituting a new class for the

reception of the *Monotrematous Quadrupeds* of New Holland, and of separating them altogether from the *Mammalia*, arose chiefly from the supposition of the total absence of a mammary apparatus in them. This circumstance was at the same time regarded as a strong proof of an essential difference in their mode of producing the young : and it was inferred that the latter, in the absence of the lacteal nourishment, must have derived the materials necessary for their development from some store of nutriment analogous to the yelk of the embryo in the oviparous and ovoviviparous tribes.

“ But the converse of this proposition, that a mammiferous animal must necessarily be viviparous, by no means follows. The development of an animal may be carried on to a certain degree either in the oviparous or ovoviviparous mode of generation, and yet after incubation or birth, additional store of nutriment may be required from the parent in order that the processes of organization may be completed to the extent necessary to enable the young animal to gain a subsistence by its own exertions. Indeed, when we consider how long, in many of the orders of *Birds*, the unfledged young are totally dependent on their parent for their nutriment ; that this nutriment, though in general foreign matter, collected with much industry and frequently at great risk, yet is sometimes, as in the *Pigeon*, a secretion from the parent's body ; and when we further reflect that generation in the *Marsupialia* is essentially of the ovoviviparous kind, —we shall have no difficulty in reconciling ourselves to the consideration of the *Monotremata* as oviparous or ovoviviparous, and at the same time as mammiferous, animals.

“ With respect to the *Ornithorhynchus*, it seems incontrovertible that the apparatus discovered by Meckel is truly mammary, and executes the important function of providing the lacteal nutriment for the young. Nevertheless, this discovery leaves us just as much in the dark as we were before respecting its mode of generation, and equally dependent on the exertions of those naturalists who may have the good fortune of observing facts in the living animal respecting this most interesting and important subject. It is obvious also, that the discovery of the mammary glands in the other monotrematous genus, although highly confirmatory of their accordance with the rest of the *Mammalia* in the characteristic function of lactation, yet by no means renders less necessary an unremitting attention to every habit of the living animal which may elucidate the processes of generation.

“ In the meanwhile, however, it affords me much pleasure to be able to lay before the Committee preparations of the mammary glands from the *Echidna Hystrix*, which, as the following description will show, afford an additional instance of the close affinity subsisting between it and *Ornithorhynchus*, notwithstanding the great dissimilarity existing between them in external form and in the nature of their integuments. These glands were discovered in a female specimen not quite arrived at maturity, and which therefore in all probability had never been impregnated. They are consequently very small, as compared with those which have been observed in *Ornithorhynchus*, but are precisely analogous in number, form, composi-



tion, situation, and mode of termination on the outer surface of the integument.

“The terminal ducts, which are fewer in number than in *Ornithorhynchus*, are similarly grouped together, so as to form a small oval *areola*, 3 lines in the greater and 2 in the lesser diameter. Each *areola* is situated half an inch from the mesial line, and  $3\frac{1}{2}$  inches from the orifice of the vestibule of the *cloaca*. They are much more readily discovered than in *Ornithorhynchus*, in consequence of the hairs in the *Echidna* being scantier and stiffer, so that the orifices for their transmission are larger than the orifices of the ducts, which is the reverse of what is observed in *Ornithorhynchus*: this, however, may not be the case in the fully developed gland. The *areolæ* are also slightly raised above the surrounding integument, but there is no vascular *rete* or erectile tissue discoverable at these parts. The lactiferous ducts, before penetrating the *corium*, pass between the fibres of a dense *panniculus carnosus*, which is here, as in *Ornithorhynchus*, interposed between the glands and the integument. The number of the ducts is about sixty. The lobules of the gland are proportionally shorter and broader. Their texture under the lens appears the same as in *Ornithorhynchus*; that is to say, minutely cellular, and in neither instance consisting of simple *cæca* or elongated follicles. From their small size in the *Echidna* they could not be injected.

“The smallest size which these glands have presented in *Ornithorhynchus* is about one third larger than those in the *Echidna* now exhibited; in this state the ovary and uterine tubes were small, and apparently in a state of quiescence. When the ovary is fully developed, and the uterine tubes correspondently enlarged, the mammary glands are about 2 inches in the long, and 1 in the short, diameter. When the ovary is found large but flaccid, and apparently after having shed its contents; and when the uterine tubes are still large; then the mammary glands exhibit their greatest development, equalling 5 inches in the long, and 3 in the short diameter, and being nearly half an inch in thickness. In this state they may be readily injected; when the lactiferous ducts, to the number of about one hundred and fifty, are seen to terminate in a small oval *areola* on the external surface, not on any raised eminence, but on the level integument, from which the hairs grow as freely as in the surrounding parts. Nevertheless, from the glands being confined to the female, and exhibiting by their variation of size that their function is temporary, and as the period of their greatest activity is shown by the state of the uterine organs to be subsequent to the development and expulsion of the *fœtus*, they must be regarded as being true mammary glands, destined to provide nourishment for the newly-born animal. The peculiar development of the *panniculus carnosus* over the ventral region, both in *Echidna* and *Ornithorhynchus*, will assist in explaining the mode in which the lacteal secretion is conveyed from the parent to the offspring. The gland lying between this muscle and the expanded cartilages of the ribs and the marsupial bones, is subject to compression, and the young animal need only apply its soft and flexible lips to the *areola* in order to receive the secretion.”

November 13, 1832.

## Lieutenant-Colonel Sykes in the Chair.

A numerous collection of *Fishes* was exhibited which had been formed in Ceylon by Dr. Sibbald, Corr. Memb. Z.S., and had been presented by him to the Society. It included upwards of seventy species, among which were types of various genera not previously contained in the Society's Museum. They were severally brought under the notice of the Committee by Mr. Bennett, who dwelt particularly on those which he regarded as new to science. They are as follow:

DIACOPE SPILURA. *Diac. vittis rufis latis parallelis utrinque quinque, quarum secunda tertiaque oculum attingentibus, quarta axillam, quinta commissuram oris; labio inferiore aurantiaco; macula magna nigra ante basin pinnae caudalis; pinnae dorsalis parte spinosa superne inferneque anguste nigrescenti marginata.*

D.  $1\frac{1}{2}$ . A.  $\frac{3}{8}$ .

*Diac. octolineatae*, &c. affinis. Differt a speciebus adhuc cognitibus numero radiorum et pictura. Dens angularis antice utrinque in maxilla superiore maximus; inter hos duo majores; in maxilla inferiore dentes duo laterales utrinque majores.

DIAGRAMMA SIBBALDI. *Diag. albescens, fasciis tribus longitudinalibus, (quarum media lata postice ramosa per pinnam caudalem mediam excurrente, superiore latissima basin pinnae dorsalis includente antice posticeque interrupta, inferiore mediocri simplice,) naso, macula suborbitali, fronte, macula ante basin pinnae pectoralis, pinna pectorali praeter marginem superiorem, plaga triangulari ad basin pinnae analis, aliisque duabus submarginalibus pinnae caudalis, castaneo-nigris; infra et ad apicem pinnae analis flavus.*

D.  $1\frac{3}{8}$ . A.  $\frac{3}{8}$ .

CHÆTODON XANTHOCEPHALUS. *Chæt. suborbicularis: pinnis rotundatis: pallide brunnescentibus; fasciis oculari haud ultra oculum extensa; lineis transversis quinque vel sex subfractis parum saturatioribus; capite (praeter opercula strigamque argenteam infra-ocularem,) gula, pectore, pinnis ventralibus, linedque post-operculari per basin pinnae pectoralis ducta, flavis; pinnarum dorsalis analisque parte molli externe nigrescente flavo fimbriata, basin versus flavescens lined sanguinea interne cincta; cauda pinnaeque caudali superne inferneque flavis, hac quadrata hyalina brunneo ad radios lineata.*

D.  $1\frac{1}{8}$ . A.  $\frac{3}{5}$ .

Striga prima a radio spinoso quarto pinnae dorsalis pone axillam decurrit; hanc sequuntur strigae tres quatuorve ventrem tantum versus ibique indistinctae; secunda a basi radii spinosi sexti; tertia oc-

tavi; quarta decimi; quinta duodecimi; inter secundam et tertiam dorsum versus lineæ transversæ aliquot indistinctæ brevissimæ.

**CILETODON GUTTATISSIMUS.** *Chæt. latè ovatus: pinnis verticalibus posticè rotundatis, caudali quadratâ: fasciâ oculari nigrâ flavo marginatâ: lutescens, squamis corporis singulis (præter pectoris) guttâ nigrâ notatis lineas interruptas longitudinales efformantibus; pinnis dorsali analique nigrescentibus, extrorsum saturatoribus, flavescenti latè fimbriatis, illius parte molli obscurè nigro guttatâ, hujus nigro punctatissimâ; pinne caudalis basi flavâ immaculatâ, medio nigro lunatim fasciato, apice hyalino.*

D.  $\frac{1}{2}$ . A.  $\frac{3}{5}$ .

Affinis videtur *Chæt. miliari*, Quoy & Gaim. Differt numero radiorum spinosorum pinne dorsalis atque coloribus, præsertim pinnarum et maximè pinne caudalis.

**HOLACANTHUS XANTHURUS.** *Hol. latè ovatus: pinnis verticalibus posticè rotundatis: aculeo præoperculari longo: olivaceo-brunneus, squamis singulis lunulâ lutescenti notatis, pinnis dorsali analique saturatoribus albo fimbriatis; infrâ flavescens, pinnis ventralibus maculâque utrinque labii inferioris concoloribus; pinna caudali osseque suprascapulari flavis, illius apice hyalescente.*

D.  $\frac{1}{8}$ . A.  $\frac{3}{18}$ .

**ACANTHURUS LEUCOSTERNON.** *Ac. pinna caudali lunatâ: cæruleo-nigrescens; capite nigro; fræno maxillæ inferioris ultra commissuras oris supernè ducto gulâque ad basin pinnarum pectoralium extensâ niveis; maculâ elongatâ transversâ post-operculari albescente; pinnis verticalibus ventralibusque rufescentibus lined nigrescente marginatis alboque fimbriatis; pinne caudalis fasciâ basali, alterâque apicali latè lunatâ, marginibusque nigris; pectorali subhyalind externè nigrescente, basi tantum axillâque flavis.*

D.  $\frac{3}{5}$ . A.  $\frac{3}{17}$ .

**JULIS ZEYLONICUS.** *Jul. pinna caudali rotundatâ: lutescens, capite plumbeo, aurantiaco rivulato; pinnis verticalibus, vittâ ad basin pinne dorsalis cæruleo infernè marginatâ, vittâ interruptâ apud lineam lateralem ductâ, fasciâ longitudinali laterali supernè infernèque cæruleo marginatâ, ramis inde plurimis abbreviatis ventrem versus ductis, linedque obliquâ per basin pinne pectoralis ad ventrem extensâ, aurantiacis; pinna dorsali ad basin lineâ crassâ brevi obliquâ inter singulos radios, secundâ in medio ad radios partis mollis, guttâque versus apicem, cæruleis notatâ; pinne analis vittâ mediâ alterâque subapicali, pinneque caudalis rivulis subinterruptis verticalibus tribus, cæruleis.*

D.  $\frac{3}{17}$ . A.  $\frac{3}{17}$ .

Ad commissuram oris utrinque dentes majores duo approximati; in maxillâ superiore anticè dentes maximi duo, duos majores anteriores maxillæ inferioris inter se (ore clauso) recipientes.

**JULIS PORPHYROCEPHALA.** *Jul. pinna caudali lunatâ: flavescenti-rufescens, lineolis saturatoribus transversis interruptis ubique no-*

tatus; capite, maculâ fissâ dimidium superiorem pinnæ pectoralis tegente, lineâ latâ intra margines superiorem et inferiorem pinnæ caudalis, vittâ baseos pinnæ analis, vittâque indistinctâ versus apicem pinnæ dorsalis partis mollis, purpureo-nigris; pectoris vittis quinque, quarum externis mediâque lutescentibus, intermediis saturatè rubris; pinnâ dorsali ad basin cum corpore concolore, ad apicem flavescenti fimbriatâ; anali ad apicem caudalique flavis; verticis lined longitudinali mentique fasciis duabus lutescentibus.

D.  $\frac{8}{3}$ . A.  $\frac{2}{1}$ .

*Julis lutescentem* (*Labrus lutescens*, Sol. MSS.) quodammodo refert, numerisque radiorum cum illo convenit; sed differt coloribus et maximè capitis. Dentium in utrâque maxillâ duo antichi majores, sequentes gradatim decrescentes.

LEUCISCUS ZEYLONICUS. *Leuc. elongatus, compressus*: pinnâ dorsali medid, supra pinnas ventrales positâ, radio ultimo subelongato; anali brevi; caudali latè bifurcâ: rostro acuto; ore angulato: lined laterali rectâ paullò supra medium ductâ; argenteus; squamis minimis.

D. 14. A. 9. V. 11. P. 13. C. 18.

TETRODON ARGYROPLEURA. *Tetr. capite oblongo*: pinnâ caudali bilobâ: dorso ventreque hispidis: suprâ et ad latera nigrescens, infrâ albus; capite dorsoque supernè nigro guttulis; fasciâ latâ longitudinali laterum mediand maculâque præorbitali argenteis; pinnis dorsali analique anticè præaltis.

D. 12. A. 11. P. 18. C. 12.

Specimens were exhibited of numerous *Fishes* collected at the Mauritius by Charles Telfair, Esq., Corr. Memb. Z.S., and presented by him to the Society. Among them Mr. Bennett pointed out as apparently hitherto undescribed the two following species;

ATHERINA PUNCTATA. *Ath. flavescens, vittâ laterali mediâ latâ argented; squamis dorsalibus ocellis minutissimis numerosis pupillâ ceruleâ iride nigrâ in lunulis plerumque dispositis.*

D. 5, 11. A. 16.

JULIS STRIGIVENTER. *Jul. pinnâ caudali rotundatâ: ovato-lanceolatus, capite acuto*: suprâ brunneus? guttis saturatoribus; infrâ pallidior, lineis longitudinalibus argenteis utrinque sex; capite dimidiato, supernè flavescenti-brunneo, infernè argenteo; pinnis hyalinis, dorsali analique puncto unico nigro prope basin radii mollis penultimi notatis.

