PROCEEDINGS

OF THE

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LIST

OF

CONTRIBUTORS,

With References to the several Articles contributed by each.

LIST OF PLATES.

1856.

MAMMALIA.

AVES.

REPTILIA.

MOLLUSCA.

ANNULOSA.

PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 22, 1856.

Dr. Gray, F.R.S., in the Chair.

Mr. Yarrell stated to the Meeting that on the 3rd of January of the present year 1856, a great Bustard, *Otis tarda* of Linnæus, was taken in Berkshire. It was found about a mile from Hungerford, in the direction of Salisbury, by a boy, who observed that the bird had a broken leg, and could not, or did not, raise itself off the ground. He dragged it along by one wing to the farm to which he had been sent, where a man broke the bird's neck, that the boy might carry it back home the easier. The bird is now at Mr. Leadbeater's for preservation. It was a male, and appears to be in its second year.

The following papers were read:—

1. Description of Two New Shells discovered by Robert MacAndrew, Esq. on the coast of Norway. Described by Arthur Adams, R.N.

1. Scalaria Lovenii, A. Adams. *S. testa pyramidali-turrita apice acuminata alba, anfractibus novem planiusculis, costis annularibus subdistantibus, angustis lamellatis recurvatis prope suturas latioribus et uncinatis costarum interstitiis valde spiraliter liratis, anfractu ultimo lira valida ad basin cincto; apertura rotundata.*

Hab. Ad litt. Scandinaviæ.

2. Triforis Macandreæ, A. Adams. *T. testa pyramidali-turrita apice obtuso sinistrali tenuicula sordide alba, anfractibus quatuordecem rotundatis spiraliter liratis liris planis æqualibus subdistantibus (ad anfractum ultimum, sex) inter-*

stitiis sub lente longitudinaliter tenuissime striatis; apertura rotundata, canali brevi aperto.

Hab. Ad litt. Scandinaviæ.

2. Description of Three New Volutes from the Collections of the Hon. Mrs. Cathcart and Mr. Cuming. By Lovell Reeve, F.L.S. & G.S.

(Mollusca, Pl. XXXIII.)

1. Voluta Cathcartiæ. *Vol. testa cylindraceo-oblonga, basi recurva, spira brevi, apice papillari, anfractibus superne concavo-declivibus, deinde subplanatis; columella quadriplicata, plicis basin versus descendente; apertura elongata, subangusta, labio simplici, curvato; aurantio-fulva, nigricante-purpureo trifasciatim interrupte maculata, maculis valde irregularibus et varie nebulatis, anfractuum sutura peculiariter punctata et maculata.*

Long. $3\frac{1}{2}$ poll.; lat. $1\frac{5}{8}$ poll.

Hab. ——?

This fine species of *Voluta*, from the collection of the Hon. Mrs. Macadam Cathcart, will not admit of defined comparison with any known species. It has somewhat the tone of colour and marking of *V. Pacifica*, but is of quite another typical form. The spire is short and largely papillary, and the plaits of the columella, four in number, descend elongately to the base.

2. Voluta Americana. *Vol. testa subabbreviato-fusiformi, spira exserta, turrita, apice vix papillari, anfractibus superne concavo-angulatis, ad angulum tuberculis rotundatis, interdum in plicis descendentibus eleganter coronatis; columella superne arcuata, deinde callosa et quadriplicata, plica superna fere obsoleta, apertura subeffusa; pallida, fulvescente, aurantio-fusco trifasciatim interrupte maculata, et juxta suturam picta, interstitiis eximie reticulata.*

Long. $1\frac{3}{4}$ poll.; lat. $\frac{7}{8}$ poll.

Hab. Brazil.

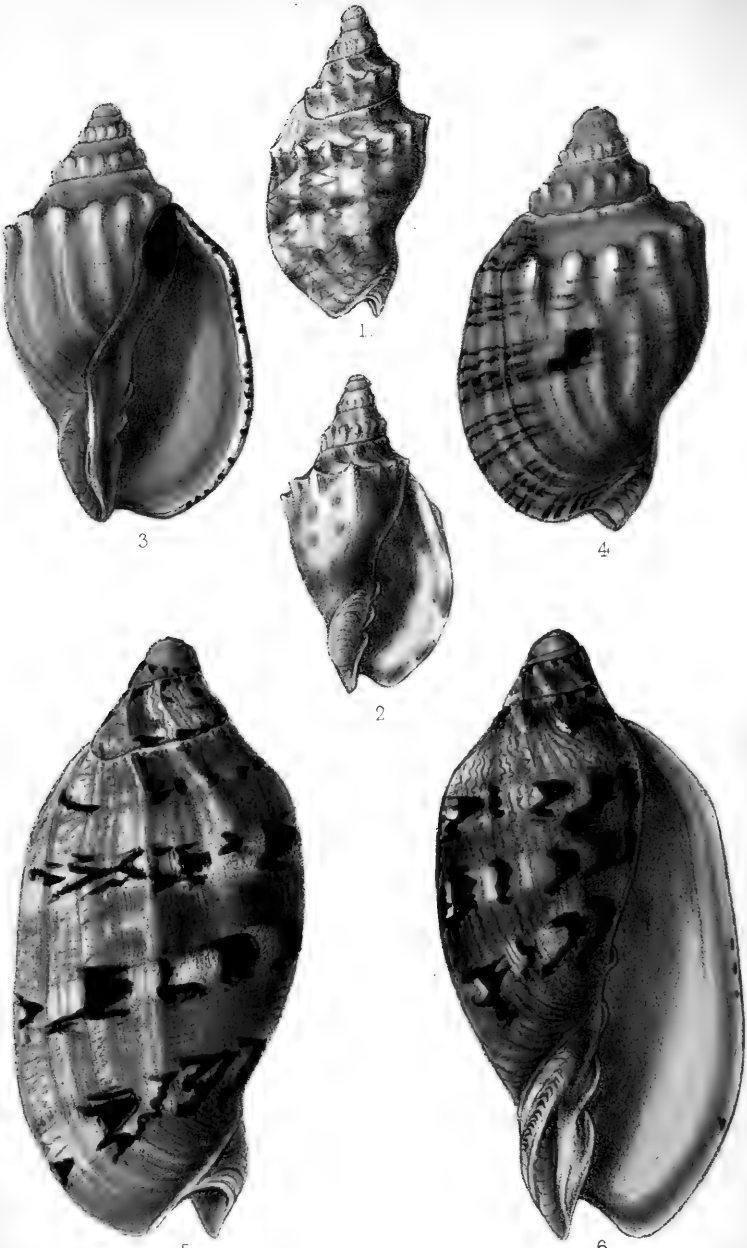
Of very characteristic form, faintly banded and reticulated with orange-brown; also in the collection of the Hon. Mrs. Macadam Cathcart.

3. Voluta Africana. *Vol. testa ovata, subventricosa, spira exserta, apice subpapillari, anfractibus superne concavo-angulatis, ad angulum tuberculato-nodatis, nodis interdum in costis descendentibus, columella arcuata, basin versus biplicata, apertura subeffusa; fulvo-aurantia, lineis fuscis, punctis hieroglyphicis sparsim internotatis, in quaternis, fasciata, columella superne intense nigra.*

Long. $2\frac{1}{2}$ poll.; lat. $1\frac{1}{2}$ poll.

Hab. East coast of Africa.

This species, from Mr. Cuming's collection, partakes of the cha-



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G.B. Sowerby lith.

W. West Imp.

1.2. Voluta Americana. 3.4. V. Africana.. 5.6. V. Cathcartiæ.

racters of *V. festiva* and *V. Hebræa*, but is of a totally distinct typical form, especially in respect of the columella, which is peculiarly arched, and has only two plaits at the base. The columella is stained at the top with the characteristic black spot of *V. festiva*.

3. Notes on the Species of Hipponyx inhabiting the American coasts, with Descriptions of New Species. By Philip P. Carpenter.

The species of this genus have a helicoid apex when young, which is never persistent as in *Pileopsis* and *Calyptræidæ* proper. In many species the shape varies extremely, and is not to be taken alone as a specific distinction. The characters of the epidermis and basal margin are among the most constant.

1. Hipponyx antiquatus, Linn.

Patella antiquata, Linn. Syst. Nat. p. 1259; Dillw. p. 1035, no. 44.
Le Soron, Adans. Sen. p. 32, pl. 2, f. 3 = *P. nivea*, Gmel.
Pileopsis mitrula, Lam. An. s. Vert. vii. p. 610, no. 2.
Capulus mitrula, Dunker, Ic. Moll. Guin. p. 36, no. 99. D'Orb. Sagra Moll. ii. p. 186.
Hipponyx mitrula, Sow. P. Z. S. 1835, p. 5.
Hipponyx antiquatus, Menke, Zeit. f. Mal. 1853, p. 79.
Concholepas antiquatus, H. & A. Adams, Gen. i. p. 373.
Hipponyx Panamensis, C. B. Adams, Pan. Shells, p. 218, no. 328.
Amalthea Panamensis, H. & A. Adams, Gen. i. p. 374.

Hab. West Indies, passim. W. Africa: Senegal, *Adanson*; Loander, *Tams*; St. Vincent, *Schmidt*. W. America: Lobos Island, Peru, *Cuming*; Panama, *C. B. Adams*.

Base rounded, not crenated; outside foliated, with faint radiating striæ. Deshayes (from descriptions) doubts the identity of the African and Caribbæan shells. Menke and Dunker confirm it: "possidemus hanc cochleolam e remotissimis terræ regionibus allatam" (*Dunker*). Sowerby's species was described from Pacific shells. C. B. Adams, for geographical reasons, doubts their identity, and names them *H. Panamensis*; "the apex being less prominent, the concentric laminæ more numerous, and the radiating striæ more deeply impressed." All these are very variable characters in the true *H. antiquata*, as well as in the Pacific specimens.

2. Hipponyx serratus, B. M. Cat. Mazatlan Moll.

H. foliaceus, Menke, Zeit. f. Mal. 1851, p. 36, no. 129, non Quoy & Gaim.

Outside like *H. antiquata*; base flattened, broad, with numerous serrated laminæ separated by brown epidermis in shreds. Muscular scar corrugated. This species is only yet known from Mazatlan.—*Lieut. Shipley; Brit. Mus. Coll.*

3. Hipponyx barbatus, Sow. P. Z. S. 1835, p. 5. C. B. Adams, Pan. Shells, p. 217, no. 327.

Hipponyx australis, Menke, Zeit. f. Mal. 1847, p. 186, no. 38; non *H. australis*, Desh. (= *Patella australis*, Lamk.)

Outside with close radiating lines of bristly hairs; base round, smooth, crenated at the outer edge. The shell is quoted with doubt by C. B. Adams, because of the difference in zoological province.

Hab. Society Islands, *Cuming*; Panama, *C. B. Adams*; Mazatlan, *Brit. Mus. Coll.*; Atooi, Sandwich Islands, *Nuttall.*

3 (*b*). Hipponyx ? barbatus, var. costellatus. *H. t.* "H. barbatæ" *simili; sed costis paucioribus, validioribus; apice subcentrali; setis minoribus, tenuioribus.*

Long. ·5; lat. ·42; alt. ·27 poll.

Hab. ? Ad insulas Maris Caribbæi.

This may prove a distinct species, but is only described from a single specimen in my collection, of which I can give no exact authority for the locality. It has the exterior of *H. Grayanus*, with the base of *H. barbatus.*

4. Hipponyx (Amalthea) Grayanus, Menke, Zeit. f. Mal. 1853, p. 115.

Hipponyx radiata, Gray, P. Z. S. 1835. C. B. Adams, Panama Shells, p. 218, no. 329. Menke, Zeit. f. Mal. 1853, p. 79; non *H. radiata*, Quoy & Gaimard, 1824; nec *H. radiata*, Desh. 1830, (= *H. crispa*, Menke).

Hab. Gallapagos, *Cuming*; Sandwich Islands, on Pinna, *Nuttall*; Panama, *C. B. Adams*; S.W. Mexico, on Pinna, *P. P. C.*; Mazatlan, *Brit. Mus. Coll.*; St. Vincent (W. Africa), *Schmidt*, teste *Menke.*

Apex subcentral; ribs fewer, coarser and more nodulous than in *H. barbata*, with softer, smaller, fewer, and more irregular hairs; base flat, not very broad, rather rounded at the inner margin, crenated at the outer, with numerous lamellæ, undulated but not serrated.

5. Hipponyx subrufus, Lam.

Pileopsis subrufa, Lam. An. s. Vert. vii. p. 611, no. 4.

Hipponyx subrufa, Sow. P. Z. S. 1835, p. 5. (Non *P. militaris*, Dillw., ut ?credit Desh.)

Capulus subrufus, D'Orb. Sagra Moll., ii. 186, pl. 24, f. 24, 25.

Hipponyx ——, sp. ind., C. B. Adams, Panama Shells, p. 217, no. 326.

Concholepas subrufa, H. & A. Adams, Gen. i. p. 373.

Lamarck's shell was described from W. Indian specimens, Sowerby's from Peruvian. There does not appear, however, any specific distinction between the two. Shell of a pinkish red, with full, recurved umbo, and finely cancellated surface; base round, simple.

Hab. W. Indies, passim; Lobos Island, Peru, *Cuming*; ? Panama, *C. B. Adams.*

The figure of *H. subrufus*, jun. in Sow. Thes. Conch. pl. 73. f. 21, is much more like the young of *H. barbatus.*

6. Hipponyx tuberculatus, n. s. *H. t. solida, conica, subrufa; apice subcentrali; costis radiantibus creberrimis, concentrice tuberculosis, interstitiis minimis; epidermide incon-*

spicua; basi lata, planata, lamellis creberrimis instructa, intus vix undulatis, ad marginem secundum costas externas undatis; cicatrice musculari lævi.

Long. ·48; lat. ·43; alt. ·17 poll.

Hab. Ad insulas Maris Caribbæi. In Mus. Brit.