D.  $\frac{2}{1}$ . A.  $\frac{2}{6}$ .

The new species of *Cowries* contained in the collection formed by Mr. Cuming in the Southern Pacific Ocean were exhibited and characterized by Mr. Gray.

#### Genus CYPRÆA.

CYPRÆA GOODALLII. *Cyp. testâ ovato-oblongâ, albâ, dorso obscure brunneo punctato maculâque subtetragonâ brunneâ punctis rotundatis albis variegatâ notato; basi planiusculâ; margine*



*subincrassatâ; latere dextro subangulato extremitatibusque minutè brunneo punctatis; ore lineari, sublato; dentibus numerosis submagnis, labii interni minoribus, externi ad bases medium extensis; columellæ parte anticâ subimpressâ, latè porcatâ: long. 6½, lat. 3 lin.*

*Hab.* in Oceano Pacifico. (Reefs of Elizabeth Island.)

This shell much resembles the small varieties of *Cyp. cribraria*, but the brown occupies only the centre of the back, and the teeth are more numerous than in that species, and not half the size.—  
J. E. G.

✓ *CYPRÆA PACIFICA.* *Cyp. testâ oblongâ; porcis transversis acutis subdistantibus; lineâ dorsali angustâ impressâ; roseo-albidâ, punctis rufis brunneisve suffusâ, maculisque duabus irregularibus subtetragonis alternantibus ad utrumque latus lineæ dorsalis; margine extremitates versus subproductâ, rosed; basi maculâque suprâ extremitatem utramque albis; ore lineari, posticè abruptè recurvo; labio externo convexo, baseos dimidium latitudine æquante; columellæ dimidio antico concavo: long. 4, lat. 2½ lin.*

*Jun. testâ hyalinâ, flavescente; ore albido.*

*Hab.* ad Insulas Gallapagos, sub lapidibus.

Very like *Cyp. suffusa*, but the four dorsal spots alternate, and the break of the mouth is more sharply recurved, and has a larger tubercle before it; the outer lip also is rather broader.—J. E. G.

✓ *CYPRÆA RUBESCENS.* *Cyp. testâ ovato-subglobosâ, pallidè rufescenti-brunneâ, tenui, pellucidâ, immaculatâ; porcis transversis angustis, acutis, subapproximatis, per lineam dorsalem continuis; ore lineari, subcurvâ; labio externo angusto, subinflexo; columellæ dimidio antico concavo, margine internâ acutâ denticulatâ: long. 4, lat. 2½ lin.*

*Jun. testâ lævi, hyalinâ, rosed.*

*Hab.* ad Insulas Gallapagos, sub lapidibus.

Very like small spotless specimens of *Cyp. Pediculus*, but darker coloured, and having the outer lip one half only of the breadth in that species; there are also one or two more ribs on the inner lip.—J. E. G.

✓ *CYPRÆA MAUGERI.* *Cyp. testâ ovato-oblongâ, pellucidâ, rosed, maculis tribus subtetragonis saturatoribus per dorsum medium dispositis; porcis transversis subapproximatis, angustissimis, acutis; lineâ dorsali impressâ angustâ indistinctâ; basi convexâ; margine externâ subincrassatâ; ore lineari, anticè parum latiore; labio externo latitudinis baseos dimidium subæquante; columelle dimidio antico concavo sulcato: long. 8, lat. 5½ lin.*

*Var. minor, crassior, lineâ dorsali impressâ distinctâ: long 6, lat. 4½ lin.*

*Hab.* ad Insulas Gallapagos, sub lapidibus.

Intermediate between *Cyp. Australis* and *Cyp. rosea*. It resembles the former in shape, and in the structure of the mouth and lips; and the latter in size, ribs, and colour, having, however, the addition of three dark spots along the middle of the back.—J. E. G.

*CYPRÆA CUMINGII:* *Cyp. testâ ovato-oblongâ, pallidè flavescenti-brunneâ, maculis albis brunneo angustè cinctis; lineâ dorsali*

*angustá laterali; basi subplaná suprù labium internum productá, atque in medio labii externi extante; margine albá, brunneo superne punctatá, ad labium externum abruptè productá; ore angusto lineari, dentibus marginalibus minimis; labio columellari sublævi, per totam longitudinem concavá; labii externi extremitatibus internè declivibus sulcatis: long.  $6\frac{1}{2}$ , lat.  $3\frac{1}{2}$  lin.*

*Hab.* ad Insulas Societatis. (Raie-tea.)

This species approaches in form most nearly to *Cyp. Margarita*, but the base is flatter and smooth, and the edge of the outer margin is entire: it also differs in the pale spots being larger, and surrounded by a dark ring. From the spotted margined variety of *Cyp. cribraria* it differs in the form of the outer margin, in having much smaller teeth; and in the columellar lip being more concave.—J. E. G.

*CYPRÆA CONTAMINATA.* *Cyp. testá ovato-ventricosá, cinereo-albá, fasciis tribus latis subsaturatoribus, fulvo obscure punctatá; basi convexá, brunneo-nigro punctatá; margine externá extremitatibusque acutis; ore lineari, dentibus subparvis numerosis, labii interni minoribus, externi ad baseos medium extensis; columellá anticè planá, uni- vel bi-plicatá: long. 6, lat. 3 lin.*

*Hab.* in Oceano Pacifico.

This species, described by Mr. Gray from his own collection, is like *Cyp. Goodallii*, but is more ventricose; has no brown dorsal spot dotted with white; is spotted on the base; and has the *columella* less concave and less ridged in front.—J. E. G.

*CYPRÆA BRODERIPII.* *Cyp. testá ovatá, subventricosá, lacteá, fasciis interruptis roseis; dorso brunneo reticulato, maculis inæqualibus rotundatis; lateribus haud arenosis, maculis convexis inæqualibus margaritaceis; basi convexá, brunnea, maculis rotundatis saturatoribus, suprù obscure albo punctatis; lined dorsali continuá, sublatá, laterali; ore sublato, dentibus albis, labii externi magnis distantibus, interni magis approximatis numerosisque, et ad baseos marginem paulum extensis; columellæ concavitate anticá brevi, profundá, plicatá: long.  $2\frac{3}{4}$ , lat.  $1\frac{3}{4}$ , alt.  $1\frac{5}{7}$  poll.*

*Hab.* in Oceano Indico. (Madagascar.)

This shell, which is one of the most beautiful of this fine genus, agrees with *Cyp. Dama* in almost every character, and especially in the sides not being sandy, and in the dorsal line being lateral; but it differs from that species in being larger, in the back being of a much brighter colour and having more numerous spots, and in the sides being ornamented with distinct unequal-sized white spots. These characters are all of so little importance in a genus so variable in regard to colour and size as the *Cowries*, that Mr. Gray would have been disposed to regard it as only a very fine specimen of *Cyp. Dama*, but for the shortness and depth of the concavity on the front of the *columella*, and the rather greater production of the teeth of the inner lip over the base. In *Cyp. Broderipii* the concavity extends the length of five folds only. In *Cyp. Dama* it extends to double that number.—J. E. G.

A skull of the *Capybara*, *Hydrochærus Capybara*, Erxl., was exhibited, and Mr. Owen read some Notes thereon. After adverting in terms of high eulogium to the genius of Cuvier, as shown by his detection of concealed affinities among the animal kingdom, he observed that "perhaps the most extraordinary instance of the enlarged views which result from unwearied observation of the internal structure of animals is afforded by Cuvier's bold enunciation of the affinity of the *Elephant* to that order of the *Mammalia* which contains the most minute forms of the class." Mr. Owen dwelt in succession on each of the evidences adduced in the 'Ossemens Fossiles' in support of this affinity, and then proceeded as follows :

"The truth of these observations was very strongly impressed on my mind when examining the *cranium* of a huge *Rodent*, which Mr. De la Fons obligingly left with me for the purposes of comparison, and for the exhibition of which this evening the Committee is indebted to that gentleman. The person from whom he procured it assured him that it was from Africa; but this is only another of the numerous instances of the little confidence to be placed in the assertions of ignorant salesmen, since the specimen presents all the characters of a genus exclusively South American, *viz.*, the *Capybara*, *Hydrochærus*, Erxl. It has every appearance of having belonged to an old animal, and is much larger than a *cranium* in the museum of the Royal College of Surgeons, which, from its dentition, I had always regarded as having appertained to an adult specimen. Nevertheless, although the *cranium* belonging to Mr. De la Fons is wholly deficient of the teeth, as well as wanting the lower jaw, I have no doubt, from the perfect accordance between the two specimens in the forms and connexions of the several bones, that they are identical as to species.

"There is, however, a difference exhibited in the *alveolæ* of the last molar tooth in Mr. De la Fons's specimen, which, although by no means sufficient for the founding of a specific difference, is important, as evidencing an additional analogy between the *molars* of the *Rodent* and those of the *Elephant*; *viz.*, that the number of transverse *laminæ* increases as the jaw enlarges with age, the whole number not coming into use at once.

"In the *Capybara*, the posterior grinders, like those of the *Elephant*, present a greater number of component *laminæ* than the anterior ones which are of earlier formation. Those of the upper jaw, according to the figure and description in the 'Ossemens Fossiles' (v. pl. 1. p. 24.) are composed of eleven *laminæ*, of which all but the first (which is notched externally) are simple. In the figure too, it is worthy of observation that the last or eleventh *lamina* is imperfect, and exhibits a construction analogous to the imperfectly-formed *laminæ* or denticles in the *Elephant's* grinder, *viz.*, a division into component columns. In the work of M. Fred. Cuvier 'Sur les Dents des Mammifères,' the number of *laminæ* in the last grinder of the upper jaw of the *Capybara* is stated as "onze ou douze;" but eleven only are exhibited in the figure, and we may suppose therefore the doubt as to the precise number to be founded on uncertainty as to the pro-

priety of considering the first deeply notched *lamina* as single or double.

“ In the *cranium* in the College Museum the number of *laminæ* is twelve, the forked one being regarded as single. In Mr. De la Fons’s specimen the *alveolæ* clearly indicate that the number of *laminæ* of the last molar had been thirteen, with the rudiment of a fourteenth; the extent of the grinding surface is, however, proportionally larger than would result from the additional *laminæ* alone; for as these *laminæ* do not cease to grow so long as the animal lives, they increase in thickness as age advances.

“ The following are the admeasurements of the two *crania* alluded to, compared with the indications to be derived from Cuvier’s figure :

	<i>De la Fons.</i>		<i>College.</i>		<i>Cuvier.</i>	
	Inches.	Lines.	Inches.	Lines.	Inches.	Lines.
Total length of the <i>cranium</i> . . . . .	10	0	7	4		
Total breadth of <i>ditto</i> (taken from the outsides of the <i>zygomata</i> ) ..	5	4	3	10		
Total breadth of the <i>occiput</i> . . . . .	3	1	2	4½		
Length of the molar surface, upper jaw . . . . .	3	6	2	6	2	6
Length of the last <i>alveola</i> , ditto ..	1	11	1	5	1	4½
Depth of ditto . . . . .	1	7	1	1		

“ The depth of the last *alveola* is greatest at its anterior part; being the reverse of what exists in the *Elephant*, where in consequence of the formation of fangs, the growth of the tooth is arrested, and absorption of the roots takes place as the anterior *laminæ* are worn down.”



November 27, 1832.

Richard Owen, Esq., in the Chair.

A letter was read, addressed to the Secretary of the Society by W. Smith, Esq., Secretary of the Hudson's Bay Company. It referred to an *Arctic Fox*, *Canis lagopus*, Linn., recently presented by the Hudson's Bay Company to the Society. This individual, which is now living in the Society's menagerie, was caught, as Capt. Hanwell of the Company's ship Prince of Wales informed him, "on the ice, on the 18th of August, in lat.  $56^{\circ} 54'$  N., long.  $83^{\circ} 30'$  W., about one hundred miles from the land: the Indians who visited Moose Factory called it *Mistatarganish*, and said that it was a cross between a *Fox* and some other animal, probably a *Wolf*."

At the same time with the *Arctic Fox*, the Hudson's Bay Company presented to the Society a living *Pekan* or *Fisher Martin*, *Mustela Canadensis*, Schreb.

A specimen was exhibited of the *Falco rufipes*, Bechst., a bird of exceedingly rare occurrence in Britain. It was shot near Doncaster, and is preserved in the collection of W. H. Rudstone Read, Esq., by whom it was communicated for exhibition to the Committee.

At the request of the Chairman, Mr. Gould exhibited a very extensive collection of *Bird skins*, from the Orkneys, and pointed out particularly those which he regarded as most interesting, either on account of their rarity or the state of their plumage. They included beautiful specimens of the *Ivory Gull*, *Larus eburneus*, Temm., and of the *King Duck*, *Somateria spectabilis*, Steph., as well as of other rare species. In many of them, as in the *black Guillemot*, *Uria Troile*, and *red-breasted Merganser*, *Mergus Serrator*, the series was complete, commencing from the egg, and proceeding to the adult plumage of the birds, which were generally exhibited both in their summer and winter dress. Nearly the whole of them were accompanied by specimens of their eggs.

The collection contained individuals of all the species of *parasitic Gull* hitherto discovered on our coasts, and Mr. Gould remarked on the differences existing between them, which he illustrated by reference to the specimens on the table. The species are *Lestris Cataractes*, *Lest. Pomarhinus*, *Lest. Richardsonii*, Swains., and *Lest. parasiticus*; the latter being now for the first time added to the British Fauna, the bird previously described by English writers under that name being identical with the species described by Mr. Swainson in the 'Fauna Boreali-Americana' as the *Lestris Richardsonii*.

[No. XXV.] ZOOLOGICAL SOCIETY. PROCEEDINGS OF THE COMM. OF SCIENCE.