The species is described from a specimen in my collection, but it exists unnamed in the British Museum. Outside somewhat like *H. Grayanus*, but with the ribs more crowded, with stronger tubercles, and without the scaly and hairy epidermis of that species; base broad and sharp at both edges, like *H. serratus*, but with the lamellæ not serrated or separated by epidermis, and with the muscular impression not corrugated.

7. Hipponyx (Amalthea) effodiens, n. s. *H. t. solidissima, depressa, albida viridi tincta; irregulari, apice subcentrali, seu vix monstrante; sulcis radiantibus altis, valde distantibus, circiter* xx. *ad* xxv.*; basi lata, non planata, intus rotundata, lævi, extus à sulcis dentata; cicatrice musculari longitudinaliter tenuissime striata; animali fossam altissimam alio in alio excavante.*

Long. ·52; lat. ·47; alt. ·13 poll.

Hab. Ad insulas Maris Caribbæi. In Mus. Brit. et Mus. Cuming repertura est.

Shell small, but enormously thick, and deeply cut by the few radiating furrows. Base rounded, toothed outside. Very deep excavations are made in the shells by younger specimens. Specimens much larger than those described are in Mr. M'Andrew's collection.

4. Extract from a Letter addressed to Adam White, Esq. by Major Thomas Hutton,—dated Mussoree, Nov. 27, 1855.

"In a box despatched from this to Calcutta on the 22nd inst., I enclosed a small packet for you containing living cocoons of *Actias selene*, in order that you may have an opportunity, if they survive the trip, of witnessing the mode in which the moth effects its escape, as I think the proceeding will be interesting to you and to entomologists generally. I have added two Cocoons in which the pupa is dead, in order to show you how distinctly visible are the wing spines, which formerly induced me to re-name the genus as '*Plectropteron*,' a term which I still think more applicable than *Actias*, in which the generic characters make no mention of the spine. As this instrument exists in both the species found in India, you will probably also detect it in *A. luna*, of America: and whether the generic name be changed or not, the characters must be revised. Before proceeding to separate the threads by the wing spines, I have ascertained that the Moth ejects from *the mouth* a few drops of a clear colourless fluid, with which the gum is dissolved, and it appears to use the tuft of down on the front, between the eyes, as a brush for the application of the solvent. This is a curious fact, as the genus,

like *Saturnia*, is said to have *no mouth*! I believe the fact stands thus,—there is no mouth organized for the reception of *nourishment*, though sufficiently so to secrete the fluid in question; this you can ascertain by dissection; but that a fluid is ejected from that organ is a fact which I have repeatedly witnessed, and it is probable, therefore, that *Saturnia* and other genera secrete a similar fluid, and similarly apply it to the threads. I have neither *eyes* nor *glasses* adapted for anatomical dissection, but you will be able to follow up the hint here given. I long since wrote about the wing spine to Mr. Westwood, who, I believe, doubted the fact of its existence; but as I have here no opportunity of seeing what is said and done on these subjects, I know not how the matter ended."

February 12, 1856.

Dr. Gray, F.R.S., in the Chair.

The following papers were read :—

1. On a New Species of Pigeon.
By G. R. Gray, F.L.S. & Z.S., etc.

(Aves, Pl. CXV.)

As I believe the members of the Society take some interest in those birds which have passed a portion of their existence in the Gardens, I am induced to place before them a Pigeon, which I have every reason to suppose has remained hitherto undescribed. It belongs to the same division as the Garnet-winged Pigeon of Latham (*Columba erythroptera*, Gm.), which has been placed in Dr. Reichenbach's subgenus *Phlegœnas* by H. H. Prince Bonaparte; but I think that, considering the numerous divisions that have been formed in this class of birds, it might with equal propriety be divided from it.

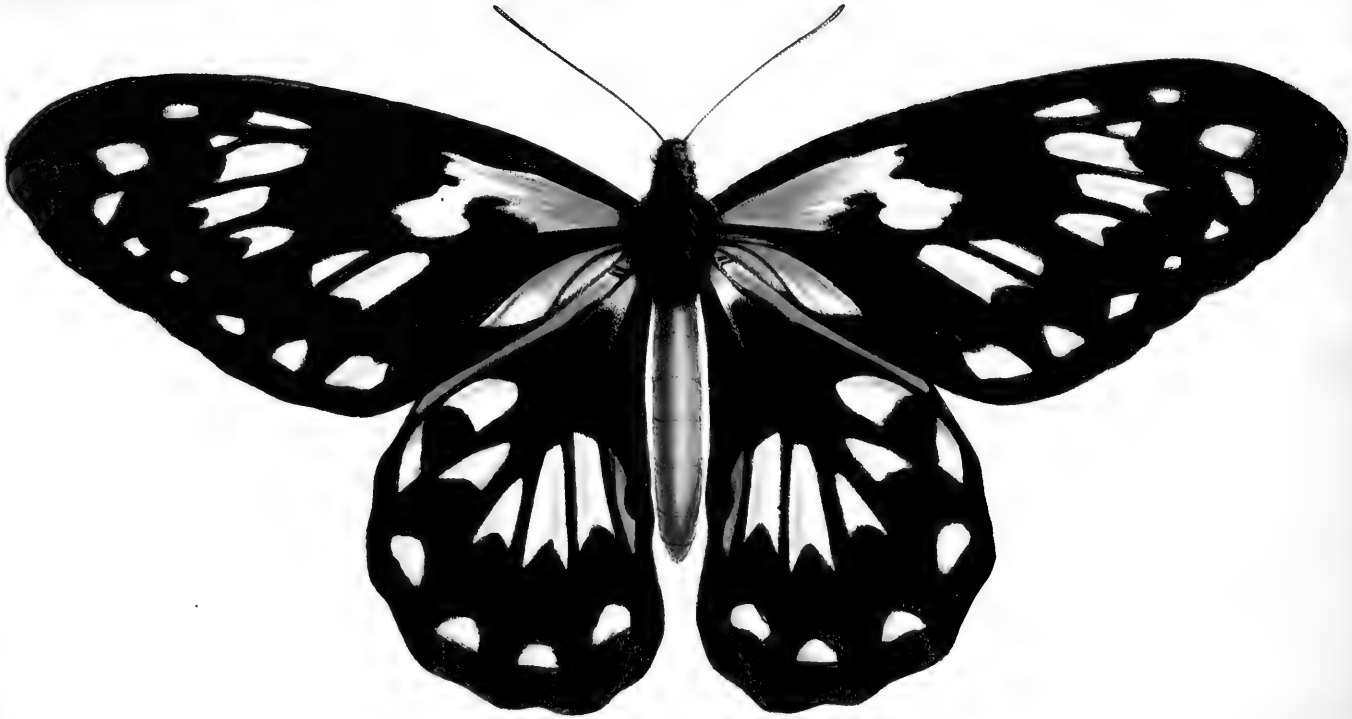
I am led to consider that there exists some slight confusion in the description of the *Columba erythroptera*, which is stated by Latham (in his History, viii. p. 71) to come from the Isle of Eimeo, which he describes as having the "belly and vent black," but I think that this is a mistake; as I find amongst Ellis's drawings, made during the voyage of the great circumnavigator Cook in the year 1777–79, a representation of a Garnet-winged Pigeon that was found on "York Isle or Eimao," having those parts pure white, and that it even extends to the end of the under tail coverts and on the thighs.

Latham has further noticed two varieties, viz. that which forms his *var.* A. is from Otaheite, and the description was taken from the

Wolf lith

M. & N. Hanhart, Imp.


NATURAL HISTO



G.H.Ford

W.West Imp

PAPILIO (ORNITHOPTERA) VICTORIÆ, G.R.Gray

drawing of Forster, who also accompanied the same celebrated voyager during the years 1772–74, which exhibits the belly and vent as "dusky." Forster had applied the name of *C. leucophrys* to this bird, under which name the description will be found in his 'Descriptiones Animalium, &c.,' edited by Professor Lichtenstein, at p. 168; while the variety B. is stated to be from the island of Tanna, and is recorded as having a "reddish black" belly (the same colour as the back).

From these notices, there appear to be at least *two*, if not three species of Garnet-winged Pigeons; and may not they, like the *Ptilonopi*, be peculiar to the different groups of islands of the South Pacific Ocean? This, however, cannot be at present satisfactorily determined, from want of specimens from the different localities, but I have ventured to draw attention to these differences, that it may lead to a further elucidation when an opportunity offers.

I may add, however, that M. Temminck, in his work on Pigeons (t. 55), figures one that may probably come near to variety B. of Latham, but he describes the belly black with purple reflexions. The British Museum contains two specimens from Bow Island, which approach in some measure to the variety A. of Latham, but the belly is of a dusky greyish black.

The one now exhibited is quite different from those referred to; it may be described in the following terms, with the name of

Calœnas (Phlegœnas) Stairi. (Pl. CXV.)

Glossy brown, with coppery reflexions in some light; top of head and back of neck dark slate, glossy with green; front, side of neck and breast pale vinaceous brown; throat and a gorget round the breast white, which latter is margined outerly with dark garnet colour; abdomen vinaceous brown, dusky on the sides; quills dusky black, slightly margined with rufous; tail brown, with a broad band of black at the end. Bill black and feet pale.

The specimen is marked as a male, and I suppose was brought from the Samoan or Navigators' Islands, as the British Museum was previously in possession of a skin given by the Rev. J. Stair as from that locality, with other interesting birds.

2. On a New Species of Lepidopterous Insect. By G. R. Gray, F.L.S. & Z.S., etc.

(Annulosa, Pl. XXXIX.)

Among the various novelties sent home during the voyages of H.M.SS. 'Rattlesnake' and 'Herald' by Mr. Macgillivray, is the splendid Butterfly now laid before the Society. It belongs to the great genus *Papilio* and to the subdivision *Ornithoptera*, and like the other known species of that group, its flight is very elevated; so much so, that it became necessary to employ powder and shot to secure the specimen; many shots have perforated the wings, and

have rather damaged the specimen, but still not so as to entirely destroy the beauty of this remarkable butterfly. No lepidopterous insect of its magnitude has hitherto been known from the locality of this species; which, from the other insects contained in the same box, is supposed (as no memorandum was sent with it) to be either Solomon Islands, Aneiteum, New Hebrides or the Fiji group,—at any rate from one of the islands in the South Pacific Ocean.

The figure (Pl. XXXIX.) represents it of its natural size. The general colour is glossy bronze-black, with the two outer rows of irregular-sized spots of pure white, while those at the base of the fore wings are rich king-yellow, but partly pure white outerly; the anterior margin of the secondary wings narrowly bordered with king-yellow.

The under surface like the upper; but the anterior margin of the secondary wings broadly bordered, and some of the spots tinged, with rich king-yellow. The head and thorax pure black; the body ochraceous yellow above, and black along the middle beneath.

It is a female. The male remains at present unknown, but one may suppose, by the usual brilliancy of the males of this group to which it belongs, that it is likely to prove a most beautiful insect, exhibiting some gorgeous combination of colour.

The name I propose for this splendid insect is *Papilio* (*Ornithoptera*) *Victoriæ*.

3. Descriptions of some Coleopterous Insects in the Collection of the British Museum, hitherto apparently unnoticed. By Adam White.

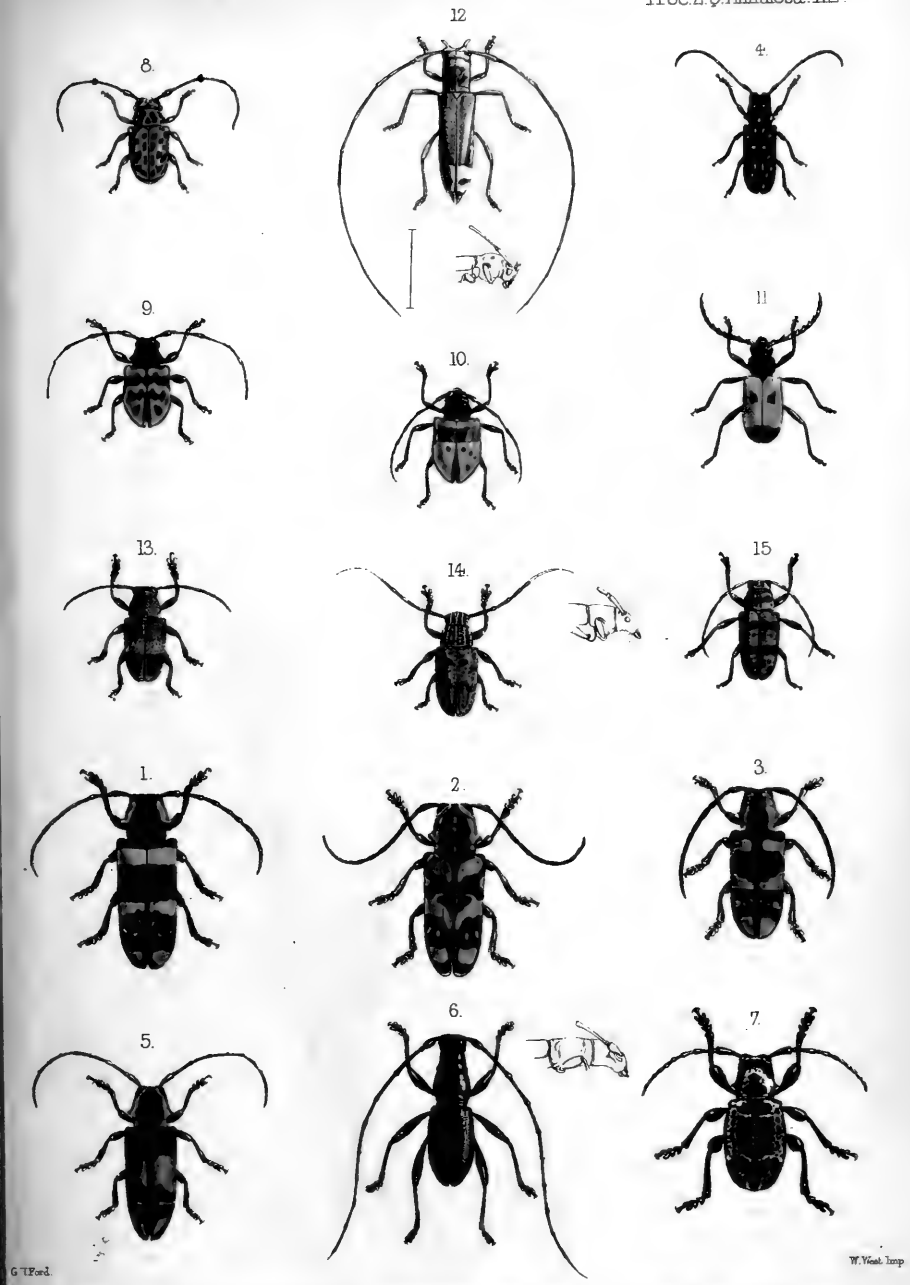
(Annulosa, Pl. XL. XLI.)

The number of "new species" of Coleopterous Insects in the Museum collection is in relative proportion to the great richness of the other branches. In this paper, some species belonging to the families *Prionidæ, Lamiadæ,* and *Cetoniadæ* will be given, as there is every likelihood, from the way in which these great groups have been investigated by Messrs. Serville, Burmeister, Schaum, Gory, and other entomologists, that the species are as yet unrecorded in scientific works; it is to the kindness of Dr. Gray, the keeper of the department, that I am indebted for permission in laying these descriptions before the Society.

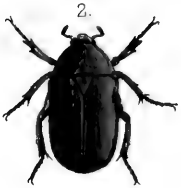
Tribe Longicornia.

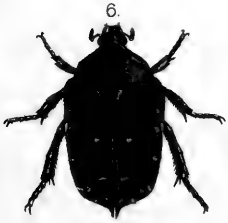
Family Prionidæ.

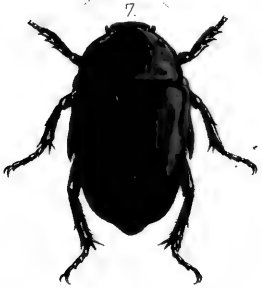
The *Prionidæ* consist of several marked subfamilies, in one of which we would place Tricrenotoma, G. R. Gray, one of the most interesting of the genera of Beetles. This form, which appears to me to be altogether Longicorn, is chiefly remarkable for its heteromerous tarsi, and for the ninth and tenth joints of its antennæ being serrated or produced at the end, almost as in the *Lucanidæ*. It is one of those "aberrant" forms which naturalists call "annectent,"

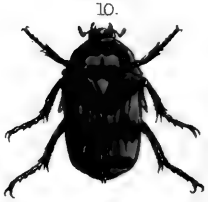


1. Tragocephala Comitessa.
2. „ Chevrolatii.
3. „ ducalis.
4. „ gemmaria.
5. „ Guerinii.
6. Deucalion Wollastoni.
7. Moneilema albopictum.
8. Amisocerus onca.
9. „ capucinus.
10. „ dulcissimus.
11. Phædinus xanthomelas.
12. Phœbe concinna.
13. Agelasta calhizona.
14. „ amica.
15. „ Newmanni.









G.H.Ford. W.West. Imp.

1.2. Trigonophorus Hookeri ♂. ♀.
3. Stethodesma Servillei.
4. Clinteria ducalis.
5. " Hoffmeisteri.
6. Cetonia procera.
7. Schizorhina Idæ.
8. " Bassii.
9. " Emilia.
10. Cetonia Schaumii.

and which appear to partake of the characters of several groups,—for instance, with the depressed form and velvety pilosity of many *Elateridæ*, it has five joints to the two first pairs of legs, and four only to the hind pair. Its head, jaws, and legs are essentially Longicorn, the number of joints of the tarsi being not a necessary character of the group; the tarsi of *Parandra* are pentamerous, and *Dorx pentamera*, an Australian insect described by Mr. Newman, has likewise five joints to all the tarsi. The sternum of *Trictenotoma* is also peculiar, that of the prothorax being received into a notch of the mesothorax, while the sternum of the metathorax is capable of being firmly fixed by "dovetailing," as it were, into the hinder notch of the mesothorax; in fact, this structure must enable the insect, if placed on its flat back, to "right" itself, like those Beetles called "Skip-jacks" (*Elateridæ*). In some species, such as *T. Childrenii* (G. R. Gray), *T. Templetonii* (Westw.), and *T. Grayii* (F. Smith), the sternum of the metathorax bulges; in *T. ænea* (Parry) that part is flattened, and the thorax is curiously serrated on the lateral margin in front, and has a very projecting point on the side beyond the middle, and notched between that point and the posterior angle, instead of being nearly straight and simply angled as in the other three species. Of these *Trictenotomæ*, all the species described are in the Museum Collection; the *T. Childrenii* being the type female specimen from the Tenasserim coast, described by Mr. G. R. Gray in one of the two insect volumes of Griffith's edition of 'Cuvier's Animal Kingdom' (pl. 5 and 5*). The *T. Templetonii* of Westwood (Oriental Ent. tab. 23, f. 3) is a native of Ceylon; like the former, it has a yellowish-grey pile; the *T. Grayii* described by Mr. F. Smith in 1851 (Cat. Coleopt. Brit. Mus. *Cucujidæ*, p. 18) is from Borneo, and has a purplish base beneath the more tawny pile of the upper parts; in the Museum there are two females, one from the collection of Mr. Alfred Wallace, who obtained it at Sarawak. The *T. ænea*, the giant of the genus, is of a brassy green, slightly pilose above. The Museum has lately obtained a specimen from India; the specimen was found by a soldier at Dhargeeling.

To the same family, and not very remote from the subfamily containing *Spondylis* and its allies, belongs, in the opinion of Dr. Burmeister, Mr. Westwood, and Mr. Leconte, the very anomalous *Hypocephalus*, of which a fine figure, with some striking remarks, has been published by Mr. Curtis in the "Transactions of the Linnean Society;" of this species, three specimens known to me, exist in this country, one in Mr. Melly's great cabinet at Liverpool, a second drawn by Mr. Westwood in the 'Arcana Entomologica,' from a specimen in his own very curious collection, and a third exhibited at the Linnean Society in 1854, from the rare cabinet of Mr. Aspinall Turner of Manchester. This remarkable Prionidous insect, like the Mole-cricket, has been altogether constructed for a subterraneous life; its marvellously developed thorax, fossorial and burrowing legs, curiously defended head, abbreviated antennæ, and other characters well shown by Mr. Westwood, and particularly by Mr. Curtis, all mark this; just as *Dorysthenes* of the East, a burrowing insect, is shown by

M. Guerin-Meneville, to have Walrus-like jaws, as *Lethrus* has incurved mandibles and other features useful in supporting the creature in the holes of the ground whence it comes. As aberrant *Prionidæ* may be mentioned, the very curious genera *Torneutes*, Reich., described in the Trans. Ent. Soc. Lond. (ii. 9, t. 2, f. 7), of which three species are now known, one from Patagonia, described by M. Guerin, and the singularly interesting *Erichsonia* of Mexico, named by Mr. Westwood, in memory of that most laborious and scientific of all the German entomologists, Dr. Erichson. The genus *Thaumasus*, Reich. (Ann. Soc. Ent. Fr. 1853, p. 419), founded on what Olivier described as a gigantic species of *Ips* (*Ips gigas*, Journ. d'Hist. Nat. 1792, i. 267, pl. 14. f. 6; *Thaumasus g.* Reich. l. c. p. 422, pl. 13. f. 4.), may be particularized as another aberrant form. In fact, the family *Prionidæ*, like many other great families, is more negative than positive, and will be found at its extremities, or at many points of its circumference, to lead off to other families, and even tribes: so that the naturalist, who wishes to simplify arrangement, however much he may split up genera, ought to avoid dividing families.

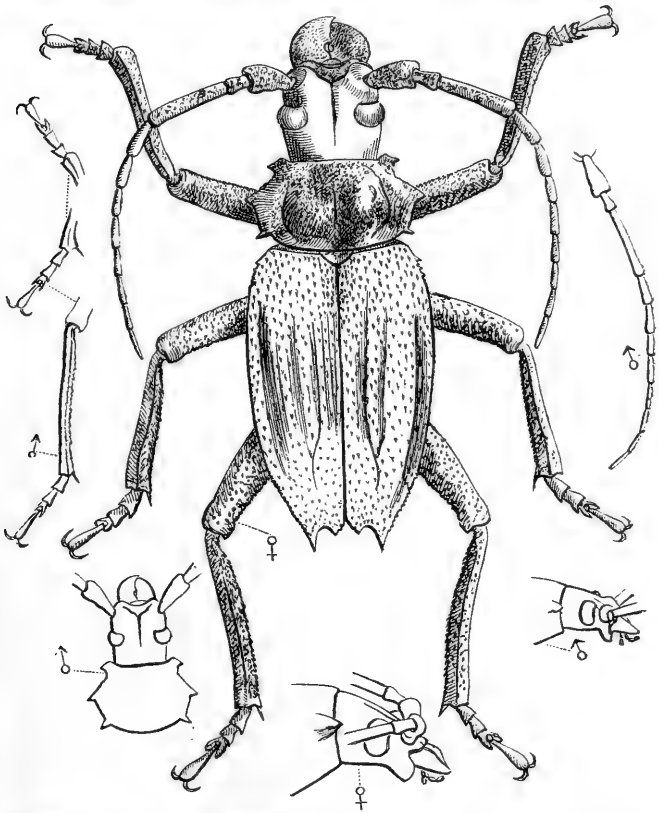
It may interest the general reader to quote a short passage from a privately circulated paper, written by my friend Mr. Empson of Bath, a distinguished natural-history traveller in South America. The insect alluded to is the noble *Psalidognathus Friendii* (G. R. Gray), which is named by the natives of Columbia 'Alaja,' that is, 'the jewel.' Mr. Empson remarks, "the first of these splendid insects which I ever saw, was at a feast given by the Cabildo, at Mariquita; upon that occasion Don Domingo Conde had placed one of them as a button to loop up, after the Spanish fashion, the broad brim of his Panama hat; to this brilliant ornament a loop of living Fireflies was attached, in a mode common in South America, and which does not injure those dazzling insect gems; thus decorated, the *sombrero* of the *cavalero* was more conspicuous in the ball-room than the jewelled tiaras of his more wealthy neighbours, although sparkling with the choice emeralds from the mines of Muzo.

"After many a weary search," adds Mr. Empson, "with Don Domingo for my guide, in the primæval forests on the eastern slopes of the Andes, we captured three of those Alajas." One of those, he remarks, "was resting on the perishing trunk of a palm-tree; in our eagerness to secure it, my hand was so much lacerated that I was obliged to relinquish my prize, and we saw its gorgeous colours flashing beneath the full blaze of a tropical sun; it settled on the stem of a cedar, and was then more cautiously transferred into my possession."

With these few remarks, which might be much amplified, a curious genus of *Prionidæ*, allied to *Psalidognathus*, G. R. Gray, and to *Prionacalus*, figured in a previous part of the Proceedings, may be here briefly described. It is strictly pseudo-tetramerous, and has much of the character of Mr. George Gray's fine Columbian genus. This genus, for which I would propose the name *Psalidocoptus**, is

* Ψαλίς, scissors, and κόπτω, from a fanciful idea of the waved outline being as it were cut with that instrument.

from Tana, in the New Hebrides, and is one of those fine insects for which science is indebted to the researches of Mr. John Macgillivray, the late able Naturalist of H.M. surveying ship 'Herald.' The sternum does not notably differ from that of *Psalidognathus*, but it



differs in having very short palpi, much shorter antennæ, the third joint the longest, the eight following about equal in length. Head, exclusive of the jaws, rather longer than wide, behind the eyes somewhat narrowed and without projection. Eyes prominent, transversely kidney-shaped, very slightly notched in front. Thorax wider than long, but much longer than in *Psalidognathus* and *Prionacalus*, with three broadish spine-like projections on each side, one in front, one about the middle, and one before the hinder angle. Scutellum small and wide, covering the abdomen; in the male, considerably surpassing it. Wingless; elytra united on the suture, contracted some-

what at the base, where there is a short spine, gradually dilated about the middle, and as gradually tapering toward the end, where they terminate in two spine-like points, the outer the longest, the inner almost a continuation of the notch, between which would be the suture; the two points curiously rotundate-emarginate. Legs very long and strong, particularly the femora, which are compressed. Tarsi with small pulvillus on end of three first joints; tarsi of female broader and shorter than those of the male.

PSALIDOCOPTUS SCABER, n. s. (Fig. on p. 11.)

Head between the eyes with a deep line, divided into two in front. Thorax surface curiously undulated, and with the head scarcely rough, although with small scattered warts; the elytra scabrous, with numerous small warts; each elytron with two parallel ridges united behind the middle and a sutural ridge; margin of elytra between warty and serrated. Jaws strong, punctured at the base, incurved, sides parallel, inner side short and obliquely cut between, the cutting edge sharp; a curious tuft of ferruginous hair on trochanter; legs serrated below on femora and tibia, legs more or less scabrous. The whole insect is of a blackish-brown, with ferruginous hairs bordering the inside of the tibiæ of the first and second pairs of legs; thorax beneath, and other parts, liable to be chafed by motion of joints ciliated with ferruginous hairs. Abdomen somewhat squamoso-verrucose beneath, a pit behind each scale-like wart, with a short hair proceeding from it.

Note. The figures were drawn on wood by Miss E. Wing, and are of the size of nature.

Family LAMIADÆ.

Among the Lamioid Longicorns there is a genus containing many finely coloured African species. The genus *Tragocephala*, Dupont (Dej. Cat. p. 638), was first briefly characterized by Laporte in his 'Animaux articulées,' tome ii. p. 472.

TRAGOCEPHALA NOBILIS. *Lamia nobilis*, Fabr. S. El. ii. 297; Oliv. t. 11, f. 76; also described by Fabricius as *Saperda læta*, l. c. p. 318. Sierra Leone. (Coll. Brit. Mus.)