A paper was read, containing "a brief account of a particular function of the nervous system," in which Dr. Marshall Hall detailed a series of experiments tending to prove the existence of a source of muscular action distinct from all those hitherto noticed by physiologists: viz. volition, the irritation of the motor nerves in some part of their origin or course, or that of the muscles themselves. The peculiarity of this motion he stated to consist in its being excited "by irritation of the extreme portion of the sentient nerves, whence the impression is conveyed through the corresponding portion of brain and spinal marrow as a centre, to the extremities of the motor nerves."

The animals experimented on were Salamanders, Frogs and Turtles. In the first of these the tail, entirely separated from the body, moved as in the living animal, on being excited by the point of a needle passed lightly over its surface. The motion ceased on destroying the spinal marrow within the caudal *vertebræ*. The head of a frog having been removed, and the spine divided between the third and fourth *vertebræ*, an eye of the separated head was touched: it was retracted and the eyelid closed, a similar movement being observed in the other eye. On removing the brain these phænomena ceased. On pinching the skin or the toe of one of the anterior extremities, the whole of this portion of the animal moved. On destroying the spinal marrow this phænomenon also ceased. Precisely similar effects were observed on pinching the skin or toe of one of the posterior extremities; and on removing the last portion of the spinal marrow this phænomenon ceased. The head of the turtle continues to move long after its separation from the body: on pinching the eyelid it is forcibly closed; the mouth is opened and the membrane expanded under the lower jaw descends as in respiration. On pinching any part of the skin of the body, extremities, or tail, the animal moves. The posterior extremities and tail being separated together, the former were immovable; the latter moved on the application of the flame of a lighted taper to the skin. Those extremities had no connexion with the spinal marrow. All movement ceased in the tail also on withdrawing the spinal marrow from its canal.

"Three things," Dr. Hall observes, "are plain from these observations: 1. that the nerves of sensibility are impressible in portions of an animal separated from the rest; in the head, in the upper part of the trunk, in the lower part of the trunk: 2. that motions similar to voluntary motions follow these impressions made upon the sentient nerves: and 3. that the presence of the spinal marrow is essential as the central and cementing link between the sentient and motor nerves."

Dr. Hall then proceeded to adduce another series of experiments still more conclusive. If a frog be made to swallow a watery solution of opium, it becomes affected with symptoms very similar to those of tetanus and hydrophobia; the body and limbs become rigidly extended; but besides this state of spasm, the cutaneous nerves become extremely susceptible, and the motor nerves extremely excitative; a shake, a touch, a breath of air even, induces spasmodic movements of the body and limbs. A frog made tetanic by opium

was decapitated and divided just below the third *vertebra*. The eyes continued drawn in, and no motion could be detected on irritating the eye, eyelid, or skin. But both the anterior and posterior parts remained tetanic as before. The limbs were moved in the same spasmodic manner by the same slight impressions. The exalted condition of the function of the sentient and motor nerves continued in each part. All was changed on removing the brain and the respective portions of spinal marrow. The eyes were immovable, but no longer retracted; the muscles of the limbs were flaccid, and there was no evidence of irritability in the sentient nerves.

"These experiments," Dr. Hall continued, "appear to me to establish a property or function of the nervous system,—of the sentient and motor nerves,—distinct from sensation and voluntary or instinctive motion. However doubtful this conclusion might appear in reference to the first series of experiments upon the animal in its natural state, it can scarcely admit of doubt when we compare with them the phenomena observed in the frog made tetanic by opium. In this case the contraction of the muscles is plainly *not* the result of volition; and it obeys the same laws, in regard to its continuance and extinction, as the similar function or property in its natural and unexalted state. Neither does it arise from the irritation of the motor nerves, or muscular fibre; for it ceases on removing the spinal marrow, while the property of irritability continues unimpaired after the destruction of the nervous centre. I conclude, then, that there is a property of the sentient and motory system of nerves which is independent of sensation and volition;—a property of the motor nerves independent of immediate irritation:—a property which attaches itself to any part of an animal, the corresponding portion of the brain and spinal marrow of which is entire. This property is capable of exaltation, in the frog, from the influence of opium, and doubtless of strychnine; and I may add, that it is diminished or extinguished by the hydrocyanic acid. It is naturally greatest in animals of lowest *sensibility*, as the cold-blooded."

With regard to the office, performed by this property of the nervous system in the animal œconomy, Dr. Hall stated that it appeared especially to preside over all those functions which, from appearing neither exclusively voluntary nor independent of the will, have been designated mixed. That the function of respiration is of this kind he considered plain from the phenomena presented by the separated head of the turtle, in which the submaxillary integuments became alternately inflated and contracted as in ordinary respiration. The actions of coughing, sneezing, vomiting, &c. are of the same kind. So apparently is the singular effect produced by tickling. Of all the parts of the human frame the *larynx* and the *anus* appear to be most under the influence of this peculiar power. No part is so impatient of irritation as the former; none so much in need of automatic action as the latter, with the other sphincters. These very parts are subject moreover to peculiar morbid affections of this function: in regard to the *larynx* it is observed in some affections of dangerous tendency referred to spasm: in the sphincters it is seen in those sin-

gular and painful affections termed strangury and tenesmus. There are also peculiar affections of the system of voluntary muscles referrible to the same property. In hydrophobia and tetanus, in each of which the extremities of the sentient nerves have been wounded, there is a peculiar exaltation of this function : the morbid action appears to be propagated to the spinal marrow ; and then along the motor nerves, producing those dreadful sensations and spasms so fearfully characteristic of these affections. The least external shock or impression is terrible ; the immediate muscular contractions are intolerable.



December 11, 1832.

William Yarrell, Esq., in the Chair.

A specimen was exhibited of a *Hedgehog* from the interior of South Africa, which formed part of a rich collection of preserved animals, recently brought from that country by Mr. A. Steedman, to whom the Committee was indebted for the exhibition. Mr. Bennett pointed out various characters distinguishing it from the several species of *Erinaceus* previously known, and proposed for it, on account of a remarkable band of long white hairs passing from below and behind the ears across the forehead, the name of

*ERINACEUS FRONTALIS*. *Er. oblongo-ovatus*; *spinis variè intertextis, ad basin albis in medio purpurascens, versus apicem albidis brunneo apiculatis; pilis brunneis, fasciæ frontalis albæ rigidis, aurículas oblongas obtegentibus.*

*Hab. in Africâ Australi.*

*Long. corporis, 5½, lat. 3 unc.; long. auriculæ, 7 lin.; pedis postici cum unguibus, 1 unc. 5 lin.*

In form this new species approaches the *European Hedgehog*, which it also resembles in its general colouring and in its concealed ears; but these organs, although not at first sight visible, are, in the *Cape Hedgehog*, long, their auricle, which is rather narrow and nearly oblong, being produced more than half an inch, while in the *Er. Europæus* this part is not at all lengthened, but forms merely a narrow margin surrounding the ears. In *Er. auritus*, and in the two species from the Himalayan Mountains, recently described by Mr. Bennett, (page 123,) the auricles are not only considerably produced, but are quite uncovered, forming a striking part of the physiognomy of these animals.

Among the brown hairs which cover the under part of the sides, and the belly and limbs, a few white bristles are intermixed; and in the individual exhibited, there is a white patch occupying the inside and base of one of the fore legs, and a second, covering about one half of the lower jaw on one side; these marks Mr. Bennett regarded as accidental.

He stated that Mr. Steedman had informed him that he had possessed a second individual of the same species, which he had transferred to M. Verreaux.

A specimen was exhibited of the *Phasianus lineatus*, Lath., obtained from the Tennasserim coast by G. Swinton, Esq., Corr. Memb. Z. S., by whom it was presented to the Society. The species was characterized by Mr. Vigors in the First Part of the 'Proceedings,' page 24.

The exhibition was resumed of the collection of *Shells* formed by Mr. Cuming on the Western coast of South America, and among the islands of the Southern Pacific Ocean. The new species were accompanied, as on the previous occasions, by descriptions from the pens of Mr. Broderip and Mr. G. B. Sowerby.

#### Genus MUREX,

**MUREX BUXEUS.** *Mur. testá subfusiformi, multifariam unduloso-varicosá, transversim striatá, fuscá albo transversim lineatá; aperturá albá; labro intùs denticulato: long.  $1\frac{2}{8}$ , lat.  $\frac{1}{10}$  poll.*

*Hab. ad Iquiqui.*

Found on a sandy bottom at the depth of eighteen fathoms.—

W. J. B.

**MUREX DIPSACUS.** *Mur. testá fusiformi, multifariam varicosá, varicibus subfrondentibus, transversim costatá, quasi cancellatá, albá fusco subfusiata; spirá productá, canali mediocri: long. 1, lat.  $\frac{1}{2}$  poll.*

*Hab. ad Sanctam Elenam.*

From a rocky bottom at the depth of twelve fathoms.—W. J. B.

**MUREX PALLIDUS.** *Mur. testá fusiformi, albá, novemfariam varicosá, costis transversis frequentibus et lineis longitudinalibus creberrimis cancellatá; canali valdè apertá: long.  $\frac{9}{17}$ , lat.  $\frac{4}{17}$  poll.*

*Hab. ad Insulas Falkland dictas.—W. J. B.*

#### Genus RANELLA.

**RANELLA PYRAMIDALIS.** *Ran. testá elongato-pyramidali, valdè compressá, albá, transversim costatá, anfractibus suturam versus coronatis; lineá longitudinali interstitiali utrinque solitariá, elevatá; spirá valdè productá: long.  $\frac{7}{8}$ , lat.  $\frac{1}{8}$  poll.*

*Hab. ad Uliteam et Panamam.*

The interstitial longitudinal line which traverses the whole length of the shell, both on the upper and under sides, may be almost termed a *varix*.

Found on the reefs.—W. J. B.

**RANELLA PUSILLA.** *Ran. testá pyramidali, albá, granulosá: long.  $\frac{9}{17}$ , lat.  $\frac{5}{17}$  poll.*

*Hab. in Oceano Pacifico (Lord Hood's Island).*

Found on the reefs.—W. J. B.

#### Genus CARDITA.

**CARDITA TRICOLOR.** *Card. testá ovato-rhombeá, longitudine altitudinem superante, radiatim costatá, albidá, fasciis fuscis longitudinaliter notatá; margine dorsali postico, latereque antico brevi, aurantiaci; latere postico longiore; costis, anticis præsertim, subgranosis: long. 1.5, lat. 1, alt. 1.1 poll.*

*Hab. in Americâ Centrali.*

Found among sand and mud, at a depth of ten fathoms, in the Bay of Guayaquil.—G. B. S.

**CARDITA LATICOSTATA.** *Card. testá ovato-rhombed, turgidd, longitudine altitudinem superante, radiatim costatá, epidermide fulvescente indutá, fasciis brunneis longitudinaliter notatá; margine dorsali postico elevatiusculo; costis latis, anticis præsertim, lincis elevatis decussatis: long. 2·1, lat. 1·4, alt. 1·6 poll.*  
*Hab. in Americâ Centrali (Guacomayo).*  
 Found in sand, at a depth of from six to twelve fathoms, at St. Elena, Panama, and Real Llejos.—G. B. S.

**CARDITA RADIATA.** *Card. testá oblongá, pallecente, maculis vel fasciis fuscis variegatá; latere antico brevi, postico elongato; costis paucis latis radiatá, costis anticis transversim decussatis, medianis posticè angulatis, posticis rotundatis, dorsali squamiferá: long. 2·1, lat. 0·6, alt. 0·9 poll.*

*Hab. ad Salango, Columbiæ Occidentalis, et ad Panamam.*

Found in muddy sand at from six to twelve fathoms.—G. B. S.

**CARDITA AFFINIS.** *Card. testá oblongá, pallidá, fusco-variá, latere antico brevi, postico elongato; costis paucis latis radiantibus, anticis obsoletiusculis, posticis prominentibus angulosis, sub-squamiferis: long. 1·4, lat. 0·6, alt. 0·6 poll.*

*Hab. in Americâ Meridionali.*

Dredged from sandy mud, at a depth of from six to twelve fathoms, in the Bay of Montejo and Gulf of Nocoia.—G. B. S.

**CARDITA SPURCA.** *Card. testá obovatá, albá, epidermide olivaceá indutá; costis radiantibus eminentibus granosis ornatá; latere postico supernè anguloso: long. 1, lat. 0·55, alt. 0·7 poll.*

*Hab. ad oras Peruviae.*

Dredged among coarse sand and gravel, in from six to ten fathoms, at Iquiqui, in Peru.—G. B. S.

**CARDITA MURICATA.** *Card. testá obovatá, albicante, costis radiantibus muricatis ornatá, posticis magnis distantibus, anticis minoribus approximatis; latere antico brevissimo: long. 1·1, lat. 0·55, alt. 0·55 poll.*

*Hab. ad littora Insularum Maris Pacifici.*

Found attached to and under stones on the beach of Crescent and Rapa Islands. A few brown spots are occasionally to be seen ornamenting the dorsal and lateral parts of these shells.—G. B. S.

#### Genus PECTUNCULUS.

**PECTUNCULUS MULTICOSTATUS.** *Pect. testá suborbiculari, albá, castaneo rubiginoso cinereoque variegatá; costellis numerosis, ex umbone radiantibus, transversim striatis: long. 1·5, lat. 1·2, alt. 1·5 poll.*

*Hab. in Americâ Meridionali.*

Found in coarse sand and gravel, in twelve fathoms water, off the Island of Muerte, in the Bay of Guayaquil.

This is one of the most beautiful of the *Pectunculi*, being of a pure white, elegantly mottled with chestnut, rust-colour, and ash-grey: it is remarkable that in the young shells some of the radiating ribs

are more prominent than others in the proportion of two large to one small.—G. B. S.

**PECTUNCULUS INÆQUALIS.** *Pect. testâ subcordiformi, obliquâ, inæquilaterali, altitudine longitudinem superante, gibbosâ, obtusè radiatim striatâ, striis per fasciculos costiformes congestis, interstitiis striatis: long. 1.5, lat. 1.15, alt. 1.6 poll.*

*Hab.* ad Panamam et Real Llejos.

A very beautiful species, of a white colour, varied with blueish grey, and very irregularly splashed over with dark chestnut brown: the ligament is short, and a very small part of it is anterior to the umbones.

Found in sandy mud in ten fathoms.—G. B. S.

**PECTUNCULUS ASSIMILIS.** *Pect. testâ subcordiformi, obliquâ, inæquilaterali, altiùs quàm longâ, subgibbosâ, radiatim sulcatâ et striatâ, striis per fasciculos costiformes congestis, interstitiis latiusculis, lævibus: long. 1.3, lat. 1, alt. 1.5 poll.*

*Hab.* in Americâ Centrali et Meridionali.

Dredged in sandy mud and gravel, in from eight to twelve fathoms, at Puerto Portrero and in the Bay of Guayaquil.

It is a beautiful species, varying much in colour: in general the ground colour is white, and it is splashed over with greyish brown, rust-colour, and chestnut brown.—G. B. S.

**PECTUNCULUS TESSELLATUS.** *Pect. testâ orbiculari, subglobosâ, albâ, castaneo tessellatâ et variegatâ; costis rotundatis, subdistantibus, radiantibus: long. 0.9, alt. 1, lat. 0.7 poll.*

*Hab.* ad littora Columbiæ Occidentalis.

From sandy mud and gravel, in from eight to ten fathoms, at Monte Christe and in the Bay of Xipixapi.—G. B. S.

**PECTUNCULUS STRIGILATUS.** *Pect. testâ orbiculari, subventricosâ, albidâ, roseo tinctâ et rubiginoso strigatâ et variegatâ; costis rotundatis, distantibus, radiantibus, interstitiis lævibus; long. 1, lat. 0.65, alt. 1.05 poll.*

*Hab.* ad Sanctam Elenam.

Dredged from a depth of six to eight fathoms in sandy mud.—G. B. S.

**PECTUNCULUS LONGIOR.** *Pect. testâ ellipticâ, albicante, radiatim sulcatâ, latere postico brevior, ferrugineo, ventrali roseo-fuscescente, antico longiore; intus albicante, purpurascens-brunneo infectâ; long. 1.4, lat. 0.7, alt. 1.2 poll.*

*Hab.* ad littora Brasiliæ.

Two specimens only were brought from Rio de Janeiro.

This species is remarkable for being proportionally longer than others.—G. B. S.

#### Genus CAPSA.

**CAPSA ALTIOR.** *Capsa testâ oblongo-subtrigonâ, pallescente, intus violacè, epidermidè olivacè indutâ; marginibus dorsalibus inclinatis; latere antico rotundato-acuminato, postico subtruncato,*



*ventrali antico rotundato, postico leviter flexuoso; umbonibus nigricanti-purpurascensibus: long. 3·3, alt. 2·3, lat. 1·35 poll.*

*Hab.* in Peruviâ et Americâ Centrali.

Dredged among coarse gravel, in twelve fathoms water, in the Gulf of Nocoio. A smaller variety, which is also rather higher, was found at Tumbez, at a depth of five fathoms, in thin mud.—G. B. S.

### Genus SOLENELLA, G. Sowerby.

*Testa ovalis, æquivalvis, subæquilateralis, compressa, nitens, epidermide olivaceo-viridi, tenui, induta; dentibus cardinalibus nullis, lateralibus anticis in utraqve valvâ, tribus ad quatuor, lateralibus posticis plurimis, seriem rectiusculam efformantibus, omnibus parvis acutis; impressionibus muscularibus duabus, lateralibus, subdistantibus; impressione pallii sinu magno: ligamento externo, elongato.*

An interesting new genus of marine bivalves, in which the general form and characters of M. Blainville's *Solenocurtus* are combined with the series of minute sharp teeth characteristic of *Nucula*. It appears to belong to the family of the *Solenaceæ*, and it may at once be separated from the *Mastraceæ*, to which *Nucula* belongs, by the circumstance of the whole of the ligament being external.

*SOLENELLA NORRISII. Sol. testâ albido-cærulescente; epidermide olivaceo-viridi, zonis concentricis saturatioribus: long. 1·6, alt. 1, lat. 0·4 poll.*

*Hab.* ad Valparaiso.

Discovered by Mr. Cuming, in soft mud, at from fourteen to forty-five fathoms depth.

This is the only species of the genus I have seen; but Mr. Cuming informs me that he obtained a single valve of another and very different species. By the specific name I wish to honour and keep in remembrance Thomas Norris, Esq., of Redvales, near Bury, Lancashire.—G. B. S.

### Genus NUCULA.

*NUCULA ELONGATA. Nuc. testâ elongatâ, lanceolatâ, tenui, albâ, epidermide fuscâ prope marginem ventralem indutâ; subæquilaterali, latere antico breviorè; margine dorsali rectiusculâ, posticè subreflexâ; serie dentium posticâ divaricatâ: long. 2·7, lat. 0·25, alt. 0·7.*

*Hab.* in Columbiâ Occidentali.

Dredged in sandy mud, at a depth of twelve fathoms, at Xipixapi.

*NUCULA CRENIFERA. Nuc. testâ elongatâ, lanceolatâ, lævigatâ, tenuissimè longitudinaliter striatâ; marginibus dorsalibus carinatis, carinis concinnè crenulatis: long. 1·4, alt. 0·4, lat. 0·2 poll.*

*Hab.* ad Xipixapi.

This species approaches nearly in shape to *Nuc. lanceolata*; it is, however, broader and higher, and its dorsal margin, when the two

valves are closed, is flat, with angular crenated edges. It was dredged in sandy mud, at a depth of nine fathoms.—G. B. S.

*NUCULA POLITA.* *Nuc. testá oblongá, anticè rostratá, albá, epidermide virescente, politá; margine dorsali anticá lavi; striis nonnullis obliquis anticis: long. 1·4, alt. 0·6, lat. 0·45 poll.*

*Hab. ad Panamam.*

A single specimen of this very beautiful species was dredged up in sand from a depth of seven fathoms.—G. B. S.

*NUCULA PISUM.* *Nuc. testá parvú, obliquè ovali, latere antico brevissimo, margine dorsali inclinatá: long. 0·25, lat. 0·15, alt. 0·2 poll.*

*Hab. ad Valparaiso.*

Dredged in coarse sand and gravel, at various depths from seven to forty fathoms.—G. B. S.

*NUCULA COSTELLATA.* *Nuc. testá oblongá, tenui, anticè rostratá, acuminatá, costis duabus dorsalibus approximatis, crenulatis; costellis acutis concentricis, totam superficiem tegentibus: long. 0·8, alt. 0·3, lat. 0·2 poll.*

*Hab. ad Panamam.*

Two specimens were taken in sandy mud at a depth of ten fathoms. A thin epidermis covers the shell.—G. B. S.

*NUCULA GIBBOSA.* *Nuc. testá oblongá, gibbosá, anticè acuminato-rostratá, longitudinaliter sulcatá; dorso antico depresso, marginibus centralibus elevatis: long. 1·2, lat. 0·55, alt. 0·6 poll.*

*Hab. ad littora Peruviae.*

Found in soft mud, at a depth of five fathoms, at Tumbes in Peru. A variety, with a less elevated ridge in the centre of the anterior dorsal margin, and of much smaller size, was found in mud, at twelve fathoms, in the Gulf of Nocoioyo.—G. B. S.

*NUCULA ELENENSIS.* *Nuc. testá ovatá, gibbosá, longitudinaliter sulcatá, anticè rostrato-acuminatá; limbo dorsali antico arcuato, marginibus crenulatis: long. 0·5, lat. 0·25, alt. 0·35 poll.*

*Hab. ad Sanctam Elenam.*

Dredged in sandy mud at a depth of six fathoms.—G. B. S.

*NUCULA EBURNEA.* *Nuc. testá ovatá, gibbosá, longitudinaliter sulcatá, nitidá, eburneá, anticè rostrato-acuminatá: long. 0·65, lat. 0·3, alt. 0·35 poll.*

*Hab. ad oras Columbiae Occidentalis.*

Found in sandy mud, at a depth of from seven to nine fathoms, in the Bay of Caraccas.—G. B. S.

*NUCULA CUNEATA.* *Nuc. testá ovato-cuneiformi, gibbosá, epidermide virescente, nitidá, latere postico rotundato, antico acuminato; superficie concentricè sulcatá: long. 0·4, lat. 0·2, alt. 0·25 poll.*

*Hab. ad Valparaiso.*

Dredged in coarse sand and gravel, at various depths, from fourteen to forty-five fathoms.—G. B. S.

*NUCULA EXIGUA.* *Nuc. testá parvú, obliquè ovatá, albicante, pel-*

*lucidâ, concentricè sulcatâ; latere postico longiore, subacuminato, antico brevissimo: long. 0·2, lat. 0·1, alt. 0·15 poll.*

*Hab.* ad Columbianam Occidentalem (Bay of Caraccas).

A single specimen found in sandy mud at nine fathoms depth.—G. B. S.

#### Genus AMPHIDESMA.

**AMPHIDESMA ROSEUM.** *Amph. testâ suborbiculari, rosâ, concentricè costatâ, epidermide fuscâ, lucidâ, indutâ; latere postico subemarginato; costis confertis, acutis: long. 2·5, alt. 2·3, lat. 1·1 poll.*

*Hab.* ad littora Peruvizæ.

Shell of a rose colour all over; darker about the *umbo*. A single valve was found at Tumbes in Peru.—G. B. S.

**AMPHIDESMA RUPIMUM.** *Amph. testâ subovali vel suborbiculari, subirregulari, radiatim striatâ, costis interruptis concentricè rugosâ; umbone lævigato; intûs albâ; dentibus lateralibus subapproximatis, brevibus, crassis, margineque dorsali posticâ purpureis: long. 1·25, alt. 1, lat. 0·65 poll.; long. 1·3, alt. 1·2, lat. 0·7 poll.*

*Hab.* in Oceano Pacifico.

Outside of the shell white; a few rose-coloured rays are occasionally observable near the basal margin. Found in coarse gravel in the crevices of rocks in coral reefs at Lord Hood's Island. A variety which is white all over, both inside and out, occurs in the clefts of rocks in coarse gravel at the Gallapagos Islands.—G. B. S.

**AMPHIDESMA FORMOSUM.** *Amph. testâ ovali, albicante, roseo radiatâ et purpureo maculatâ, concentricè costatâ, costis confertis, anticè posticèque rugulosis; umbonibus intûs lutescentibus: long. 2, alt. 1·6, lat. 0·7 poll.*

*Hab.* ad Sanctam Elenam.

The most beautiful of all the *Amphidesmata* I have yet seen. Only two odd valves were dredged in seven fathoms water.—G. B. S.

**AMPHIDESMA PALLIDUM.** *Amph. testâ ovali, pallidè purpurascens, fulvâ, umbonibus saturatoribus, tenuissimè concentricè striatâ, epidermide tenui, subiridescente indutâ; latere postico subtruncato, dorsali rotundato: long. 1·25, lat. 0·45, alt. 0·9 poll.*

*Hab.* ad Salango, Columbiæ Occidentalis.

The young shells are paler and more fulvous in colour. Dredged in sandy mud at a depth of seven fathoms.—G. B. S.

**AMPHIDESMA LÆVE.** *Amph. testâ ovatâ, albâ, lævigatâ, epidermide corned, tenui indutâ; latere postico brevior, rotundato, antico longiore subacuminato; sulco obsoleto posticali, ab umbone ad marginem ventralem decurrente: long. 1·45, alt. 1·1, lat. 0·35 poll.*

*Hab.* ad Xipixapi, Columbiæ Occidentalis.

A single specimen of this very delicate species was dredged from a depth of ten fathoms in sandy mud.—G. B. S.

**AMPHIDESMA PURPURASCENS.** *Amph. testâ ovali, purpurascens; margine anticâ rotundatâ, posticâ subacuminatâ, subtruncatâ, dor-*

*sali posticâ rectiusculâ crenulatâ; costis concentricis, acutis, crenulatis, confertissimis, tenuibus, fulvis: long. 1·9, alt. 1·5, lat. 0·65 poll.*

*Hab.* ad Sanctam Elenam.

A single valve of this elegant species was picked up on the sands at St. Elena.—G. B. S.

**AMPHIDESMA PUNCTATUM.** *Amph. testâ ovali, crassiusculâ, albicante, sparsim roseo fulvoque maculatâ; posticè subtruncatâ, plicâ flexuosâ posticali distinctâ; disco externo concentricè impresso-punctato; marginibus, inferiori costis nonnullis concentricis latis, dorsalibus anticè et posticè roseo maculatis; long. 1·7, alt. 1·35, lat. 0·6 poll.*

*Hab.* ad Insulas Gallapagos.

A perfect specimen and a single valve are all that Mr. Cuming obtained.—G. B. S.

**AMPHIDESMA LENTICULARE.** *Amph. testâ albidâ, lenticulari, lævigatâ, tenuissimè radiatim striatâ; parte mediâ anticâque striis elevatis, subconcentricis, flexuosis decussatâ; margine posticâ subflexuosâ; epidermide tenuissimâ, flavescente: long. 0·87, alt. 0·8, lat. 4·5 poll.*

*Hab.* ad Sanctam Elenam.

A single specimen was dredged from a depth of six fathoms in sandy mud.—G. B. S.

**AMPHIDESMA ELLIPTICUM.**—*Amph. testâ ellipticâ, albidâ, subobliquâ, lævi, epidermide fuscâ; latere antico longiore, rotundato, postico breviorè, obliquè subtruncato; superficie concentricè leviter striatâ: long. 2, alt. 1·7, lat. 0·75 poll.*

*Hab.* in Columbiâ Occidentali (Monte Christe).

Inside pure white. Dredged at a depth of nine fathoms in sandy mud.—G. B. S.

**AMPHIDESMA CORRUGATUM.** *Amph. testâ suborbiculari, albicante, radiatim striatâ, concentricè rugulosâ; epidermide fuscâ; margine dorsali posticâ rectâ, inclinatâ; intus flavescente: long. 2·1, alt. 1·9, lat. 1 poll.*

*Hab.* in Peruviâ et ad Iquiqui.