TRAGOCEPHALA FORMOSA. *Cerambyx formosus*, Oliv. t. 20, f. 153, is another well-marked species from S. Africa, abundant in collections. (Coll. Brit. Mus.)

TRAGOCEPHALA PULCHELLA, Westw. Arc. Ent. ii. t. 69, f. 4, is another species from Sierra Leone. (Coll. Brit. Mus.)

TRAGOCEPHALA VARIEGATA, Bertolom., Ann. Sc. Nat. 1845, p. 423. S. Africa (Inhambere).

TRAGOCEPHALA GALATHEA, Chevr., Rev. et Mag. de Zool. 1855, p. 184, was procured by the Scottish missionaries at Benin, Old Calabar.

The TRAGOCEPHALA ANGOLATOR and T. LUCIA, described by Olivier and Newman, belong likewise to this genus, but are aberrant forms, as is the TRAGOCEPHALA TRIFASCIELLA, described and figured

in the illustrated Proceedings for 1850. The latter differs somewhat from *Tragocephala* proper, while *Lamia angolator*, from its short wide thorax, &c., may hereafter constitute the type of a distinct section: all three are in the Museum Collection.

In the Museum Collection are some undescribed species, which may be characterized as

TRAGOCEPHALA COMITESSA. (Pl. XL. fig. 1.)

T. elongata, nigra; fronte aurantiaca; thoracis lateribus aurantiacis, post tuberculum nigris; elytris fasciis duabus sulphureis, lateribus aurantiacis; prima continua, secunda angustiore, antice et postice sinuata; elytris singulis punctis tribus albis; sutura apice albo-punctata, ante apicem macula aurantiaca margine pallidiore; metathorace maculis duabus aurantiacis, aliquando obsoletis; abdominis segmentis tribus basalibus lateribus subtus aurantiacis.

Long. lin. $9\frac{1}{4}$–11.

Hab. Africa Austr. (Port Natal). Coll. Brit. Mus. (*Gueinzius* et *Krauss*).

T. formosæ affinis sed distincta.

TRAGOCEPHALA CHEVROLATII, n. s. (Pl. XL. fig. 2.)

T. nigra, capite aurantiaco, mandibulis basi aurantiacis, fascia in genis, fascia inter antennas et vertice nigris; thoracis lateribus flavis, tuberculo apice et postice nigro; dorso nigro, macula parva pallida posticali alteraque antica sæpe obsoletis; elytris singulis nigris; fascia mediana aurantiaca subobliqua, ramum antice ferente; maculis duabus aurantiacis sæpe obsoletis, macula magna aurantiaca ante apicem, punctoque parvo ad apicem; abdominis lateribus aurantiaco maculatis; pedibus cinereo-griseis, femoribus flavo maculatis.

Long. lin. $8\frac{1}{3}$–11.

Hab. Africa Austr. (Port Natal). In Mus. Brit., &c.

In honorem L. A. Augusti Chevrolat, Parisiensis, Coleopterophili valde egregii.

TRAGOCEPHALA DUCALIS, n. s. (Pl. XL. fig. 3.)

T. capite aurantiaco, fascia oculari, alteraque verticali nigris; antennis crassiusculis, nigris; thorace supra medio nigro, lateribus aurantiaco late marginatis, pube subvermiculata; elytris nigris fasciis duabus aurantiacis suturam haud attingentibus, lateribus latioribus, marginibus pallidis, apice aurantiaco, maculis tribus parvis inter apicem et fasciam secundam, exteriore majore; corpore subtus aurantiaco, abdominis segmentis, medio et lateribus nigris; pedibus ochraceo-griseis, femoribus extus et intus aurantiaco maculatis.

Long. lin. 8–$9\frac{1}{3}$.

Hab. Africa Austr. (Port Natal). Coll. Brit. Mus. (*Saunders*, &c.)

Tragocephala gemmaria, n. s. (Pl. XL. fig. 4.)

T. nigra; lateribus frontis maculaque genarum et macula inter antennas pallide cæruleis; thorace supra maculis novem cæruleis, quatuor in margine antica, tribus in postica; elytris singulis maculis 12–13 *pallide cæruleis; thorace subtus et abdominis lateribus maculis cæruleis majoribus; pedibus posticis, femoribus extus, tibiis basi supra cæruleo-notatis; antennis articulo secundo compresso.*

Long. lin. $6\frac{1}{2}$.

Hab. Africa Occid. (Sierra Leone) (*Rev. D. F. Morgan*). Coll. Brit. Mus.

Tragocephala Guerinii. (Pl. XL. fig. 5.)

T. nigra, capitis thoracisque lateribus fascia flava continua, elytris fascia lata guttaque ante-apicali ferrugineo-ochraceis, mesothorace ferrugineo-ochraceo, medio nigro-lineato abdominis lateribus subtus fascia flava extus dentata.

Long. lin. 10.

Hab. Congo.

In honorem Guerin-Meneville, entomologi et carcinologi Parisiensis celeberrimi, naturæque delineatoris exquisitissimi.

Tragocephala Buquetiana. *T. nigra, fronte macula elongata aurantiaca sub oculis ramum haud emittente; elytris singulis basi fascia aurantiaca obliqua, humero et spatio circa scutellum nigris; fascia mediana et macula sub-apicali aurantiacis.*

Long. lin. $8\frac{1}{4}$.

Hab. Sierra Leone (*Rev. D. F. Morgan*).

In honorem M. Buquet, Parisiensis, in Coleopteris exoticis ditissimi et peritissimi.

We have also in the Museum the elegant, slim, little graceful T. tenuicornis, Chevr., from Port Natal, the T. scenica of Dej., from W. Africa, and the T. pictor, Klug, a common S. African species.

Tribe Lamellicornia.

Family Cetoniadæ.

Note.—Mr. Turner of Manchester, the possessor of a very fine collection of the larger and more showy *Coleoptera* of West Africa, and of many of the Beetles of other lands, showed me a specimen of the (so-called) *Goliathus giganteus*, of which I once saw the example in the Hunterian Museum at Glasgow, and which served to show that the sharp and discriminating eye of the able and judicious Dr. Schaum, who, with Dr. Burmeister, is one of the best authorities on the subject of *Cetoniadæ*, was probably right in regarding *G. giganteus* and *G. Drurii* as mere local varieties of one species, to which the name Goliathus Africanus, Lamarck, may be given.

Trigonophorus Hookeri, n. s. (Pl. XLI. fig. 1 ♂. fig. 2 ♀.)

T. læte viridis, metallico valde refulgens pedibus gracilibus, femoribus viridibus flavescenti-rubro lineatis seu lavatis, tibiis rubris,

posticis intus ciliatis, tarsis fuscescenti-nigris; thorace antice angustato, supra dense punctulato, margine postica solum lævissima; scutello fere toto lævi; antennis subrufis, capite maris in fronte rufo.

Hab. In India alpina.

The two figures represent this fine insect of the natural size. It is named after Dr. Joseph Hooker, F.R.S., &c. &c., author of many noble botanical works, and of the 'Himalayan Journal.' During his travels in India he found this and many other fine species of insects now in the Museum Collection. We have now all the species of this interesting group except *T. Delessertii*, Guerin-Meneville.

STETHODESMA SERVILLEI. (Pl. XLI. fig. 3.)

S. fusco-subpurpurea, sericea, thorace flavo cingulato, elytris singulis maculis decem parvis albo-argenteis, uropygio albo-maculato, subtus rufo-brunnea, plagis albis lateribus singulis in serie duplici ordinatis.

Hab. In Africa meridionali (Port Natal) (*Dr. Krauss*).

The red of the thorax extends on its under side. Mesothorax with scattered scales. Head cut in front, and side lobes produced shortly and somewhat rounded. Legs uniform in colour.

Huic insecto nomen *Servilleanum*, synonymon Entomologiæ, in honorem *Audinet-Serville* amici dilectissimi, proposuit descriptor.

CLINTERIA DUCALIS. (Pl. XLI. fig. 4.)

This insect, of which the name only appears in the Museum List of *Cetoniadæ*, p. 15, published in 1847, is regarded by Dr. Schaum as a variety of the very variable *Clinteria atra*. The present variety is of a dull olive-green, and has a patch of golden-yellow about the middle of each elytron. The under side is purplish-brown, and the sides have two rows of small white spots. The head and legs are purplish.

It is a native of Silhet, and notwithstanding the great authority of Dr. Schaum, I cannot help, even now, regarding it as distinct from *C. atra*, Wied., of which *C. funeraria* and *C. biguttata* of Gory and Percheron are varieties.

CLINTERIA HOFFMEISTERI. (Pl. XLI. fig. 5.)

This very beautiful and distinct species was described in the 'Annals and Mag. of Nat. History,' vol. xx. p. 341. It was named after the late lamented Dr. W. Hoffmeister, travelling physician to H.R.H. Prince Waldemar of Prussia. I well remember this amiable and able man during his several visits to the British Museum. He was struck by a grape-shot at the battle of Ferozeshah, on the 21st December 1845, when in close attendance on Prince Waldemar. The shot entered his temple. "He fell forward to the ground. The Prince instantly sprang from his horse and raised him, but the vital spark had already fled; at the same moment the advance of the forces rendered it necessary to move on. The slain were unavoidably

left on the field of battle." He was laid (two days after) in the same grave "with several of his friends who fell on that bloody day, and a simple monument in the burial-ground at Ferozepore, erected by the Prince to the memory of his faithful physician and beloved companion, records his tragic fate, and marks his journey's utmost bourn*."

Schizorhina Bassii. (Pl. XLI. fig. 8.)

This fine species, described in the 'Annals and Mag. of Nat. History' (vol. xx. p. 264), is figured here. The genus *Bassia* was *not* named after Mr. G. Bass.

Schizorhina (Hemipharis?) Emilia. (Pl. XLI. fig. 9.)

S. (*H.*?) *nitida, subgracilis, subparallela, æneo-viridis, thoracis linea laterali, maculisque duabus postice aurantiacis* (*aliquando subobsoletis*), *elytrisque singulis lineatim punctatis, aurantiaco maculatis aut plagiatis.*

Animalculum hoc pulchrum, Febr. 2ndo, A.D. 1856, die nat. descriptum, Emiliæ Jalland, filiæ fratris mei, dicatum est.

Head rather closely punctured, very slightly notched in front, above distinctly punctured. Thorax indistinctly punctured, except before the hind angles, shaped much as in *H. insularis*, of a highly polished but obscure brassy green, thickened margin of thorax in front yellow, the yellow continuous (beyond the middle of the edge) on the inner side; thorax on each side with a narrow irregularly-edged yellow line, almost parallel with the edge, and truncated and somewhat dilated behind; before the posterior thoracic lobe are two small triangular yellow spots. Scutellum yellow; margins, especially at the apex, green; each elytron is irregularly margined with yellow on the sides at the base, and there are six to eight irregular yellow marks, one before the apex somewhat transverse; sides of meso- and metathorax yellow; sides of abdomen with three yellow spots; pygidium with two yellow marks nearly covering it, and divided by a pear-shaped green spot, or green extended so as to leave only four small yellow spots; tibiæ and tarsi tinted with purplish; base of anterior femora and coxæ rufous. This species quite connects the subgenera *Hemipharis* and *Diaphonia*, and shows the accuracy of the views of that learned entomologist Dr. Schaum. The two specimens are females, and have short lamellæ to the antennæ.

Hab. New Hebrides (Aneiteum). Collected by Mr. John Macgillivray, the able naturalist to H.M.S. 'Herald.'

Schizorhina (Hemipharis) Idæ. (Pl. XLI. fig. 7.)

S. (*H.*) *grandis, fusculo-nigra, capitis vertice, thorace supra, elytris a basi, usque ultra medium, pygidio, mesothoracis lateribus, metathorace femoribus posticis infra flavescenti-brunneis.*

S. (*H.*) *Brownii* valde affinis et forsan varietas geographica. Di-

* 'Travels in Ceylon and Continental India,' translated from the German. Edinburgh, 1848. A very graphic work, consisting of the letters chiefly of that talented man, who fell at Ferozeshah.

catur Idæ Pfeiffer, viatricis celeberrimæ quæ in Ceram speciem hanc pulchram invenit.

CETONIA (PROTÆTIA) PROCERA, n. s. (Pl. XLI. fig. 6.)

C. (*P.*) *supra viridi-subsericea, poroso-punctata, albido paululum submaculata in elytris præsertim, elytris apice spinoso-productis; subtus læte metallico-viridis, abdomine plagis* 16 *albo-pilosis, in quatuor ordinibus dispositis.*

In size between *P. ferruginea* and *P. regalis*; above, including upper side of legs, it is of a fine dull, dark velvety green, which, when rubbed, displays beneath a metallic base, as in many of the *Cetoniadæ*, such as *Goliathus torquatus*; the edges of the *nasus* are metallic. The head and thorax above are thickly and distinctly poroso-punctate; there is an indication of a yellowish-white dot near each front angle of the thorax (which dot may vary in size in other specimens); the elytra have four dots passing into short transverse streaks on each side, and a small spot near the suture, about the middle, and a short white streak midway between the middle and the spine; three dots between that and the spine, which is longer and much more distinct than on the sides of elytra, transversely pitted in many shallow short waves; general surface punctured, the punctures chiefly in striæ. Head small, slightly ridged on sides in front of eyes, slightly narrower in front, and rather deeply grooved behind front margin. Under side and legs metallic green, femora and mesothorax acuducted, the latter with two or three patches of isabella pile; abdomen irregularly punctured, smooth, with eight transverse patches of isabella pile on each side in double columns. Hairs on tibiæ rufous; fore edge of front tibiæ and tarsi of all the legs metallic green.

Hab. Philippine Islands. (Coll. Cuming.)

N.B. The figures are of the natural size.

This is alluded to in Dr. Schaum's second list of *Cetoniadæ*, and is quoted under the above name.

CETONIA (PROTÆTIA) SCHAUMII. (Pl. XLI. fig. 10.)