Dredged from coarse gravel in ten fathoms water.—G. B. S.

**AMPHIDESMA AUSTRALE.** *Amph. testâ suborbiculari, rotundatâ, albicante, radiis pallidè roseis nonnunquam pictâ, concentricè rugosâ: long. 1, alt. 1, lat. 0·5 poll.*

*Hab.* in littoribus Novæ Hollandiæ et ad insulas Oceani Pacifici.

Found by Mr. Cuming in the crevices of the coral rocks at Lord Hood's Island.

I have had the printed descriptions of the three last species by me for several years, but they have never been published.—G. B. S.

#### GENUS NERITINA.

**NERITINA LATISSIMA.** *Ner. testâ rotundatâ, ventricosâ, striis longitudinalibus, minutis, creberrimis, fuscâ luteo maculatâ, maculis numerosissimis; labro dilatato, latissimo, spiram longè prætereunte; labio crenulato, subluteo: long. 1½, lat. 1½ poll.*



*Var. flavescens fasciis duabus nigris.*

*Hab.* ad Real Llejós, in fluvio, rupibus adhærens.

A very curious species, probably the analogue of *Strombus latissimus* among the river shells.—W. J. B.

**NERITINA DILATATA.** *Ner. testâ ovato-truncatâ, dorso convexo, albido-fuscâ lineis nigris angulatis reticulatâ; spirâ obliquè incurvâ; labro tenui supernè sub-biauriculato; labio subarcuato, denticulato: long.  $\frac{5}{8}$ , lat.  $\frac{1}{2}$  poll.*

*Hab.* ad insulam Taheiten in rivis, saxis adhærens.

A species approaching *Ner. auriculata*, Lam., but very distinct from it.—W. J. B.

**NERITINA GLOBOSA.** *Ner. testâ globosâ, flavescente vel fuscâ, quasi guttatâ, guttarum limbis nigricantibus; labio subrugoso, denticulato: long. 1, lat. 1 poll.*

*Hab.* ad Chiriqui Colombiæ Occidentalis in fluvio.—W. J. B.

**NERITINA NUX.** *Ner. testâ ovato-globosâ, fuscâ, longitudinaliter striatâ, striis creberrimis; labio serrato, unidenticulato: long.  $\frac{2}{3}$ , lat.  $\frac{2}{3}$  poll.*

*Hab.* ad insulam Taheiten in rivis, saxis adhærens.—W. J. B.

**NERITINA INTERMEDIA.** *Ner. testâ suborbiculari, olivaceo-fuscâ, nigro reticulatâ; dorso subgibboso, labio externo intûs lævi, albicante; columellari subflavo, planulato, margine centrali rugulosâ: long. 0.75, lat. 0.85 poll.*

*Hab.* in Americâ Centrali.

Found abundantly on stones in a mountain stream in the Isle of Lions, Bay of Montejo. It bears a distant resemblance to *Ner. pulligera*. A smaller variety occurs in a rivulet at San Lucas in the Gulf of Nocoia.—G. B. S.

**NERITINA CHLOROSTOMA.** *Ner. testâ suborbiculari, ellipticâ, olivaceo-fuscâ, nigro reticulatâ, subfasciatâ; aperturâ intûs flavâ; labii columellaris margine obtusè unidentatâ, rugulosâ: long. 0.5, lat. 0.55 poll.*

*Hab.* ad Insulam Taheiten.

Found on stones in the rivulets.—G. B. S.

**NERITINA PICTA.** *Ner. testâ subglobosâ, cinerascete, maculis, sphacelis, vittisque diversimodò pictâ; labio interno castaneo: long. 0.5, lat. 0.4 poll.*

*Hab.* ad Panamam.

Found in abundance on a mud-bank partially overflowed with fresh water.—G. B. S.

**NERITINA RETICULATA.** *Ner. testâ subovali, transversim striatâ, aterrimâ, albo reticulatâ et maculatâ; aperturâ omninò lutescente: long. 0.45, lat. 0.48 poll.*

*Hab.* ad Insulas Polynesias.

From Lord Hood's Island; found in fine sand on the reefs, occasionally overflowed.—G. B. S.

**NERITINA MORIO.** *Ner. testâ subovali, transversim striatâ, atrâ;*

*aperturâ pallescente ; columellâ supernè emarginatâ, in medio denticulatâ : long. 0·7, lat. 0·75 poll.*

*Hab.* ad Insulas' Polynesias.

Found on the coral reefs at Ducie's and Easter Islands.—G. B. S.

#### Genus ANCYLUS.

*ANCYLUS OBLIQUUS.* *Anc. testâ subovatâ, diaphanâ, longitudinaliter minutissimè striatâ ; mucrone verticis obliquo : long. 1·7, lat. 1·5 poll.*

*Hab.* in Chili in rivulis, saxis adhærens.—W. J. B.

The stomach, *cæca*, *cranium*, &c. of *Hyrax Capensis* were exhibited, the former forming part of the collection of Mr. Thomas Bell. Mr. Owen, who had anatomically examined the individual from which they were obtained, read the following account of its structure.

“It is unnecessary to enter before this Committee into the scientific history of *Hyrax Capensis*, since it has already been fully given in the ‘Ossemens Fossiles,’ and in the ‘Decas Mammalium’ of Hemprich and Ehrenberg : it may even appear presumptuous in me to occupy your time with the anatomical description of an animal that has already been described by the most accomplished anatomist and zoologist of his age. Since the time, however, that the *Cape Hyrax* was dissected by Pallas, no other original account of the structure of the soft parts of this animal has appeared ; for I infer from the descriptions of some parts, as the digestive organs, which appear in several places of the ‘Leçons d’Anatomie Comparée,’ that Cuvier had not, at the period of his preparing that work for the press, himself dissected the *Hyrax* ; and this may probably account for his silence respecting some other remarkable anomalies in the structure of the *Hyrax* described by Pallas, but which the illustrious author of our only text-book in comparative anatomy was probably averse to give his sanction to, without having confirmed them by personal observation. On this account I feel that even a simple confirmation of the observations of Pallas would be acceptable to every zoologist ; but in the following communication some additional facts, as well as more particular descriptions of the most remarkable anomalies, have been given, the amount of which will be readily appreciated by whoever will compare this account with the original description of *Cavia Capensis*, in the ‘Spicilegia,’ and ‘Miscellanea Zoologica,’ of Pallas.

“The specimen here described was a full-grown male, placed temporarily in the Society's Menagerie by Thomas Bell, Esq. It lived in the Gardens through the greater part of last summer, and died at the winter repository for the smaller animals a few days ago.

“As it was already skinned when I first saw it, its dimensions will be more safely given from the skeleton ; I shall only therefore here observe that its length from the anterior surface of the upper *incisors* to the vent was 1 foot  $5\frac{1}{2}$  inches.

“On laying open the *abdomen*, which was of considerable capacity, the *viscera* were found disposed in the following manner :—the liver occupied the epigastric region and the atlantal part of both *hypo-*

*chondria*\*; below or sacred of the liver appeared the great curvature of the stomach, extending quite across the *abdomen*; from this part the *omentum* extended half-way down the rest of the *abdomen*: on lifting up the *omentum* there appeared what Pallas justly calls, "insignis crassorum intestinorum apparatus", consisting of an enormous *cæcum*, and *colon*; below which, extending upwards from the iliac regions, were the extremities of the two accessory *cæca*. These latter parts were overlapped by what may be termed the spermatic *omenta*, two duplicatures of *peritoneum*, including fat, continued from the spermatic vessels, *testes* and *vasa deferentia*, and extending from the lumbar and iliac regions towards the middle line of the *abdomen*. These, in the fœtal *Hyrax* are remarkably large and loaded with fat. On turning aside the *cæca*, (which can easily be done, as they have an entire investment of *peritoneum*, and are not closely attached to the abdominal *parietes*;) the convolutions of the small intestines, and of the rest of the *colon*, were brought into view.

"The *duodenum* is not so loosely connected with the back part of the *abdomen* as in most of the *Rodentia*; but it has throughout its course one entire investment of *peritoneum*. It descends in front of the right kidney for 4 inches, and then suddenly returns upon itself, passing behind the ascending *colon*, and runs along the middle of the spine as high as the stomach, where it becomes a loose intestine, or *jejunum*. At its commencement it is not dilated as in many *Rodentia*.

"The small intestines were about 8 lines in diameter, and were convoluted upon a mesentery about 1 inch and  $\frac{3}{4}$ ths in breadth, in the curve of which ran a chain of dark-coloured lacteal glands. Pallas counted eleven. On laying open the small intestines they presented a peculiarity I have not met with in any other quadruped, viz. a series of about twelve small pouches, distant from 3 to 5 inches from each other, about 3 lines in diameter and the same in depth, their orifices pointing distad, or towards the *cæcum*. These pouches make no projection externally, being situated wholly beneath the muscular coat. They consist of duplicatures of the mucous membrane, and are surrounded by the *glandulæ aggregatæ* which open into them by numerous orifices. Their use would appear to be to prevent the secretion of these glands being mixed as soon as formed with the chyme, but, by retaining it, to alter its qualities in some degree. The whole inner surface of the small intestines is beset with fine *villi*, giving them considerable resemblance to the intestines of a bird. For the extent of about a foot from the commencement of the small intestines many of these *villi* terminated in a black point, a circumstance which Pallas also observed, "intus punctis contiguis atris villosum." The length of the small intestines was 4 feet 6 inches.

"The *cæcum* seemed at first sight to have a great analogy to that

\* Pallas observes that the whole of the liver was in his specimen situated in the right *hypochondrium*, and did not extend beyond the mesial line of the diaphragm. In a *viscus* so loosely attached as this is in the *Hyrax*, variety in respect to position is to be expected.

of the *Hare* and other *Rodents*, being sacculated, and distended with a blackish pultaceous matter; but in form one would compare it rather with that of the *Tapir*, its magnitude arising more from its breadth than its length. Its length from the orifice of the *ileum* is 3 inches, its circumference 8 inches. The *colon* gradually diminishes as it leaves the *cæcum*, 4 inches from which its diameter is nearly that of the small intestines: the dilated part of the *colon* is bent in a sigmoid form, and the remainder is convoluted on a broad *mesocolon*, and at a distance of 2 feet from the dilated part (when unravelled) terminates between two conical *cæca* in a second dilated intestine. Each of these singular *cæca* was an inch and a half in diameter at its base, and gradually contracted till it terminated in a glandular vermiform appendage about half an inch long, and 2 lines in diameter. The intestine continued from these was 3 inches in diameter, but also gradually contracted, so that at a distance of 6 inches it also became as small as the small intestines. The whole length of this intestine, the "intestinum bicornè" of Pallas, or second *colon*, was 2 feet 6 inches in length; making the length of the whole intestinal canal, exclusive of the *cæca*, 9 feet 4 inches, or about six times the length of the animal. Nothing in particular was observed either in the first or second divisions of the *colon*; but the contents of the latter were much drier than those of the former, and were collected into detached fibrous masses, or *scybalæ*. Notwithstanding the complexity of the intestinal canal, it is suspended from a single continuous duplicature of the *peritoneum* advancing from the bodies of the *vertebræ* and extending from the beginning of the *jejunum* to the *rectum*.

"In looking through the *Vertebrata* for an analogous formation of the intestinal canal, we shall find the *Hyrax* standing almost alone in this respect: among the *Mammalia* it is only in a few of the *Edentate* species that the double *cæcum* is to be met with, as, e. g. *Myrmecophaga didactyla*, Linn., and *Dasypus 6-cinctus*, Linn.; whilst in *Birds*, although the double *cæcum* more generally prevails, yet an additional single *cæcum*, anterior to these, has only been found in a few species. This structure, however, completes the analogy, *quoad* the number of *cæca*, but with respect to function the cases are widely different; the single anterior *cæcum* of *Hyrax* evidently performs an important part in digestion, while in the *Bird* it exhibits merely a trace of a structure peculiar to embryonic life. I should consider, however, the double *cæcum* of *Hyrax* as indicating an affinity to the group which intervenes, in the system of Cuvier, between the order it was originally placed in, and the one to which that great naturalist has transferred it. And it is interesting to find that while the *facies* of *Hyrax* so far simulates that of a *Rodent* as to have deceived the older naturalists, and to have concealed from them those unerring indications of its alliance with the *Pachydermata* which the osseous system exhibits, yet that Nature, as if in confirmation of her abhorrence to the *saltus*, had left in the internal structure of this singular animal an impression borrowed from the type of the *Edentata*.

"Although the stomach of some of the *Rodentia*, as the common *Rat*, and of the *Edentata*, as the *Manis*, exhibits a partial cuticular



lining, yet it is among the *Pachydermata* that this structure is most prevalent. In the *Hyrax*, two thirds of the stomach on the cardiac side are lined with a thick, white and wrinkled cuticle; along the greater curvature it was raised in the present instance into a number of warty excrescences, the consequences of disease. The stomach is of an oblong form, contracted and bent upon itself where the cuticle terminates. Its greatest length, when moderately distended, is  $5\frac{1}{2}$  inches; its depth, opposite the cardiac orifice, 3 inches; the extent of the cardiac *sacculus*, beyond the œsophageal opening, 2 inches. The pyloric end was lined by a vascular and villous membrane. No difference could be detected in the state of the matters situated at the cardiac and pyloric ends of the stomach: they consisted of well-masticated vegetable substances. Immediately beyond the *pylorus* were the orifices of a number of follicles. The *œsophagus* had a course of 2 inches in the *abdomen*, before terminating at the *cardia*; this depended on the greater distance at which the stomach was situated from the diaphragm.

“The liver had the same form and number of lobes as described by Pallas. The middle lobe had the usual two notches, into the left of which the coronary ligament entered; but the right contained no gall-bladder, which in the *Hyrax*, as in some of the *Rodentia*, and many of the *Pachydermata*, is deficient. A compensation for this deficiency was, however, in some measure apparent in this animal; for the hepatic ducts, immediately on leaving the lobes of the liver, dilated into three globular receptacles, the united capacities of which would have equalled a moderate-sized gall-bladder; the duct formed by the union of these receptacles was 3 lines in diameter and 1 inch 3 lines in length; it grew gradually narrower as it approached the intestine, and terminated three fourths of an inch from the *pylorus*.

“In the largest of the above-mentioned dilatations of the hepatic ducts there was a *Distoma*, probably the same species as the *Liver Fluke of Sheep*; and both in that and the other receptacle there were small pulverulent biliary concretions, of a bright yellow colour. I therefore feel uncertain whether these receptacles should be considered as altogether normal.

“The *pancreus* was a small flattened gland, but terminated by two distinct ducts, one close to the hepatic, the other 1 inch beyond it, lower down the *duodenum*. This disposition of the ducts, and the sudden bend of the *duodenum*, also reminds one of the structure of birds.

“The spleen had the same position and flattened semilunar form as Pallas describes.

“The relative size and position of the kidneys, and of the *capsulæ renales*, also accorded with the observations of that great anatomist. The *tubuli uriniferi* terminated in each kidney in a very prominent pointed *papilla*; the left kidney I observed to be peculiarly flattened on the outer or lateral side, which presents generally a regular convexity.

“In the ‘*Spicilegia Zoologica*,’ Pallas describes the peculiar in-  
[No. XXV.]

sertion of the ureters with a note of admiration; and I am not aware that a parallel structure has since been discovered in any animal possessing an urinary bladder. It is not, however, precisely in the *fundus* or summit of the bladder that the ureters open; they enter between the muscular fibres at the back part of the *fundus*, at the angles, analogous to the situation at which the *tubæ Fallopianæ* enter the human *uterus*; but they run obliquely downwards and inwards for 2 lines before they terminate, leaving, however, a full inch of space between them and the orifice of the *urethra*. The long diameter of the distended bladder is 1 inch 4 lines. For what purpose this structure is designed in the *Hyrax*, or whether the urine undergoes any change in consequence of it, I cannot conjecture; but it is a curious fact, that, according to Hemprich, both the natives of Arabia, and the boors of the Cape, regard the urine of *Hyrax* as medicinal.

“In accordance with the length of the loins in *Hyrax*, (a circumstance which Cuvier particularly notices,) the parts in relation with that region seem peculiarly elongated. The muscular part of the *urethra* is a full inch in length, and the *vesiculæ seminales*, opening into the termination of this part, lie on either side of it, so that their *apices* only reach the bladder. The *vasa deferentia* also are much longer than is usually seen in the true *Testiconda*, the *testes* being situated just below the kidneys, 3 inches anterior to the bladder. Pallas has accurately described their form and situation, and also the course of the *vasa deferentia*, and the convoluted mass, like a second *epididymis*, behind the bladder. They terminate distinctly from the ducts of the *vesiculæ seminales*, beneath a valvular fold of the inner membrane of the *urethra*, at the termination of the muscular part of that canal. These *vasa deferentia* are remarkably attenuated, as in all *Testiconda*, before they reach the bladder; they then begin to enlarge, and by means of their convolutions, must form a considerable receptacle for the *semen*. Yet here the *vesiculæ seminales* are as large and complex, proportionally, as in the *Boar*, a circumstance which seems to afford a strong additional argument to those advanced by Tyson (*Phil. Trans.*, xiii. p. 370,) and Hunter (*Anim. Econ.*, p. 31,) against their supposed use as mere receptacles.

“These *vesiculæ seminales* were situated on either side the muscular part of the *urethra*; not behind the bladder, but in the space between it and the bulb of the *urethra*. They were each  $1\frac{1}{2}$  inch in length, and 8 lines in breadth, giving off a number of short wide processes, which, as they are compacted together, give to the external surface a brain-like appearance. Their ducts are wide, and terminate behind the valvular fold at the end of the muscular part of the *urethra*.

“Two prostate glands, of a tubular structure, lie at the lower ends of the *vesiculæ seminales*.

“The bulb of the *urethra* commences by a wide *cul-de-sac*: the spongy part of the *urethra*, which forms its *parietes*, is 2 lines in thickness, and this is embraced by *acceleratores* of remarkable

strength for so small an animal. Two small flattened Cowper's glands, of a circular figure, open by long ducts into this part of the *urethra*; the remainder of the canal is narrow.

"The *penis* is abruptly bent backwards, and terminates in a truncate extremity, which I have observed frequently hanging down in the living animal. The *erectores* muscles are short and strong, but quite inadequate to perform the office their name implies. The erection or extension of the *penis* is performed, as in other retro-mingents, by two muscles arising from the *symphysis pubis*, and inserted near the *glans* by a single tendon, which traverses the *dorsum penis*. One can hardly conceive how even these muscles can be adequate to the complete extension of the *penis*, unless assisted by the action which Cuvier attributes to the *acceleratores urinae*, viz. that of expelling the accumulated blood from the bulbous part, and chasing it to the other end of the *penis*,—an action which one can readily conceive must have a considerable influence in the erection, as well as in driving onwards the fluids accumulated in the bulb.

"The viscera of the chest, the tongue, and the *larynx* presented nothing remarkable.

"The chief peculiarity observed in the muscular system was a modification of the digastric muscle of the lower jaw, which arose, as in the *Armadillos*, from the upper part of the *sternum*, instead of the *occiput* or temporal bone; and was inserted into the whole *ramus* and angle of the lower jaw; it was of remarkable strength, being as large as the *sterno-cleido-mastoideus* in man. It is this muscle which occasions the peculiar fulness of the neck in the *Hyrax*."

The following extract from the Report of the Council to the General Meeting on December 6th, was read:

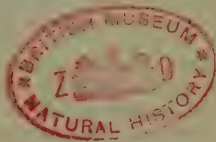
"In their last Annual Report, the Council adverted with unmixed satisfaction to the meetings of the Committee of Science and Correspondence, and to the published Proceedings which have emanated from those meetings. The Council saw in them proofs of the scientific zeal of the Members of the Society, both at home and abroad; and subsequent meetings and proceedings have confirmed the impression made by them, that much important information was likely to be afforded to the public by the industry and talent of those Members who have taken a share in producing them, as well as of other Members, not less qualified to add to the general stock of zoological knowledge. Aware from such ample evidence that the Society may, by the exertions of its Members, assume a rank in the scientific world commensurate with its resources and their zeal, the Council have under consideration a plan for substituting in lieu of meetings of a Committee, general meetings of the Society for scientific purposes. They trust to be able to lay before an early meeting the details of such a plan. With it will be connected the publication, with the requisite illustrations, of all the more important papers which may be communicated to the scientific meetings."

It was announced as probable that the contemplated arrangements would be so far completed in the course of the month as to take effect on the 8th of January next.

In their Report to the General Meeting on January 3rd, 1833, the Council presented a series of By-Laws, establishing General Meetings for the transaction of scientific business, and determining the publication of Transactions as well as of Proceedings. They proposed that these By-Laws should be considered as provisionally in force, until the day on which, according to the Charter, they should be submitted for confirmation by the Society, and suggested, therefore, that the General Meetings for scientific purposes should commence on the 8th of January.

The Report then proceeded as follows :

“On the adoption of these propositions, the Meetings of the Committee of Science and Correspondence may be considered as concluded, and the Council deem it right that the occasion should not pass without recording the satisfaction which they, in common with the Society at large, have felt in the proceedings of that Committee. The active Members of it (and they are numerous), and the Correspondents and friends who have added to the stock of knowledge through its means, are well entitled to the best thanks of the Society for their valuable communications. It is hoped that their exertions in the cause of science will be unremittingly continued ; that fellow-labourers, not less numerous nor less active, will vie with them in the cultivation of the extensive field of investigation on which they have hitherto been engaged ; and that the Scientific Meetings of the Society will go on increasing in interest and in estimation as a most effectual means of acquiring and imparting Zoological knowledge.”





# INDEX.

The names of New Species and of Species newly characterized are printed in Roman Characters: those of Species previously known, but respecting which novel information is given, in *Italics*: those of Species respecting which Anatomical Observations are made, in CAPITALS.

	Page.		Page.
<i>Acanthurus leucosternon</i> , Benn.	183	<i>Ardea Caboga</i> , Penn.	158
<i>Accipiter Dukhunensis</i> , Sykes ...	79	<i>cinerea</i> , Lath.	158
<i>Dussumieri</i> , .....	79	<i>cinnamomea</i> , Gmel.	159
<i>Achatina Dactylus</i> , Brod. ....	32	<i>Egretta</i> , Gmel.	157
<i>Aglaia Chilensis</i> , Vig. ....	3	<i>Garzetta</i> , Linn.	157
<i>Agriopus Peruvianus</i> , Cuv. & Val.	5	<i>Grayii</i> , Sykes	158
<i>Alauda Deva</i> , Sykes .....	92	<i>Javanica</i> , Horsf.	158
<i>Dukhunensis</i> , Sykes ...	93	<i>Malaccensis</i> , Gmel.	158
<i>Gulgula</i> , Frankl. ....	92	<i>nigrirostris</i> , Gray	158
<i>Alcedo Bengalensis</i> , Gmel. ....	84	<i>Arvicola agrestis</i> .....	109
<i>rudis</i> , Linn. ....	84	<i>riparia</i> , Yarr.	109
<i>Amphidesma Australe</i> , Sow. ....	200	<i>Astur Hyder</i> , Sykes .....	79
<i>corrugatum</i> , Sow.	200	<i>Atherina punctata</i> , Benn. ....	184
<i>ellipticum</i> , Sow. ...	200	<i>Birgus Latro</i> , Leach .....	17
<i>formosum</i> , Sow. ...	199	<i>Botaurus stellaris</i> , Briss. ....	159
<i>laeve</i> , Sow. ....	199	<i>Bucco caniceps</i> , Frankl. ....	97
<i>lenticulare</i> , Sow. ...	200	<i>Philippensis</i> , Gmel. ....	97
<i>pallidum</i> , Sow. ...	199	<i>Buceros Nepalensis</i> , Hodgs. ....	15
<i>pulchrum</i> , Sow. ...	57	<i>Budytes Beema</i> , Sykes .....	90
<i>punctatum</i> , Sow. ...	200	<i>citreola</i> , Cuv. ....	90
<i>purpurascens</i> , Sow.	199	<i>melanocephala</i> , Sykes ..	90
<i>roseum</i> , Sow. ....	199	<i>Bulinus affinis</i> , Brod. ....	106
<i>Rupium</i> , Sow. ....	199	<i>albicans</i> , Brod. ....	105
<i>Anas strepera</i> , Linn. ....	168	<i>Broderipii</i> , Sow. ....	30
<i>Anastomus Typus</i> , Temm. ....	160	<i>Cactivorius</i> , Brod. ....	31
<i>Ancyclus obliquus</i> , Brod. ....	202	<i>Coquinabensis</i> , Brod. ...	30
<i>Anser Girra</i> .....	167	<i>Coturnix</i> , Sow. ....	30
<i>Anthus agilis</i> , Sykes .....	91	<i>derelictus</i> , Brod. ....	107
<i>Antilope buhalina</i> , Hodgs. ....	12	<i>erosus</i> , Brod. ....	106
<i>Hodgsonii</i> , Abel ....	14	<i>granulosus</i> , Brod. ....	31
<i>Antipathes dichotoma</i> , Pall. ....	41	<i>guttatus</i> , Brod. ....	31
<i>spiralis</i> .....	42	<i>modestus</i> , Brod. ....	106
<i>Aquila bifasciata</i> , Hardw. & Gray	79	<i>mutabilis</i> , Brod. ....	108
<i>chrysaëta</i> , Sav. ....	79	<i>nitidus</i> , Brod. ....	31
<i>Ardea Asha</i> , Sykes .....	157	<i>Nux</i> , Brod. ....	125

	Page.		Page.
Bulinus Panamensis, Brod. ....	105	Cardita tumida, Brod. ....	56
Proteus, Brod. ....	107	varia, Brod. ....	56
pulchellus, Brod. ....	106	Carocolla globosa, Brod. ....	30
pupiformis, Brod. ....	105	quadridentata, Brod. ....	30
pustulosus, Brod. ....	105	Ceblepyris canus, Temm. ....	87
rubellus, Brod. ....	124	fimbriatus, Temm. ...	86
scalariformis, Brod. ....	31	Centropus Philippensis, Cuv. ...	98
scutulatus, Brod. ....	106	CERCOPITHECUS ALBOGULARIS,	
Tigris, Brod. ....	107	Sykes ..... ..	18
translucens, Brod. ....	31	Cercopithecus albogularis, Sykes	18
turratus, Brod. ....	106	Diana, Geoffr. ....	123
varians, Brod. ....	107	Ceyx tridactyla, Lacép. ....	84
versicolor, Brod. ....	108	Chaetodon guttatissimus, Benn. ..	183
Vexillum, Brod. ....	105	xanthocephalus, Benn. ....	182
vittatus, Brod. ....	31	Charadrius Philippensis, Lath. ...	166
CAMELUS DROMEDARIUS, Linn. ...	126	pluvialis, Linn. ....	166
Cancellaria acuminata, Sow. ...	53	Chiton articulatus, Sow. ....	59
brevis, Sow. ....	52	bipunctatus, Sow. ....	104
buccinoides, Sow. ...	54	Blainvillii, Brod. ....	27
Bulbulus, Sow. ....	55	catenulatus, Sow. ....	104
bullata, Sow. ....	51	Chiloensis, Sow. ....	58
cassidiformis, Sow. ...	53	Columbiensis, Sow. ....	58
chrysostoma, Sow. ...	54	crenulatus, Brod. ....	27
clavatula, Sow. ....	52	dispar, Sow. ....	58
decussata, Sow. ....	55	Elenensis, Sow. ....	27
gemmulata, Sow. ...	55	exiguus, Sow. ....	104
goniostoma, Sow. ...	51	Frembleii, Brod. ....	28
hæmastoma, Sow. ....	54	Goodallii, Brod. ....	25
indentata, Sow. ....	54	graniferus, Sow. ....	104
mitriformis, Sow. ...	51	Grayii, Sow. ....	57
obesa, Sow. ....	52	hirudiniformis, Sow. ....	59
ovata, Sow. ....	53	Janeirensis, var? Gray	27
pulchra, Sow. ....	50	lævigatus, Sow. ....	59
rigida, Sow. ....	53	limaciformis, Sow. ....	26
solida, Sow. ....	50	luridus, Sow. ....	26
tessellata, Sow. ....	51	Lyllii, Sow. ....	26
tuberculosa, Sow. ...	51	punctulatissimus, Sow. ...	58
uniplicata, Sow. ....	173	pusillus, Sow. ....	57
Canis Dukhunensis, Sykes. ....	15	Pusio, Sow. ....	105
Lagopus, Linn. ....	189	retusus, Sow. ....	28
Capito albifrons, Vig. ....	3	roseus, Sow. ....	58
Caprimulgus Asiaticus, Lath. ...	83	rugulatus, Sow. ....	58
Mahrattensis, Sykes	83	scabriculus, Sow. ....	28
monticolus, Frankl. ....	83	setosus, Sow. ....	27
CAPROMYS FOURNIERI, Desm. 68,	100	Stokesii, Brod. ....	25
Capsa altior, Sow. ....	196	stramineus, Sow. ....	104
Cardita affinis, Sow. ....	195	subfuscus, Sow. ....	26
Cuvieri, Brod. ....	55	Swainsoni, Sow. ....	27
laticostata, Sow. ....	195	Chloropsis aurifrons, Jard. & Sel-	
muricata, Sow. ....	195	by? ..... ..	98
radiata, Sow. ....	195	Ciconia Argala, Steph. ....	160
spurca, Sow. ....	195	leucocephala ..... ..	159
tricolor, Sow. ....	194	Cinnyris concolor, Sykes ..... ..	99