Supra obscure viridis, subtus læte metallico-viridis, capite flavo trilineato, linea media latiore, thoracis marginibus anticis lateralibusque flavis, plaga transversa subheraldice postica flava, scutello flavo apice excepto viridi; elytris flavo irregulariter transverse trifasciatis, elytris singulis medio longitudinaliter sub-bicarinatis, et 9–11*-punctato-lineatis, pedibus flavis, extus et apice articulorum subviridibus, tarsis obscure viridi-fuscis, abdominis lateribus subtus punctatis, segmentis quatuor lateribus flavo-marginatis; uropygio flavo triangulariter biplagiato elytris apice suturali acuminato, sterno antice flavo producto.*

Hab. Celebes (*Madame Ida Pfeiffer*).

Head semicircularly cut in front, the margins trending inwards.

Seems really to connect *Pachnoda* with *Protætia*.

Named in compliment to Dr. Schaum, whose name and abilities require only to be mentioned when *Coleoptera* are described.

The figures are of the size of nature.

4. Note on the Zoological Appendix to the 'Report of the U.S. Naval Astronomical Expedition to the Southern Hemisphere,' and on the Geographic Range and Distribution of the Tanagrine Genera Calliste and Euphonia.

By Philip Lutley Sclater, M.A., F.Z.S.

The second volume of the 'Report of the U.S. Naval Astronomical Expedition to the Southern Hemisphere,' of which copies have lately been received in this country, contains a very valuable account of the specimens of natural history collected by the Expedition in Chili. Each section of the Zoology appears to have been assigned to the person best qualified to undertake it. The Ornithological part (by Mr. Cassin) is illustrated by some very nicely coloured plates, and contains a list of the Birds of Chili, with many interesting notes on their native names, habits, &c.

What I particularly wished to notice, however, was, that there are three species of Tanagers—*Callistæ cyaneicollis* and *gyroloides* and *Euphonia rufiventris*—included in this list, and apparently intended to be represented as inhabitants of the republic of Chili. Now I have always supposed, and still believe it to be the case, that these genera of Tanagers do not extend on the western side of the Andean range nearly so far south as that country. Indeed Tschudi and D'Orbigny assert that they are only found in the wood regions of Peru and Bolivia on the eastern slope of the Andes, and I have never seen examples of birds belonging to either of these genera in Chilian collections; nor are they, or other similar tropical forms, mentioned as occurring there by the several previous writers on the zoology of that country. Under these circumstances I cannot help thinking there must have been some error with regard to the locality of the specimens of these Tanagers procured by Lieut. Gillis's expedition.

I may remark at the same time that the bird figured in this same work, pl. xviii. fig. 2, as a companion to *Calliste cyaneicollis*, is not *Calliste larvata* (Du Bus), but *Calliste thalassina*, Strickland (*Aglaia Wilsoni*, Lafr.—Des Murs, Icon. Orn. pl. 56. fig. 2).

The appended Table shows the distribution of the species of the genus *Calliste* as far as I have been able to collect information on the subject. It will be observed, that only one of this genus has yet been found north of the isthmus of Panama, though very possibly new species are yet to be discovered in the unexplored parts of Central America. The metropolis of this group seems to be the wood regions of New Grenada, Ecuador, Peru and Bolivia; but we require much more information concerning the local faunæ of this great continent before very accurate statistics can be drawn up of the geographical distribution of these and other forms of animal life.

	Central America.	New Grenada.	Quixos in Ecuador.	Vicinity of Quito.	Eastern Peru.	Cisandean Bolivia.	Venezuela.	Trinidad.	Brit. Guiana.	Cayenne.	Prov. Rio Negro.	North Brazil.	South Brazil.	Paraguay.
1. *tatao*	...	...	...	...	...	...	...	...	*	*	*	...	...	...
2. *cœlicolor*	...	*	...	...	...	...	...	...	...	...	...	...	...	...
3. *yeni*	...	...	...	...	*	*	...	...	...	...	...	...	...	...
4. *tricolor*	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5. *festiva*	...	...	...	...	...	...	...	...	...	...	...	*	*	...
6. *fastuosa*	...	...	...	...	...	...	...	...	...	...	...	...	*	...
7. *cyaneiventris*	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8. *aurulenta*	...	*	...	*	...	...	...	...	...	...	...	...	...	...
9. *Sclateri*	...	*	...	...	...	...	...	...	...	...	...	...	...	...
10. *pulchra*	...	...	*	...	*	...	...	...	...	...	...	...	...	...
11. *Arthusi*	...	...	...	...	...	...	*	...	...	...	...	...	...	...
12. *icterocephala*	...	...	...	*	...	...	...	...	...	...	...	...	...	...
13. *thoracica*	...	...	...	...	...	...	...	...	...	...	...	...	*	...
14. *Schranki*	...	...	*	...	*	*	...	...	...	...	...	...	...	...
15. *guttulata*	...	...	...	...	...	...	*	*	*	...	...	...	...	...
16. *punctata*	...	...	...	...	...	...	...	...	...	*	...	...	...	...
17. *rufigula*	...	...	...	*	...	...	...	...	...	...	...	...	...	...
18. *xanthogastra*	...	*	*	...	*	...	...	...	...	...	...	...	...	...
19. *graminea*	...	...	...	...	...	...	...	...	...	*	...	...	...	...
20. *ruficapilla*	...	*	...	...	...	...	...	...	...	...	...	...	...	...
21. *cayana*	...	...	...	...	...	...	...	...	*	*	...	...	...	...
22. *cyanolæma*	...	...	...	...	...	...	...	...	...	...	*	...	...	...
23. *castanonota*	...	...	...	...	...	...	...	...	...	...	...	*	*	*
24. *peruviana*	...	...	...	...	...	...	...	...	...	...	...	...	*	...
25. *flava*	...	...	...	...	...	...	...	...	...	...	...	...	*	*
26. *cucullata*	...	...	...	..	...	...	*	...	...	...	...	...	...	...
27. *cyanoptera*	...	...	...	...	...	...	*	...	...	...	...	...	...	...
28. *larvata*	*	...	...	...	...	...	...	...	...	...	...	...	...	...
29. *lunigera*	...	...	...	*	...	...	...	...	...	...	...	...	...	...
30. *Parzudakii*	...	*	*	...	...	...	...	...	...	...	...	...	...	...
31. *chrysotis*	...	...	...	...	*	...	...	...	...	...	...	...	...	...
32. *gyrola*	...	...	...	...	...	...	...	...	*	*	...	...	...	...
33. *Desmaresti*	...	*	*	...	*	*	...	...	...	...	...	...	...	...
34. *gyroloides*	...	...	...	...	...	...	*	*	...	...	...	...	...	...
35. *brasiliensis*	...	...	...	...	...	...	...	...	...	...	...	*	...	...
36. *flaviventris*	...	...	...	...	...	...	...	*?	*	*	*	...	...	...
37. *boliviana*	...	*	...	...	*	*	...	...	...	...	...	...	...	...
38. *inornata*	...	*	...	...	...	...	...	...	...	...	...	...	...	...
39. *atrocærulea*	...	...	...	...	*	*	...	...	...	...	...	...	...	...
40. *ruficervix*	...	*	...	*	...	...	...	...	...	...	...	...	...	...
41. *atricapilla*	...	*	...	...	...	...	*	...	...	...	...	...	...	...
42. *argentea*	...	...	...	...	*	...	...	...	...	...	...	...	...	...
43. *nigro-viridis*	...	*	...	*	...	...	*	...	...	...	...	...	...	...
44. *thalassina*	...	*	*	...	*	...	...	...	...	...	...	...	...	...
45. *cyaneicollis*	...	*	*	...	*	*	...	...	...	...	...	...	...	...
46. *labradorides*	...	*	...	...	...	...	...	...	...	...	...	...	...	...
47. *xanthocephala*	...	...	...	...	*	*	...	...	...	...	...	...	...	...
48. *venusta*	...	*	*	...	...	...	...	...	...	...	...	...	...	...
Total.....	1	16	8	6	12	7	7	3	5	6	3	1	8	2

5. On the Genus Assiminia (Leach).
By Dr. J. E. Gray, F.R.S., P.B.S. etc.

In a list of some species of British shells at the end of an arrangement of Mollusca in the 'London Medical Repository' for 1821 (vol. xv. p. 239), I noticed a new mollusk under the name of "*Nerita* (*Syncera*) *hepatica*, n. s. The animal of this shell differs from all others of this order by the eyes appearing to be at the end of the tentacula, but I believe that they are placed on a peduncle as long as the tentacula, and the peduncle and tentacula are soldered together."

Dr. Leach, when he examined the animal of this shell, formed it into a genus under the name of *Assiminia*, and named the species after myself as *A. Grayana*, described under this name at the end of the genus *Limnea*, in Fleming's 'British Animals,' p. 275 (1828), who observes, "Dr. Leach sent me several years ago a shell from Greenwich marshes, constituting a new freshwater genus, under the title *Assiminia Grayana*. The lip is thickened on the pillar and reflected over the cavity, but is destitute of the oblique fold, and the lip does not extend over the body whorl. The colour is brown; whorls six in number, conical, regularly increasing in size, glossy, with minute lines of growth. Length about $\frac{2}{10}$ths of an inch."

In my paper "On the Difficulty of distinguishing certain genera of Testaceous Mollusca by their Shells alone, and on the Anomalies in regard to Habitation observed in certain species," published in the 'Philosophical Transactions' for 1835, p. 301, I observe: "About fifteen years since I first observed in the marshes near the bank of the Thames, between Greenwich and Woolwich, in company with species of *Valvata*, *Bithynia* and *Pisidium*, a small univalve shell, agreeing with the smaller species of the littoral genus *Littorina* in every character both of shell and operculum. Yet this very peculiar and, apparently, local species has an animal which at once distinguishes it from the animal of that genus and from all Ctenobranchous Mollusca. Its tentacula are very short and thick, and have the eyes placed at their tips, while the *Littorinæ*, and all the other animals of the order to which they belong, have their eyes placed on small tubercles on the outer side of the base of the tentacles, which are generally more or less elongated. The shell in question and its animal were described and figured by Dr. Leach in his hitherto unpublished work on British Mollusca, under the name of *Assiminia Grayana*, and as this name has been referred to by Mr. Jeffreys and other conchologists, it may be regarded as established, and that of *Syncera hepatica*, proposed by myself in the 'Medical Repository,' vol. x. p. 239, will take rank as a synonym. A second species of this genus has lately been made known by Mr. Benson, by whom it was found on the ponds in India. Its shell is banded like that of *Littorina* 4-*fasciata* and several other smaller *Littorinæ*, and has been figured in the Supplement to 'Wood's Conchology,' t. 6. f. 28, under the name of *Turbo Francesiæ*."

In my edition of 'Turton's Manual,' 1840, p. 88, I characterize the genus thus:—*Assiminia*: Shell ovate, conical, solid; mouth

ovate; tentacles very short, scarcely longer than the tubercles on which the eyes are placed, and united to their side, p. 78, f. 4, 5, 6, observing, "the animal differs from *Littorina* in the apparent position of the eyes, which is an anomaly among the water and Ctenobranchous Mollusca;" and after quoting Mr. Berkeley's description of the tentacula I observe,—"I am inclined to retain my former theory, for if the pedicel of the eye of this genus is minutely examined, it will appear to be formed of two parts united by a suture."

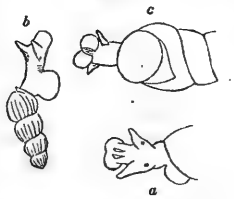
In 1852, having obtained permission of the family, I printed Dr. Leach's 'Molluscorum Britanniæ Synopsis' above referred to, and he there described the genus—"ASSIMINIA. Testa conica, spira mediocris. Animal tentaculis duobus brevibus, apice paulo angustioribus obtusis, ad apicem oculigeris, instructum; oculi parvi, rotundi; operculum tenue."

"From the form of the shell this genus might be considered as belonging to the second stirps (*testa conica, spira brevis*), but the animal proves that it is more nearly allied to *Sabanæa* than to any other of the British genera." (p. 155. t. 9. f. 4, 5.)

Lately some doubt has been attempted to be thrown on the distinctness of the genus, which it has been proposed should be united to the genus *Truncatella* of Risso.

Considering the very great similarity which often exists in the general appearance of the animals of very distinct genera of Mollusca,—a similarity so great, that if a person was to place before me, without the shell or operculum, the animal of the genera *Murex, Triton, Purpura, Fasciolaria, Columbella,* &c., I should not be able to distinguish one from the other without the examination of the teeth or the lingual membrane, and that would only enable me to separate *Triton, Cassis* and *Fasciolaria* from each other and from *Murex, Purpura* and *Columbella,* and not the three latter genera from each other; and it is the same with the animals of several other orders and families;—

Fig. 1.



1. *Truncatella truncatula β.*
a. With foot extended, in the act of drawing up the shell.
b. Side view.
c. Seen beneath as crawling up a glass, when the muzzle is exserted.

Fig. 2.

2. *Assiminia Grayana.*
a. Under side of animal and shell.
b. Side view.
c. Front of foot, showing how the lower lamina of the foot projects beyond the upper.

yet the animals of the two genera *Assiminia* and *Truncatella* (see figs. 1 and 2) proposed to be united, are so unlike in general ap-

pearance, minute structure and habit, that it is extraordinary that any person should have made the proposal.

I think the best way to show the distinction of these two genera will be to copy, in addition to the extract already given, the figures (see figs. 1 and 2) and descriptions of the animals given in different authors, commencing with Mr. Lowe, who has figured and described the animal of *Truncatella* in the fifth volume of the 'Zoological Journal,' and Mr. Berkeley's description and figure of the animal of *Assiminia*; then the description of the animal of the Indian species of the latter genus, both printed in the volume above referred to; and, lastly, some extracts of additional peculiarity of the genus *Truncatella*, observed by Mr. Clark, and published in his work on British Mollusca.

"1. TRUNCATELLA. R. T. Lowe, Zool. Journ. v. 299. t. 19. f. 4.