	Page.		Page.
<i>Cinnyris currucaria</i> .....	98	<i>Columbella spurea</i> , Sow. ....	113
<i>lepida</i> .....	98	<i>sulcosa</i> , Sow. ....	118
<i>Mahrattensis</i> .....	99	<i>turrata</i> , Sow. ....	115
<i>minima</i> , Sykes .....	99	<i>uncinata</i> , Sow. ....	114
<i>Vigorsii</i> , Sykes .....	98	<i>unicolor</i> , Sow. ....	119
<i>Circaetus brachydactylus</i> , Vieill.	78	<i>unifasciata</i> , Sow. ...	114
<i>Circus pallidus</i> , Sykes .....	80	<i>varia</i> , Sow. ....	116
<i>variegatus</i> , Sykes .....	81	<i>varians</i> , Sow. ....	118
<i>Coccothraustes chrysopeplus</i> , Vig.	4	<i>versicolor</i> , Sow. ....	119
<i>Collurio erythronotus</i> , Vig. ....	86	<i>Coracias Indica</i> , Linn. ....	96
<i>Hardwickii</i> , Vig. ....	86	<i>Corvus culminatus</i> , Sykes .....	96
<i>Lahtora</i> , Vig. ....	86	<i>splendens</i> , Vieill. ....	96
<i>Colobus ferrugineus</i> , Illig. ....	122	<i>Coturnix Argoondah</i> , Sykes .....	153
<i>polycornus</i> , Illig. ....	122	<i>ductylisonans</i> , Temm. ....	152
<i>Temminckii</i> , Kuhl .....	122	<i>erythrorhyncha</i> , Sykes .....	153
<i>Columba Cambayensis</i> , Lath. ...	150	<i>Pentah</i> , Sykes .....	153
<i>Hodgsonii</i> , Vig. ....	16	<i>textilis</i> , Steph. ....	152
<i>humilis</i> , Temm. ....	150	<i>Crassatella gibbosa</i> , Sow. ....	56
<i>Meena</i> , Sykes .....	149	<i>undulata</i> , Sow. ....	56
<i>Enas</i> , Linn. ....	150	<i>Cuculus canorus</i> , Linn. ....	98
<i>risoria</i> , Linn. ....	150	<i>fugax</i> , Horsf. ....	98
<i>tigrina</i> , Temm. ....	150	<i>Cursorius Asiaticus</i> , Lath. ....	165
<i>Columbella angularis</i> , Sow. ....	118	<i>Cyclostoma Cumingii</i> , Sow. ....	32
<i>bicanalifera</i> , Sow. ...	113	<i>flavum</i> , Brod. ....	59
<i>buccinoides</i> , Sow. ...	114	<i>minutissimum</i> , Sow. ....	32
<i>castanea</i> , Sow. ....	118	<i>succineum</i> , Sow. ...	32
<i>coronata</i> , Sow. ....	114	<i>Cypræa Broderipii</i> , Gray .....	186
<i>costellata</i> , Sow. ....	118	<i>contaminata</i> , Gray .....	186
<i>dorsata</i> , Sow. ....	120	<i>Cumingii</i> , Gray .....	185
<i>elegans</i> , Sow. ....	114	<i>Goodallii</i> , Gray .....	184
<i>fluctuata</i> , Sow. ....	115	<i>Maugeri</i> , Gray .....	185
<i>fulva</i> , Sow. ....	115	<i>pacifica</i> , Gray .....	185
<i>fuscata</i> , Sow. ....	117	<i>rubescens</i> , Gray .....	185
<i>gibberula</i> , Sow. ....	115	<i>Cypselus affinis</i> , Hardw. ....	83
<i>guttata</i> , Sow. ....	118	<i>alpinus</i> , Illig. ....	130
<i>hæmastoma</i> , Sow. ...	116	DASYPROCTA ACOUCHY, F. Cuv. ....	100
<i>harpiformis</i> , Sow. ...	113	DASYPUS PEBA, Desm. ....	130
<i>lanceolata</i> , Sow. ....	116	SEX-CINCTUS, Linn. 130, 134	
<i>livida</i> , Sow. ....	117	<i>Dentalium perpusillum</i> , Sow. ...	29
<i>lyrata</i> , Sow. ....	114	<i>quadrangulare</i> , Sow. ....	29
<i>maculosa</i> , Sow. ....	116	<i>splendidum</i> , Sow. ...	29
<i>major</i> , Sow. ....	119	<i>tesseractum</i> , Sow. ...	29
<i>Maura</i> , Sow. ....	117	<i>Diacope spilura</i> , Benn. ....	182
<i>mendicaria</i> , Lam. ...	117	<i>Diagramma Sibbaldi</i> , Benn. ....	182
<i>nigropunctata</i> , Sow. ....	117	<i>Dicrurus Balicassius</i> , Vieill. ...	86
<i>obtusa</i> , Sow. ....	117	<i>cærulescens</i> , Vieill. ...	86
<i>procera</i> , Sow. ....	119	<i>Didus ineptus</i> , Linn. ....	111
<i>pulcherrina</i> , Sow. ...	113	<i>Diplodactylus</i> , n. g. Gray .....	40
<i>pygmæa</i> , Sow. ....	119	<i>vittatus</i> , Gray ...	40
<i>pyrostoma</i> , Sow. ....	116	<i>Dules caudavittatus</i> , Cuv. & Val. ....	112
<i>recurva</i> , Sow. ....	115	ECHIDNA HYSTRIX, Cuv. ....	179
<i>rugosa</i> , Sow. ....	115	<i>Emberiza cristata</i> , Vig. ....	93
<i>scalarina</i> , Sow. ....	116	<i>hortulana</i> , Linn. ....	93

	Page.		Page.
<i>Emberiza melanocephala</i> , Scop. . . . .	93	<i>Holacanthus xanthurus</i> , Benn. . . . .	183
<i>quadricolor</i> , Lath. . . . .	94	HYDROCHÆRUS CAPYBARA, Exl. . . . .	187
<i>subcristata</i> , Sykes. . . . .	93	Hypsipetes Ganeesa, Sykes . . . . .	86
<i>Erinaceus frontalis</i> , Benn. . . . .	193	HYRAX CAPENSIS, Schreb. . . . .	202
Grayi, Benn. . . . .	124	<i>Ibis falcinellus</i> , Temm. . . . .	161, 162
Spatangus, Benn. . . . .	123	<i>ignea</i> . . . . .	161
<i>Eudynamys orientalis</i> , Vig. & Horsf. . . . .	97	<i>papillosa</i> , Temm. . . . .	162
<i>Falco Chicquera</i> , Lath. . . . .	80	<i>religiosa</i> , Cuv. . . . .	160
<i>rufipes</i> , Bechst. . . . .	189	<i>Ixos Cafer</i> . . . . .	88
<i>Tinnunculus</i> , Linn. . . . .	80	<i>fulcatus</i> . . . . .	89
<i>Fasciolaria granosa</i> , Brod. . . . .	33	<i>jocosus</i> . . . . .	88
<i>Felis Catus</i> , Linn. . . . .	12	<i>Jora Tiphia</i> . . . . .	89
<i>Leo</i> , Linn. . . . .	146	<i>Julis porphyrocephalus</i> , Benn. . . . .	183
<i>Leopardus</i> , Linn. . . . .	148	<i>strigiventer</i> , Benn. . . . .	184
<i>Moormensis</i> , Hodgs. . . . .	10	<i>Zeylonicus</i> , Benn. . . . .	183
<i>Nepalensis</i> , Horsf. & Vig. . . . .	12	<i>Ketupa Leschenaulti</i> , Less. . . . .	82
FELIS ONÇA, Linn. . . . .	7	<i>Lacerta agilis</i> , Linn. . . . .	112
PARDALIS, Linn. . . . .	9	<i>Lanius muscipoides</i> , Frankl. . . . .	86
<i>Francolinus Ponticerianus</i> , Steph. . . . .	154	<i>Leptosomus Afer</i> , Vieill. . . . .	97
<i>spadiceus</i> , Sykes . . . . .	154	<i>Lestris parasiticus</i> , Temm. . . . .	189
<i>Fringilla crucigera</i> , Temm. . . . .	94	<i>Richardsonii</i> , Swains. . . . .	189
<i>leuconota</i> , Temm. . . . .	95	<i>Leuciscus Zeylonicus</i> , Benn. . . . .	184
<i>nisoria</i> , Temm. . . . .	94	<i>Limosa Glottoides</i> . . . . .	163
<i>Fulica atra</i> , Linn. . . . .	165	<i>Horsfieldii</i> , Sykes . . . . .	163
<i>Fuligula cristata</i> , Steph. . . . .	170	<i>Linaria Amandava</i> . . . . .	93
<i>rufina</i> , Steph. . . . .	169	<i>Lonchura</i> , n. g. Sykes . . . . .	94
<i>Gallinago media</i> , Ray . . . . .	163	<i>Cheet</i> , Sykes . . . . .	95
<i>minima</i> , Ray . . . . .	163	<i>leuconota</i> , Sykes . . . . .	95
<i>Gallinula Javanica</i> , Horsf. . . . .	164	<i>nisoria</i> , Sykes . . . . .	94
<i>Gallus crispus</i> , Temm. . . . .	152	<i>quadricolor</i> , Sykes . . . . .	94
<i>domesticus</i> , Ray . . . . .	152	<i>Lutra Chilensis</i> , Benn. . . . .	1
<i>giganteus</i> , Temm. . . . .	151	<i>Mareca Awsuree</i> , Sykes . . . . .	168
<i>Morio</i> , Temm. . . . .	152	<i>fistularis</i> , Steph. . . . .	168
<i>Sonneratii</i> , Temm. . . . .	151	<i>pæcilorhyncha</i> , Steph. . . . .	168
<i>Gonodactylus Chiragra</i> , Latr. . . . .	6	<i>Marginella curta</i> , Sow. . . . .	105
<i>ensiger</i> , Owen . . . . .	6	<i>Cypræola</i> , Sow. . . . .	57
<i>Graucalus Papuensis</i> , Cuv. . . . .	86	<i>Fruentum</i> , Sow. . . . .	57
<i>Grus Antigone</i> , Steph. . . . .	157	<i>Megalurus?</i> <i>ruficeps</i> , Sykes . . . . .	91
<i>Gulo larvatus</i> , Sm. . . . .	67	<i>Meleagris Gallopavo</i> , Linn. . . . .	151
<i>Hæmatornis Bacha</i> , Vig. . . . .	79	<i>Merops viridis</i> , Linn. . . . .	82
<i>undulatus</i> , Vig. . . . .	15	<i>Milvus Govinda</i> , Sykes . . . . .	81
<i>Halcyon Smyrniensis</i> . . . . .	84	<i>Mirofra phænicura</i> , Frankl. . . . .	93
<i>Haliaëtus Ponticerianus</i> . . . . .	78	<i>Motacilla cinerea</i> , Ray . . . . .	130
<i>Helix Monile</i> , Brod. . . . .	29	<i>Dukhunensis</i> , Sykes . . . . .	91
<i>Hemipodius Dussumieri</i> , Temm. . . . .	155	<i>flava</i> , Ray . . . . .	129
<i>pugnax</i> , Temm. . . . .	155	<i>neglecta</i> , Gould . . . . .	129
<i>Tagoor</i> , Sykes . . . . .	155	<i>variegata</i> , Steph. . . . .	91
<i>Himantopus melanopterus</i> , Horsf. . . . .	166	<i>Murex buxeus</i> , Brod. . . . .	194
<i>Hirundo concolor</i> , Sykes . . . . .	83	<i>Carduus</i> , Brod. . . . .	175
<i>erythropygia</i> , Sykes . . . . .	83	<i>crispus</i> , Brod. . . . .	176
<i>filifera</i> , Steph. . . . .	83	<i>Dipsacus</i> , Brod. . . . .	194
<i>Jewan</i> , Sykes . . . . .	83	<i>erosus</i> , Brod. . . . .	174
		<i>exiguus</i> , Brod. . . . .	175