"*Tentacula* (2 *contractilia*) *cylindrico-conica, brevia, obtusa, basi distincta, proboscide separata; oculis sessilibus paullo supra basis angulum externum positis. Caput proboscidiforme exsertum. Os ad extremitatem proboscidis cylindricæ, inter tentacula exsertæ, disciformem, supra emarginatam* (*sc. bilobam, ob buccas labiales in proboscidem ipsam coadunatas vel commutatas*). *Pallium collare siphone nullo; orificio ad dextrum corporis ut in* Helice, Melampode, Pedipede, *&c. Pes rotundatus vel ovalis, brevis, minimus, posticus. Operculum corneum simplex, i. e. non spirale, ovale, aperturam testæ omnino claudens. Testa turrita; adulta cylindrica, decollata vel truncato-obtusa; anfractibus distinctis, vel lævibus vel transverse costatis. Apertura ovalis, brevis; peritremate continuo. Labrum simplex. Epidermis nulla.*

Animal littorale, amphibium, sed revera marinum et branchiis spirans. Ingredienti, discus terminalis proboscidis pro pedis parte antica servit; itaque modo fere larvarum Phalænidarum Geometrarum gradibus alternis incedit. Testa junior, tereti-acuminata, e pluribus anfractibus quam adulta constat; prioribus in plerisque demum (*ut in* Hel. Bulimo decollato) *defractis, truncata evadit.*

"It is now nearly three years (1829) since the acquisition of a single live specimen of *Cyclostoma truncatulum*, Drap., and a long and continued observation of its animal, convinced me that it was entitled to rank as a distinct genus from any which were then constituted. I had accordingly designated it in my MSS. by the generic name of *Herpetometra*; derived from its peculiar manner of crawling. This appellation I had since purposed changing into *Truncatella*, the very name by which I find the self-same species designated by Risso in his 'Histoire Nat. &c. de l'Europe Méridionale.' In this work, however, the genus rests, like very many others of the same writer, on most unsubstantial ground, the animal being entirely neglected."

"ASSIMINIA. Berkeley, Zool. Journ. v. 429. t. 19. f. 4.

"*Voluta denticulata*, Mont. (*Carychium Myosotis*, Michaud, Compl. de l'histoire de Drapard.), and *Assiminia Grayana*, Leach, abound under stones in the salt marshes by the Thames at Gravesend.

Having an opportunity of examining both in a living state in the summer of 1832, I was surprised to find manifest indications that both were pulmoniferous, which were confirmed on a minute inspection of the internal structure, as far as perhaps could be expected in such small animals. I was enabled in the former to trace distinctly the course of the vessels, and was decidedly of opinion that the lungs were constructed for the breathing of air unmixed with water. In the other case I was not so successful, though the utmost pains were taken; but as the animal is only half the size, the difficulty was much increased. I am enabled, however, to assert, that I could detect nothing like branchiæ; and what is more to the point, that the vault of the cavity of respiration was traversed by a multitude of minute vessels all tending one way towards a large vessel running down in the direction of the heart, which is exactly the structure in *pulmoniferous Mollusca*. This, perhaps, will be esteemed as decisive when the external characters of the animal are taken into consideration."

"Assiminia Grayana.

"Foot broadly obovate, obtuse, composed evidently of two distinct laminæ, the lower projecting beyond the upper, and separated from it by an accurately defined line; above fuscous, beneath olivaceous, shaded with cinereous. Tentacula very short and obtuse, fuscous; eyes at the tips. Muzzle porrected, not truly proboscidiform, deeply notched in front, fuscous, strongly annulated; the edge of the lip paler; on each side is a groove running backwards from the base of the tentacula. Mantle open behind. Fæces elliptical (as in *Cyclostoma*). Operculum corneous, ovate, spirally striated. The most remarkable circumstance in this animal is the position of the eyes, at the tips of the tentacula, as in *Helix* and its allies, and not at the base. It would appear as if there were in reality no tentacula, and only the tubercle common to many Mollusca at the base of the tentacula a little more developed than usual. The shell is so like that of some species of *Rissoa*, that it is quite surprising that in Dr. Fleming's 'British Animals,' and in Mr. Jeffreys' paper in the 'Linnean Transactions,' it should be placed in, or close to, the genus *Limnæa*. Dr. Leach seems to have formed his conclusions from an actual inspection of the animal, and consequently made a distinct genus for its reception. In many points the animal resembles very much that of *Cyclostoma*, and is perhaps a step nearer than that and *Helicina*, which have the mantle open behind to the *pectinifera*. Its nearest ally, however, amongst the *pectiniferous Mollusca* I should conceive not to be *Rissoa*.

"The animal and shell are figured in Forbes and Hanley's 'British Mollusca,' iii. 70, t. 71. f. 3, 4, and t. H.H. f. 6.

"Mr. Benson, at page 463 of the same volume of the Zool. Journ., has given the following description of the animal of *Assiminia fasciata* (*Turbo Francesii*, Gray, in Wood's Supplement, t. 6. f. 28): —"Animal: Head with only two short, thick, subcylindrical tentacula, with the percipient points placed at their summits. Snout, like that of *Paludina*, transversely corrugated and bilobed, or rather

emarginate at the centre of the extremity, the lobes rounded. Mantle free, and branchial cavity open. Foot with a spiral horny operculum, angular at the upper part."

I may add to these descriptions that Mr. Clark has lately stated that the tentacula of *Truncatella Montagui* are "short, flat, broad, triangular, and diverge greatly, scarcely forming an angle of 25°. The eyes are large and black, and have white prominent pupils, which visibly dilate and contract. I have never observed such in any mollusk, though similar ones may have escaped notice; they are placed a little nearer to the base than the middle of their lower half, not on pedicles, but quite flat on the centre of semicircular expansions of the outer side of the tentacles, with an external tendency. The branchial plume is single, of an elongated, kidney-shaped figure, and has the usual constriction or sinus at the end nearest to the heart; it can be detected with high powers in sunlight, through the body volution of pale, clear, thin shells."

The eyes of *Truncatella littorea* "are precisely those of *T. Montagui*, and a similar white pupil is a singular coincidence."

In conclusion, I may observe, that I regard the general form and organization of the animal and shell of *Truncatella* as so peculiar, that I have long considered it the type of a peculiar family, characterized by the form of the lips and feet, the mode of walking, the short, broad, diverging tentacles, the position of the eye and its peculiar form, and the truncation of the shell.

On the other hand, the general form of the animal, the manner and habitation of the genus *Assiminia* are so like those of some of the smaller species of *Littorina* (which Dr. Leach named *Sabancæa*), that if it was not for the peculiar position of the eye on its long pedicel, I should have been inclined to have considered it as a subdivision of that genus, with very short tentacles and elongated eye-peduncles. But Mr. Berkeley's observations have set that at rest, as well as the distinction between it and *Truncatella*; for he shows that *Assiminia* has lungs like *Cyclostoma*, or rather *Helicina*, while the *Littorinæ* and *Truncatellæ* have well-developed gills for respiration, like the greater part of the marine genera; but the gills of *Littorina* and *Truncatella* are very unlike one another, the gills of the former being broad, short, laminar, and of the latter, single, ovate, and pectinate.

P.S.—Messrs. H. and A. Adams, in the number of their work issued since this paper was read, are so impressed with the peculiarity of the combination of characters that the animal presents, viz. a pulmonary respiration, spiral operculum, and terminal eyes, that they have formed for the genus a suborder named *Prosophthalma*, and a particular family, *Assiminiadæ*: see Genera of Mollusca, 313.

J. Wolf lith.

J. G. & E. Keulemans imp.

MARGADORNIS BRUNNESCENS *Walden*.


BRITISH MUSEUM
NATURAL HIST

J. Wolf. lith.

M & N. Hanhart, Imp.

CONOPOPHAGA CUCULLATA. *Sclater*

February 26, 1856.

Dr. Gray, F.R.S., in the Chair.

The following papers were read:—

1. On some additional Species of Birds received in collections from Bogota.

By Philip Lutley Sclater, M.A., F.Z.S.

(Aves, Pl. CXVI.—CXIX.)

MM. Verreaux of Paris, knowing the interest I take in New Grenadian ornithology, have most kindly transmitted to me some specimens of birds from a collection lately received from Bogota, which did not appear to them to be included in my list, published in in this Society's 'Proceedings' for last year. I have also myself noticed a few others, which I had not previously remarked in collections from that locality. From these sources I am enabled to lay before the Society a list of twenty-two species, which, added to those given in my former catalogue, raise the total number of birds now ascertained as belonging to this peculiar fauna to 457.

1. Nyctale harrisi, Cassin, Pr. Ac. Sc. Phil. (1849) iv. p. 157, et Journ. Ac. Sc. Phil. N. S. ii. p. 53, pl. 5. *Ciccaba gisella*, Bp. Consp. p. 44. *Gisella harrisi*, Bp. Compt. Rend. 1855, Oct. 22nd. '*Nyctalitinus albipunctatus*, Kaup,' Gray, Cat. of Gen. of B., App. p. 135.

Dr. Hartlaub writes me word that the Bremen Museum has a Bogota specimen of this peculiar Owl, and the example in the Norwich Museum named by Dr. Kaup *Nyctalitinus albipunctatus* was received, I believe, from the same locality.

2. Synallaxis elegans, sp. nov.

S. pallide murino-brunnea, infra medialiter albescentior, ventre medio candido, crisso et lateribus dorso concoloribus: pileo toto, nisi fronte, alis extus et cauda rufis: loris albescentibus.

Long. tota 6·4, alæ 2·2, caudæ 3·7.

This *Synallaxis* is very like a common Brazilian species, *S. ruficapilla*, Vieill., which it resembles in having the head, wings and tail bright rufous. But in the present bird the rufous colour does not extend over the front, which is brown like the back, there are no yellowish supercilia, or at least the very faintest traces of them, and the under plumage is not cinereous, but brown like the upper, only paler, and medially passing into white, which colour is quite pure in the middle of the belly. The tail is longer, and the webs of the rectrices are not so broad as in the Brazilian bird.

This species, like other true *Synallaxes*, has only eight large rectrices and an outer pair abnormally small. Other birds, often placed in this genus, have twelve, which is the number given by

Vieillot in his generic characters, but I consider this erroneous, and believe the former number to be the normal one.

The present bird seems not uncommon in Bogota collections, but has probably been hitherto confounded with its several allied species.

3. Synallaxis mœsta, sp. nov.

S. olivascenti-brunnea, subtus paulo dilutior: alis intus nigris, extus castaneis: cauda rufa: loris et gutture albidioribus: tectricibus subalaribus pallide fulvis; rostro valido, nigro; mandibula inferiore basi albescente: pedibus pallidis.

Long. tota 5·2, alæ 2·5, caudæ 2·5.

The single specimen which I possess of this bird was received from MM. Verreaux. It is of a nearly uniform olive-brown, rather lighter below, particularly on the throat and sides of the head. The chestnut margin of the quills grows narrower towards their apices, leaving the dusky black apparent, but at their bases extends through both webs and shows itself underneath. The tail is pure rufous and very short, but I am not quite certain that it is of its normal length in my specimen, there being indications of a state of moult. The bill is rather stronger and more conical than in most species of the genus.

Out of the six *Synallaxes* described by M. de Lafresnaye (Rev. Zool. 1843, p. 290) as from this country, I have as yet only met with three, namely, *S. gularis*, *cinnamomeus* and *unirufus*, which I have been able to identify with certainty. I have, however, specimens of a Bogota bird of this genus which I think may possibly be his *S. fuliginosus*, and there are examples of the same species in the British Museum. If I am correct in my conjectures, I may remark, that the description he gives of this bird is hardly sufficiently accurate, and I can only refer my specimens doubtfully to his species with the following characters:

4. Synallaxis fuliginosa, Lafr. R. Z. 1843, p. 290?

S. supra rufescenti-brunnea, alis extus paulo clarioribus, cauda adhuc clariore, pure brunnescenti-rufa, scapis plumarum nigris: rectricibus decem, angustissimis et tenuissimis: loris et superciliis indistincte albidis: infra obscure cinerea, mento summo et ventre albescentioribus: rostro nigro: basi mandibulæ inferioris albicante; pedibus validissimis clare brunneis.

Long. tota 6·5, alæ 2·3, caudæ 3·75.

The tail of this bird is of a clearer and more reddish-brown than the back, with the shafts of the feathers black. The outer pair of rectrices are abnormally small, measuring only one inch in length, the next pair about double that length. The webs of all are exceedingly narrow, in particular the outer ones, and grow finer towards the extremities.

This form of *Synallaxis* shows evident *rapprochement* towards *Sylviorthorhynchus*.

5. Anabates ruficaudatus, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1838, p. 15.

I possess a Bogota skin, received from MM. Verreaux, which

M. de Lafresnaye has kindly identified for me as being of this species.

The apical portion of the outer primaries in this bird is black, which colour gradually diminishes in extent in the succeeding feathers, and is reduced to a minimum in the secondaries, where it only forms a blotch at the ends. The first quill is nearly wholly black, and in those next succeeding the same colour advances far up the stems, being broadly margined outwardly with chestnut, and inwardly with paler cinnamomeous.

6. Anabates erythropterus, sp. nov.?

A. supra pallide brunnescenti-cinereus; alis extus et cauda tota rufis, remigum exteriorum parte apicali nigra: loris oculorum ambitu et gula cum tectricibus subalaribus cinnamomeis: corpore cetero subtus pallide cinnamomescenti-albido, lateribus olivaceo tinctis: rostro albido, culmine nigrescenti-plumbeo: pedibus pallidis.

Long. tota 6·2, alæ 3·6, caudæ 3·1.

The only *Anabates* I know of likely to resemble the present species is *A. guianensis* (Pl. Enl. 686, fig. 2). I have never seen that bird, but if it has been correctly described, there is no doubt that this species is distinct.

7. Xenops rutilans, Temm. Pl. Col. 72, fig. 2.

A Bogota skin received from MM. Verreaux seems referable to this bird, though there is rather more black in the tail than in my Brazilian specimens.