	Page.		Page.
<i>Murex horridus</i> , Brod. ....	176	<i>Nucula Elenensis</i> , Sow. ....	198
<i>humilis</i> , Brod. ....	175	<i>elongata</i> , Sow. ....	197
<i>incisus</i> , Brod. ....	176	<i>exigua</i> , Sow. ....	198
<i>Lappa</i> , Brod. ....	177	<i>gibbosa</i> , Sow. ....	198
<i>lugubris</i> , Brod. ....	175	<i>Pisum</i> , Sow. ....	198
<i>Margariticola</i> , Brod. ...	177	<i>polita</i> , Sow. ....	198
<i>Maurus</i> , Brod. ....	174	<i>Numida Meleagris</i> , Linn. ....	152
<i>nitidus</i> , Brod. ....	176	<i>Nycticorax Europæus</i> , Steph. ...	159
<i>Nucleus</i> , Brod. ....	175	<i>Octodon</i> , n. g. <i>Benn.</i> ....	46
<i>Oxyacantha</i> , Brod. ....	176	<i>Cumingii</i> , <i>Benn.</i> ....	47
<i>pallidus</i> , Brod. ....	194	<i>Edicnemus crepitans</i> , Temm. ...	166
<i>pinniger</i> , Brod. ....	174	<i>Oriolus Galbula</i> , Linn. ....	87
<i>Princeps</i> , Brod. ....	175	<i>Kundoo</i> , <i>Sykes</i> ....	87
<i>pumilus</i> , Brod. ....	175	<i>melanocephalus</i> , Linn. ...	87
<i>recurvirostris</i> , Brod. ....	174	<i>Ornithorhynchus paradoxus</i> ,	
<i>rubescens</i> , Brod. ....	174	<i>Blum</i> . ....	145.
<i>squamosus</i> , Brod. ....	176	<i>Orthotomus Bennettii</i> , <i>Sykes</i> ...	90
<i>tetragonus</i> , Brod. ....	174	<i>Lingoo</i> , <i>Sykes</i> ....	90
<i>Vibex</i> , Brod. ....	175	<i>Ortyx spilogaster</i> , <i>Vig.</i> ....	4
<i>vittatus</i> , Brod. ....	176	<i>Otis fulva</i> , <i>Sykes</i> ....	155
<i>Mus giganteus</i> , Hardw. ....	40	<i>nigriceps</i> , <i>Vig.</i> ....	155
<i>longicaudatus</i> , <i>Benn.</i> ....	2	<i>Otus Bengalensis</i> , Frankl. ....	81
<i>Musculus</i> , Linn. ....	41	<i>Ovulum æquale</i> , Sow. ....	174
<i>oleraceus</i> , <i>Benn.</i> ....	121	<i>Avena</i> , Sow. ....	173
<i>platythrix</i> , <i>Benn.</i> ....	121	<i>inflexum</i> , Sow. ....	173
<i>setifer</i> , Horsf. ....	40	<i>rufum</i> , Sow. ....	173
<i>sylvaticus</i> , L. ....	41	<i>Paguma</i> , Gray ....	65
<i>Muscicapa Banyumas</i> , Horsf. ...	85	<i>larvata</i> , Gray ....	68
<i>ceruleocephala</i> , <i>Sykes</i> ....	85	<i>Palæornis melanorhynchus</i> , <i>Sykes</i> ...	96
<i>melanops</i> , <i>Vig.</i> ....	85	<i>torquatus</i> , <i>Vig.</i> ....	96
<i>picata</i> , <i>Sykes</i> ....	85	<i>Paradoxurus aureus</i> , F. Cuv. ...	68
<i>Poonensis</i> , <i>Sykes</i> ....	85	? <i>binotatus</i> , Gray ...	68
<i>Muscipeta flammea</i> , Cuv. ....	85	<i>Bondar</i> , Gray ....	66
<i>Indica</i> , Steph. ....	84	<i>Crossii</i> , Gray ....	67
<i>Paradisi</i> , Cuv. ....	84	<i>dubius</i> , Gray ....	66
<i>peregrina</i> ....	85	<i>Finlaysonii</i> , Gray ....	68
<i>Mustela Canadensis</i> , Schreb. ...	189	<i>Hamiltonii</i> , Gray ..	67
<i>Myophonus Temminckii</i> , Vig. ...	15	<i>hermaphroditus</i> , Gray ....	67
<i>Neophron Percnopterus</i> , Sav. ...	78	<i>larvatus</i> , Gray ....	67
<i>Neritina chlorostoma</i> , Sow. ....	201	<i>leucopus</i> , Ogilb. ...	67
<i>dilatata</i> , Brod. ....	201	<i>Musanga</i> , Gray ...	66
<i>globosa</i> , Brod. ....	201	<i>Pallasii</i> , Gray ....	67
<i>intermedia</i> , Sow. ....	201	<i>Pennantii</i> , Gray ..	66
<i>latissima</i> , Brod. ....	200	<i>prehensilis</i> , Gray ...	66
<i>Morio</i> , Sow. ....	201	<i>trivirgatus</i> , Gray... ..	68
<i>Nux</i> , Brod. ....	201	<i>Typus</i> , F. Cuv. ...	65
<i>picta</i> , Sow. ....	201	<i>Parra Sinensis</i> , Gmel. ....	164
<i>reticulata</i> , Sow. ....	201	<i>Partula auriculata</i> , Brod. ....	125
<i>Noctua Indica</i> , Frankl. ....	82	<i>hyalina</i> , Brod. ....	32
<i>Nucula costellata</i> , Sow. ....	198	<i>rosea</i> , Brod. ....	125
<i>crenifera</i> , Sow. ....	197	<i>varia</i> , Brod. ....	125
<i>cuneata</i> , Sow. ....	198	<i>Parus atriceps</i> , Horsf. ....	92
<i>eburnea</i> , Sow. ....	198	<i>xanthogenys</i> , Vig. ....	92

	Page.		Page.
<i>Passer domesticus</i> , Briss. ....	95	<i>Propithecus Diadema</i> , Benn. ...	20
<i>Pastor Mahrattensis</i> , Sykes ....	95	<i>Pseudomys</i> , n. g. Gray .....	39
<i>Pagodarum</i> , Temm. ....	95	<i>Australis</i> , Gray ...	39
<i>roseus</i> , Temm. ....	95	<i>Psittacus Erithacus</i> , Linn. ....	23
<i>tristis</i> , Temm. ....	95	<i>Pterocles exustus</i> , Temm. ....	154
<i>Pavo cristatus</i> , Linn. ....	151	<i>quadricinctus</i> , Temm. ....	155
<i>Pectunculus assimilis</i> , Sow. ....	196	<i>Ptilinopus Elphinstonii</i> , Sykes ...	149
<i>inæqualis</i> , Sow. ....	196	<i>Puffinus fuliginosus</i> , Strickl. ...	129
<i>intermedius</i> , Brod. ....	126	<i>Purpura muricata</i> , Brod. ....	125
<i>longior</i> , Sow. ....	196	<i>Querquedula Circia</i> , Steph. ....	169
<i>maculatus</i> , Brod. ...	126	<i>Crecca</i> , Steph. ....	169
<i>multicostatus</i> , Sow. ....	195	<i>Rallus Akool</i> , Sykes .....	164
<i>ovatus</i> , Brod. ....	126	<i>RAMPHASTOS ARIEL</i> , Vig. ....	42
<i>strigilatus</i> , Sow. ....	196	<i>Ranella affinis</i> , Brod. ....	179
<i>tessellatus</i> , Sow. ...	196	<i>cælata</i> , Brod. ....	179
<i>Pelidna Temminckii</i> , Steph. ....	164	<i>muriciformis</i> , Brod. ....	179
<i>Perdix picta</i> , Jard. & Selby ....	153	<i>nitida</i> , Brod. ....	179
<i>Petrocincla cinclorhyncha</i> , Vig. ....	88	<i>pusilla</i> , Brod. ....	194
<i>Maal</i> , Sykes .....	88	<i>pyramidalis</i> , Brod. ....	194
<i>Pandoo</i> , Sykes .....	87	<i>tuberculata</i> , Brod. ....	179
<i>Phalacrocorax Javanicus</i> , Steph. ....	170	<i>ventricosa</i> , Brod. ....	178
<i>Phasianella stylifera</i> , Turt. ....	60	<i>Regulus ignicapillus</i> , Temm. ...	139
<i>Phasianus albo-cristatus</i> , Vig. ...	16	<i>Rhipidura albofrontata</i> , Frankl. ....	85
<i>ignitus</i> , Lath. ....	16, 24	<i>fuscocentris</i> , Frankl. ....	85
<i>leucomelanos</i> , Lath. ...	16	<i>Rhynchæa picta</i> , Gray .....	164
<i>lineatus</i> , Lath. ...	16, 193	<i>Rhynchaspis virescens</i> , Leach ...	168
<i>PHENICOPTERUS RUBER</i> , Linn. ...	141	<i>Saxicola bicolor</i> , Sykes .....	92
<i>Phœnicopterus ruber</i> , Linn. ....	159	<i>erythropygia</i> , Sykes ...	92
<i>Phœnicura atrata</i> , Jard. & Selby ....	92	<i>rubeculoides</i> , Sykes ...	92
<i>Suecica</i> .....	92	<i>rubicola</i> , Temm. ....	91
<i>Phytotoma Bloxhami</i> , Childr. ...	3	<i>Scalaria Diadema</i> , Sow. ....	55
<i>silens</i> , Kittl. ....	3	<i>Scolopax rusticola</i> , Linn. ....	133
<i>Picus aurocapillus</i> , Vig. ....	4	<i>Scombrosox lemuridens</i> , Benn. ....	4
<i>imperialis</i> , Gould .....	140	<i>Semnopithecus? alboocularis</i> , Sykes ...	18
<i>Mahrattensis</i> , Lath. ....	97	<i>Solenella</i> , n. g. Sow. ....	197
<i>Placunanomia</i> , n. g. Brod. ....	28	<i>Norrisii</i> , Sow. ....	197
<i>Cumingii</i> , Brod. ....	29	<i>Sorex ciliatus</i> , Sow. ....	109
<i>Planorbis Peruvianus</i> , Brod. ...	125	<i>remifer</i> , Geoffr. ....	109, 139
<i>Platalea leucorodia</i> , Linn. ....	159	<i>Squilla ciliata</i> , Fabr. ....	6
<i>junior</i> .....	159	<i>spinifrons</i> , Owen .....	6
<i>Telfairii</i> , Vig. ....	111	<i>Sterna acuticauda</i> , Gray .....	171
<i>Platysoma</i> , n. g. Lién. ....	112	<i>Seena</i> , Sykes .....	171
<i>Plectropterus melanotus</i> , Steph. ....	167	<i>similis</i> , Gray .....	171
<i>Ploceus flavicollis</i> , Frankl. ....	94	<i>Stilifer</i> , n. g. Brod. ....	60
<i>Philippensis</i> , Cuv. ....	94	<i>Astericola</i> , Brod. ....	60
<i>Ploctus melanogaster</i> , Gmel. ....	171	<i>subulatus</i> , Brod. ....	61
<i>Podiceps Philippensis</i> , Steph. ...	170	<i>Turtoni</i> , Brod. ....	61
<i>Pomatorhinus Horsfieldii</i> , Sykes ....	89	<i>Strix Indranee</i> , Sykes .....	82
<i>Porphyria smaragnotus</i> , Temm. ....	165	<i>Javanica</i> , Horsf. ....	81
<i>Prinia inornata</i> , Sykes .....	89	<i>Sylvia montana</i> , Horsf. ....	89
<i>socialis</i> , Sykes .....	89	<i>Rama</i> , Sykes .....	89
<i>Procellaria fuliginosa</i> , Kuhl ...	128	<i>Sylviella</i> , Lath. ....	89
<i>Propithecus</i> , n. g. Benn. ....	20	<i>Syngnathus fucicola</i> , Benn. ....	5

	Page.		Page.
<i>Tadorna rutila</i> , Steph. ....	167	<i>Typhis Sowerbii</i> , Brod. ....	178
<i>Tænia lamelligera</i> , Owen .....	143	<i>Upupa minor</i> , Shaw .....	97
<i>Tantalus leucocephalus</i> , Lath. ...	160	<i>Vanellus bilobus</i> .....	166
<i>Tetrodon argyropleura</i> , Benn. ...	184	<i>Goensis</i> , Steph. ....	165
<i>Tiliqua Cunninghamii</i> , Gray ...	40	<i>Viralva Anglica</i> , Steph. ....	172
<i>Timalia Chataræa</i> , Frankl. ....	88	<i>Viverra binotata</i> , Reinw. ....	68
<i>Malcolmi</i> , Sykes .....	88	<i>Bondar</i> , Blainv. ....	66
<i>Somervillei</i> , Sykes .....	88	<i>hermaphrodita</i> , Pall. ...	67
<i>Totanus Glareola</i> , Temm. ....	162	<i>Indica</i> , Geoffr. ....	23
<i>hypoleucos</i> , Temm. ...	163	<i>larvata</i> , Gray .....	68
<i>ochropus</i> , Temm. ....	162	<i>Musanga</i> , Horsf. ....	66
<i>Trochilus eurypterus</i> , Lodd. ...	7	<i>nigra</i> , Desm. ....	65
<i>flavescens</i> , Lodd. ...	7	<i>prehensilis</i> , Blainv. ....	66
<i>Gouldii</i> , Lodd. ....	7	<i>Rasse</i> , Horsf. ....	23
<i>tyrianthinus</i> , Lodd. ...	6	<i>trivirgata</i> , Reinw. ....	68
<i>Turdus cyanotus</i> , Jard. & Selby	87	<i>Voluta Cumingii</i> , Brod. ....	33
<i>macrourus</i> , Gmel. ....	87	<i>Vultur Bengalensis</i> , Gmel. ....	78
<i>Saularis</i> , Linn. ....	87	<i>Indicus</i> , Lath. ....	77
<i>Typhis Belcheri</i> , Brod. ....	178	<i>Ponticerianus</i> , Lath. ....	77
<i>coronatus</i> , Brod. ....	178	<i>Xanthornis chrysocarpus</i> , Vig. ...	3
<i>Cumingii</i> , Brod. ....	177	<i>Zoothera monticola</i> , Vig. ....	15
<i>pinnatus</i> , Brod. ....	178		



$\frac{22}{3} P$