8. Margarornis brunnescens, sp. nov. (Plate CXVI.)

M. umbrino-brunnea, capitis dorsique superi pennis obsolete et angustissime nigro marginulatis: infra pallide ochracescenti-albo guttulata, his guttulis nigro cinctis et deinde umbrino-brunneo terminatis: loris et gutture medio ochracescentibus, nigrescente paululum variegatis: rostro superiore nigro, inferiore flavido, pedibus clare brunneis.

Long. tota 5·5, alæ 2·5, caudæ 2·5.

MM. Verreaux have transmitted me a single specimen of this bird, which forms a second species of the genus *Margarornis*, instituted by Reichenbach for the *Anabates squamiger*, Lafr. & d'Orb. M. de Lafresnaye has also coined the name *Anabasitta* for the same form, but I believe the first-mentioned term has a slight priority. The type of the genus is very common in collections from Bogota. The present bird may be distinguished from it at once by the want of the bright chestnut colouring on the back and tail. In form, however, there is not much difference. In *M. brunnescens* the beak is rather longer, and the first two primaries proportionately rather shorter. The elongation of the naked stems of the rectrices is carried to a greater extent in the present species than in the other. There are twelve tail-feathers, and they all terminate in a similar hair-like point. The plumage of the two species below shows much similarity, but in the "*brunnescens*" the tear-like spots are yellowish.

I may remark that Reichenbach has kept the Bogota and Bolivian *Margarornithes* apart, but M. de Lafresnaye, who knows both species, considers them identical. It is with Bogota specimens I have been comparing the present bird.

Alectrurinæ?

9. Octhoëca fumicolor, sp. nov. (Plate CXVII.)

O. supra fumoso-brunnea, dorso imo rufescentiore: alis caudaque nigris: tectricibus alarum rufo bivittatis, et secondariis ultimis extus rufescente marginatis: superciliis latis et fronte ad nucham ochracescenti-albis: subtus brunnescenti-murina, ventre medio albescentiore, gula quasi dorso concolore, sed pallidiore: rostro et pedibus nigris.

Long. tota 6·0, alæ 3·5, caudæ 3·0.

This bird appears to be naturally placed in Dr. Cabanis' genus *Octhoeca*, of which the type is *Octhoeca œnanthoides* (*Fluvicola œnanthoides*, d'Orb. Voy. pl. 38, fig. 2).

Other species belonging to this same group are *Octhoeca leucophrys* (*Fluv. leucophrys*, d'Orb. Voy. pl. 38, fig. 1), which the present bird most resembles in colouring; *Octhoeca rufipectoralis* (*ibidem*, pl. 37, fig. 2); *Octhoeca Lessoni*, mihi (*Tyrannulus rufipectus*, Less. Descr. des Mamm. et Ois. p. 296); *Octhoeca albidiema* (*Setophaga albidiema*, Lafr. R. Z. 1848, p. 8), and, perhaps, *Setophaga cinnamomeiventris*, Lafr. R. Z. 1845, p. 80. The three species figured by d'Orbigny are from Bolivia; the three latter, like the present, from Bogota. They all offer considerable similarity in colours, and present, so far as I am acquainted with them, the same structure. M. de Lafresnaye has indicated the existence and affinities of this group in his article in the 'Revue Zoologique,' 1848, p. 8. All d'Orbigny's species inhabit his third zone of elevation, that is, above 11,000 feet above the sea-level, and it is probable, therefore, that the New Grenadian *Octhoecæ* are likewise from the higher regions of the Andes.

10. Euscarthmus agilis, sp. nov. (Plate CXVIII.)

E. supra nigro et pallido brunneo mixtus, pennis plerumque nigris brunneo marginatis: crista capitis totius medialiter nigra, lateraliter autem et subtus pallide brunnea: alis nigris, tectricibus rufescente terminatis, secondariis extus pallescentibus: cauda unicolore nigra rectricum mediarum apicibus et omnium marginibus exterioribus pallescentibus: subtus pallide fulvo-flavidus; capitis lateribus et gutture toto albis nigro variegatis; pectore longitudinaliter nigro flammulato: rostro nigro, mandibulæ inferioris basi alba: pedibus nigerrimis: tectricibus subalaribus pallide fulvis.

Long. tota 4·6, alæ 2·2, caudæ 2·4.

This bird much resembles *Euscarthmus parulus* and *E. albicristatus* in general appearance, and may, I think, be safely placed in the

same genus, though the bill is slightly broader, and the tail is proportionately rather longer, and has the rectrices more graduated.

The only example I have seen of it was transmitted to me by MM. Verreaux.

In the markings of the lower part of the body it is not unlike *E. parulus*, but the ground-colour is more yellowish, and the striæ less distinct on the throat and more marked on the breast. Above these two species are easily distinguishable. The present has the back brown, mixed with black blotches, and not uniform cinereous-olive, and the crest is shorter and differently formed, the whole of the head-feathers being moderately lengthened, not a few of the centre feathers only, as in the older species.

Piprinæ.

11. Pipra coracina, sp. nov.

Pipra leucocilla, Sclater, P. Z. S. 1855, p. 152.

Pipra coracina, J. et E. Verreaux, MS.

♂ *coracino-nigra: pileo nuchaque albis: rostro nigrescenti-plumbeo: pedibus nigris.* ♂ junr. *viridescenti-cinereus, pæne unicolor, alis caudaque intus nigris.*

Long. tota 3·5, alæ 2·8, caudæ 1·2.

MM. Verreaux have transmitted to me an adult and young male, and their MS. description of this species of Manakin, which they consider distinct from the well-known *Pipra leucocilla*, and I am inclined to think they are right. The black colour is generally more intense in the present bird, the white extends further back down the head, the wings are longer, and the bill rather shorter. They remark that the Peruvian bird (which I have not yet seen) appears to be the same as this species..

Formicariinæ.

12. Conopophaga cucullata, sp. nov. (Plate CXIX.)

C. supra brunnescenti-olivacea, alis caudaque nigricantibus brunnescente marginatis: capite toto et cervice postica cum gula et tectricum alarum marginibus clare rufo-castaneis: plaga pectorali alba: abdomine dilute cinereo, ventre medio et hypochondriis roseo aut rufescente tinctis: tectricibus subalaribus flavicanti-brunneis: rostro flavo: pedibus pallidis.

Long. tota 4·0, alæ 2·7, caudæ 1·1.

The single specimen sent to me by MM. Verreaux is the only example I have yet seen of this *Conopophaga*. It is not likely to be confounded with any other species of the genus that I am acquainted with, its bright chestnut head and throat and white pectoral patch rendering it eminently distinguishable.

Icterinæ.

13. Sturnella ludoviciana (Linn.).

A single bird transmitted by MM. Verreaux seems to belong to

this species. The yellow belly is rather brighter than in U.S. examples, but at present I can discover no essential difference. It is singular, if this *is* the North-American species, that the Mexican bird (*Sturnella hippocrepis*, Wagl.) is usually considered distinct.

Emberizinæ.

14. Emberizoides macrurus (Gm.). *Fringilla macroura*, Gm. S. N. i. 918. *Tardivola macroura*, Cab. M. H. p. 135 (note).

A Bogota specimen of this bird which I have lately acquired agrees with the true *E. macrurus* from Cayenne, and seems to be quite distinct from the Brazilian *E. marginalis* (Temminck), with which it is generally made synonymous.

Tanagrinæ.

15. Chlorospingus xanthophrys, sp. nov.

C. brunnescenti-olivaceus: loris nigricantibus: superciliis curtis a fronte ad oculum summum et corpore mediali subtus flavis: rostro nigro: pedibus pallide brunneis.

Long. tota 4·7, alæ 2·5, caudæ 2·4.

Obs. Similis *C. superciliari*, sed minor, et superciliis brevioribus et flavis, capite non cinerascente, lateribusque olivascentibus dignoscendus.

I possess a single example of this bird, and have seen others.

16. Chlorospingus Lichtensteini, sp. nov. *Nemosia verticalis*, Licht. in Mus. Berol. (partim).

C. supra cinereus, alis caudaque nigricantibus; pileo atro: vitta mediali verticis ochracescenti-albida: subtus albidus: lateribus cinerascentibus.

Obs. Similis *C. verticali*, sed major, gula ventre concolore, nec nigra.

There is a single example of this bird in the Berlin Museum, received from M. Boissoneau of Paris along with specimens of *C. verticalis*, and not distinguished from that species.

Columbæ.

17. Chlorœnas bicolor (Vieill.). *Col. bicolor*, Vieill. N. D. d'H. N. xxvi. 345. *C. vinacea*, Temm. Pig. t. 41. Mus. Brit.

18. Zenaida ruficauda, G. R. Gray, MS. Bp. Coup d'œil sur l'ordre des Pigeons, p. 42. Mus. Brit. et Paris.

19. Zenaida pentheria, Bp. Coup d'œil, p. 42; et Consp. ii. p. 84. Mus. Brit.

20. Chamæpelia amazilia, Bp. Coup d'œil, p. 38, et Consp. ii. p. 84. Mus. Brit.

Gallinæ.

21. Chamæpetes Goudoti (Less.). *Ortalida Goudoti*, Less.

Man. d'Orn. ii. 217; et Tr. d'Orn. i. p. 481. *Chamæpetes Goudoti*, Wagler, Isis, 1832, p. 1227.

GRALLÆ.

22. GALLINAGO NOBILIS, sp. nov.

G. supra nigro-cinereo et brunneo (sicut in plerisque hujus generis speciebus) variegata: pileo summo nigro, vitta mediali irregulariter cinnamomeo-brunnea: capitis lateribus et cervice postica pallide cinnamomeo-brunneis, minute nigro punctatis; his punctis intra rictum et oculum lineam formantibus: scapularibus nigris cinnamomeo vittatis, plaga subterminali nigra præditis et extus iterum late ochracescenti-albo marginatis: remigibus omnibus pure et pallide nigricanti-cinereis, secondariorum et alulæ spuriæ apicibus extus pallescentibus; tectricibus albido et cinereo variegatis: subtus, gutture albicante, pectore toto cinnamomescenti-brunneo, nigricante flammulato; ventre toto albo, hypochondriis et tectricibus subalaribus albo nigroque regulariter transvittatis; tectricibus subcaudalibus albis cinnamomeo tinctis et nigro obsolete transfasciatis: caudæ rectricibus sedecem; harum octo mediis nigris claro rufo late terminatis, hoc colore rufo iterum sub margine anguste nigro vittato; una utrinque proxima præcedentibus assimili, sed colore nigro ochracescente maculato et terminatione rufa non æque lata; tribus autem utrinque extimis ochracescèntibus nigro irregulariter transvittatis: rostro longissimo, brunnescente, apice nigra, basi pallidiore: pedibus nigro-fuscis.

Long. tota 11·0, alæ 5·7, caudæ 2·2, rostri à rictu 3·7, tarsi 1·5.

There is an example of this fine large species of Snipe in the British Museum, from Mr. S. Stevens's Bogota collection, and MM. Verreaux have also lately transmitted a single specimen to me. It is of about the same size as Temminck's *Scolopax gigantea*, but that species appears to have the wings banded. In the present bird the quills are uniform slaty black. The spurious wings and secondaries are edged with buffy white, and all the wing-coverts are terminated with the same colour, forming irregular barrings.

23. RALLUS SEMIPLUMBEUS, sp. nov. ?

R. supra brunnescenti-olivaceus, nigro flammulatus; alis caudaque nigricanti-brunneis; alarum tectricibus rufis: loris nigris: capitis lateribus et corpore toto subtus plumbeis; mento et gulari stria albis: tectricibus subcaudalibus albis nigro mixtis: rostri culmine et apice nigris; mandibula autem inferiore ruberrima: pedibus pallide brunneis.

Long. tota 8·5, alæ 4·4, caudæ 1·8, rostri 1·7.

This is a true *Rallus*—near *R. virginianus* of the U.S.—of which MM. Verreaux have sent me a single specimen. I have tried in vain to make it agree with any recognized species, and therefore provided it with a (temporary ?) name.

2. Descriptions of Twenty-five New Species of Land-Shells, from the Collection of H. Cuming, Esq.

By Dr. L. Pfeiffer.

1. Helix exserta, Pfr. *H. testa vix perforata, conoideo-lenticulari, tenui, oblique rugosula, pallide cornea; spira conoidea, acutiuscula; anfr. 4½ regulariter accrescentibus, superne tumidulis, ad suturam carina rotundata, exserta marginatis, ultimo non descendente, basi convexo; apertura obliqua, depresse angulato-lunari; perist. simplice, recto, marginibus remotis, columellari brevi, subverticali.*
Diam. maj. 6, min. 5, alt. 3 mill.
Hab. Sandwich Islands (*Dr. Newcomb*).

2. Helix coagulata, Pfr. *H. testa anguste perforata, conoideo-depressa, tenuiuscula, arcuatim striatula et ad peripheriam oblique malleato-rugosa, alabastrina, fascia 1 pellucida prope suturam ornata; spira brevi, conoideo-convexa; anfr. 5 vix convexiusculis, ultimo obsolete angulato, basi convexo, nitido; apertura obliqua, rotundato-lunari, vix latiore quam alta; perist. simplice, recto, margine dextro declivi, columellari superne vix reflexo.*
Diam. maj. 30, min. 25½, alt. 18 mill.
Hab. Amboina.

3. Helix Hainesi, Pfr. *H. testa aperte perforata, depressa, tenui, sublævigata, diaphana, parum nitente, pallide cornea; spira brevissime conoidea, obtusa; sutura levi, submarginata; anfr. 7 vix convexiusculis, sensim accrescentibus, ultimo peripheria subangulato, basi convexiore, nitido; apertura vix obliqua, depresse lunari; perist. simplice, recto, marginibus vix convergentibus, columellari declivi, vix incrassato.*
Diam. maj. 29. min. 25, alt. 12 mill.
Hab. Siam.

4. Helix Siamensis, Pfr. *H. testa perforata, depressiuscula, solida, superne arcuato-striata, striis spiralibus granulato-decussata, pallide cornea; spira brevissime conoidea; anfr. 6 lente accrescentibus, vix convexiusculis, ultimo latiore, infra peripheriam leviter radiato-striato, nitido, albido; apertura obliqua, lunari; perist. simplice, recto, marginibus vix convergentibus, columellari superne brevissime reflexo.*
Diam. maj. 25, min. 22, alt. 12½ mill.
Hab. Siam.

5. Helix omissa, Pfr. *H. testa umbilicata, depresso-turbinata, tenui, ruguloso-striata, diaphana, cerea; spira breviter turbinata, apice acutiuscula; anf. 4 convexis, ultimo non descendente, supra peripheriam subangulato, basi convexo; umbilico ¼ diametri fere æquante; apertura diagonali, lunato-rotundata; perist. simplice, recto, marginibus approximatis, columellari subpatulo.*
Diam. maj. 4, min. 3½, alt. 2 mill.
Hab. Juan Fernandez (*H. Cuming*).

6. Helix Miguelina, Pfr. *H. testa angustissime umbilicata, depressa, tenui, striatula, pellucida, nitidissima, cornea, strigis distantibus fulvis radiata; spira parum elevata, convexa; anfr. 5½ vix convexiusculis, ultimo latiore, non descendente, depresso-rotundato; apertura magna, fere diagonali, lunato-rotundata; perist. simplice, recto, marginibus conniventibus, columellari arcuato, superne vix patente.*
Diam. maj. 11, min. 9½, alt. 5 mill.
Hab. San Miguel, Azores.

7. Helix volutella, Pfr. *H. testa umbilicata, subdiscoidea, tenui, striatula, pallide cornea, lineis rufis subconfertis radiata; spira plana; anfr. 5 vix convexiusculis, lente accrescentibus, ultimo non descendente, peripheria rotundato; umbilico aperto, ⅕ diametri subæquante; apertura parum obliqua, lunari; perist. simplice, recto, marginibus remotis, basali substricto, columellari vix patente.*
Diam. maj. 7, min. 6, alt. 2⅔ mill.
Hab. San Miguel, Azores.

8. Helix alata, Pfr. *H. testa anguste umbilicata, depressa, membranacea, oblique irregulariter striata, oleoso-micante, pellucida, fusco-cornea; spira subplana; anfr. 3½ celeriter accrescentibus, ultimo angulato, carina alæformi tenui decidua cincto, antice dilatato; basi convexo; apertura perobliqua, securiformi; perist. simplice, recto, margine basali perarcuato.*
Diam. maj. 8½, min. 6, alt. 3 mill.
Hab. Sandwich Islands (*Dr. Newcomb*).

9. Helix angelica, Pfr. *H. testa subaperte perforata, depressa, tenui, superne subconferte striata, pellucida, nitida, virenti-cornea, varicibus castaneis, flavo-marginatis, irregulariter notata; spira parum elevata, vertice prominulo; sutura anguste albido-marginata; anfr. 7 sensim accrescentibus, convexiusculis, ultimo latiore, peripheria rotundato, basi læviore; apertura fere diagonali, lunari; perist. simplice, recto, castaneo-limbato, intus callo crassiusculo albo labiato.*
Diam. maj. 31, min. 27, alt. 13½ mill.
Hab. Thibet and Punjaub, India (*Conway Shiplay, Esq.*).

10. Helix binaria, Pfr. *H. testa umbilicata, lenticulari, arcuatim obtuse costata et striis spiralibus obsolete decussata, cornea, fusco maculose strigata; spira convexa, obtusula; sutura marginata; anfr. 5½ convexiusculis, lente accrescentibus, ultimo non descendente, subacute carinato; umbilico pervio, ¼ diametri subæquante; apertura diagonali, rhombea, lamellis 2 acutis albis parietalibus, intrantibus, denticuloque obsoleto columellari coarctata; perist. simplice, recto.*
Diam. maj. 4½, min. 4, alt. 2 mill.
Hab. Sandwich Islands (*Dr. Newcomb*).

11. Helix fanulus, Pfr. *H. testa umbilicata, turbiniformi, tenui, superne confertim oblique plicata, diaphana, cerea; spira*

convexo-conica, acutiuscula; anfr. $4\frac{1}{2}$ *convexiusculis, ultimo non descendente, subacute carinato, basi radiato-striato, circa umbilicum angustum excavato; apertura obliqua, subsecuriformi; perist. simplice, recto, margine basali breviter reflexo.*

Diam. maj. $3\frac{1}{3}$, min. 3, alt. $2\frac{1}{2}$ mill.

Hab. Port Natal.

12. Helix undina, Pfr. *H. testa imperforata, globoso-turbinata, tenui, lævigata, nitida, albido-hyalina; spira convexo-conoidea; anfr. 5 convexiusculis, ultimo spira breviore, antice vix deflexo, peripheria obsolete angulato, basi planiusculo; apertura perobliqua, truncato-elliptica; perist. tenui, marginibus subconniventibus, dextro expanso, columellari leviter arcuato, planato, appresso.*

Diam. maj. 23, min. 19, alt. $14\frac{1}{2}$ mill.

Hab. —— ?

13. Bulimus Darnaudi, Pfr. *B. testa compresse subumbilicata, conico-ovata, tenui, subdistanter costata, striis spiralibus sub lente obsolete decussata, virenti-fulva; spira conica, vertice obtuso; anf.* $5\frac{1}{2}$–6 *convexiusculis, ultimo spiram paulo superante, basi subcompresso; columella substricta, leviter procedente; apertura vix obliqua, elliptico-ovali, basi subangulata; perist. breviter expanso, tenuiter albo-labiato, margine columellari dilatato, subplano, patente.*

Long. 23, diam. 12 mill.

Hab. Sennaar, interior of Africa (*Mr. Darnaud*).

14. Bulimus Cordovanus, Pfr. *B. testa subrimata, fusiformi-turrita, solidula, confertim arcuato-costulata (costulis subdecussatis, breviter pilosis), pallide fusco-cornea; spira elongata, apice obtusa; anfr. 10, superis convexis, sequentibus sensim planioribus, ultimo antice soluto, descendente, dorso acute carinato, basi cristato et scrobiculato; apertura integra, ovali, quinquedentata; dentibus 2 lamellæformibus in parte sinistra, 3 inæqualibus in dextra; perist. continuo, expanso, albido.*

Long. 23, diam. 5 mill.

Hab. Andes near Cordova.

15. Bulimus cyathostomus, Pfr. *B. testa oblique rimata, fusiformi-cylindrica, solida, longitudinaliter confertim striata, albida; spira cylindraceo-turrita, apice acuta; sutura submarginata; anfr.* $7\frac{1}{2}$ *planiusculis, ultimo* $\frac{1}{3}$ *longitudinis vix attingente, latere dextro profunde bisulcato, basi subcristato; apertura verticali, cyathiformi, ringente; columella profunde bidentata; perist. continuo, expanso, ad parietem aperturalem appresso et juxta marginem dextrum laminam validam, securiformem immittente, margine dextro superne sinuato, profunde et inæqualiter trilamellato.*

Long. $20\frac{1}{2}$, diam. 7 mill.

Hab. Old Calabar, West Africa.

16. Achatina Shuttleworthi, Pfr. *A. testa ovato-conica, tenuissima, submembranacea, confertissime chordato-plicata, sericea, cornea, maculis rufis ad suturam et ad peripheriam tæniata, cæterum pallide rufo strigata; spira conica, obtusa; anfr.* $5\frac{1}{2}$ *convex-*

iusculis, ultimo spira paulo longiore; columella substriata, compressa, basi oblique truncata; apertura obliqua, truncato-ovali; perist. simplice, tenui.
Long. 34, diam. 17 mill.
Hab. Grand Bassam, Africa.

17. ACHATINA CORROSULA, Pfr. *A. testa turrita, solidula, sublævigata, punctatim corrosula, pallide cornea; spira convexiusculo-turrita, apice acutiuscula; sutura levi, subcrenulata; anfr. 9 vix convexiusculis, ultimo $\frac{2}{7}$ longitudinis vix æquante, basi rotundato; columella perarcuata, oblique distincte truncata; apertura parum obliqua, sinuato-semiovali; perist. simplice, tenui.*
Long. 15, diam. $6\frac{1}{3}$ mill.
Hab. Neilgherries (*Conway Shiplay, Esq.*).

18. ACHATINA PALLENS, Pfr. *A. testa turrita, tenuiuscula, sublævigata (sub lente minutissime decussatim striatula), semidiaphana, pallide corneo-cerea; spira regulariter attenuata, apice acutiuscula; sutura levi, anguste marginata; anfr. 9 vix convexis, ultimo $\frac{2}{7}$ longitudinis subæquante, basi subattenuato; columella parum arcuata, abrupte truncata; apertura parum obliqua, sinuato-ovali; perist. simplice.*
Long. 16, diam. $4\frac{2}{3}$ mill.
Hab. Moëly, East Africa.

19. PUPA BACILLUS, Pfr. *P. testa profunde arcuato-rimata, subcylindrica, solida, peroblique costata, alabastrino-alba; spira sensim in conum obtusulum attenuata; sutura mediocri, costis excurrentibus coronata; anfr. 9 convexiusculis, ultimo antice alte ascendente, basi subcompresso; apertura verticali, truncato-oblonga, dente intrante parietali prope angulum coarctata; perist. breviter expanso, margine dextro intus crasse labiato, columellari simplice, patente.*
Long. 13, diam. vix 5 mill.
Hab. Mauritius.

20. PUPA TERES, Pfr. *P. testa breviter rimata, cylindracea, tenuiuscula, oblique plicata, diaphana, corneo-albida; spira cylindrica, in conum brevem, obtusum terminata; sutura impressa; anfr. 8 vix convexis, ultimo non ascendente, basi obsolete gibbo; apertura verticali, ovali; perist. tenui, expansiusculo, marginibus callo, dentem breviter intrantem emittente, junctis.*
Long. 10, diam. $3\frac{1}{2}$ mill.
Hab. Mauritius.

21. PUPA SENNAARIENSIS, Pfr. *P. testa perforata, oblongo-turrita, tenui, levissime striatula, parum nitente, fusco-cornea; spira subregulariter attenuata, apice obtusa; anfr. 7 convexis, ultimo $\frac{1}{3}$ longitudinis subæquante, circa perforationem imperviam compresso; apertura vix obliqua, truncato-oblonga, lamella unica parietali intrante, fere ad angulum marginis dextri posita, coarctata; perist. tenui vix patulo, intus sublabiato.*
Long. 4, diam. $1\frac{1}{2}$ mill.
Hab. Sennaar, interior of Africa (*Mr. Darnaud*).

22. Tomigerus Venezuelensis, Pfr. *T. testa subflexuose rimata, compresse conica, tenui, striatula, pellucida, oleoso-micante, pallide cornea; spira conoidea, obtusa; sutura rufo-marginata; anfr.* 4 *convexis, ultimo inflato, latere aperturæ vix planiore, antice vix ascendente, profunde scrobiculato et arcuato-cristato; apertura vix obliqua, subtrapeziformi, septemplicata; lamellis* 3 *in pariete aperturali (angulari maxima, intrante, mediana profunda, minima),* 3 *subæqualibus in parte basali,* 1 *valida, angulatim intrante in margine dextro; perist. tenue, acutum, expansum, intus albido-labiatum, margine supero brevi, cum dextro angulum obtusum formante, basali stricto, declivi, longissimo.*
Diam. maj. $6\frac{1}{3}$, min. $4\frac{1}{3}$, alt. 5 mill.
Hab. Venezuela.

23. Clausilia Sennaariensis, Pfr. *Cl. testa subrimata, fusiformi, tenera, dense capillaceo-costulata, oleoso-micante, pellucida, cornea; spira gracili, apice obtuse conica; sutura simplice; anfr.* 8 *vix convexiusculis, ultimo basi obtuse bicristato; apertura subobliqua, oblonga; lamellis convergentibus, infera valida, subramosa; lunella imperfecta, punctiformi vel rarius lineari; plica palatali* 1 *supera, subcolumellari inconspicua; perist. continuo, breviter soluto, expanso, albido, margine externo intus subincrassato.*
Long. 10, diam. $2\frac{2}{3}$ mill.
Hab. Sennaar, interior of Africa.

24. Megalomastoma complanatum, Pfr. *M. testa subobtecte umbilicata, pupæformi, solida, oblique levissime striatula, sordide violacea, absque epidermide; spira subcylindrica, apice attenuata, breviter truncata; sutura impressa, pallida; anf. superst.* 6, *superis convexis, penultimo vix convexiusculo, ultimo angustiore, latere aperturæ subplanato, antice pallido, circa umbilicum crista pallida, circumscripta munito; apertura verticali, circulari, in fundo castanea; perist. albo, perincrassato, superne breviter adnato, margine dextro expanso et reflexo, sinistro dilatato, patente, superne subauriculato. Operc.?*
Long. $32\frac{1}{2}$, diam. 14 mill.
Hab. Cuba.

25. Rhaphaulus Lorraini, Pfr. *Rh. testa perforata, gibbosooblonga, solida, conferte striata, sub epidermide fulvida saturate violacea; spira irregulari, inflata, in conum brevem desinens; anfr.* $5\frac{1}{2}$ *convexis, penultimo gibbo, latere aperturæ subplanato, ultimo attenuato, antice subascendente; apertura circulari, basi axin subexcedente; perist. calloso, albo, continuo, expanso et reflexiusculo, limbo interno cum exteriore connato; foramine supero parvulo, oblique sursum spectante. Operc.?*
Long. 15, diam. 8 mill.
Hab. Pulo Penang (*Dr. Lorrain*).

March 11, 1856.

Dr. Gray, F.R.S., in the Chair.

The following papers were read :—

1. Note on Psaltria flaviceps, a third American Species of the Parine Genus Psaltria.

By Philip Lutley Sclater, M.A., F.Z.S.

In describing a new *Conirostrum* in these 'Proceedings' for last year (P.Z.S. 1855, p. 74), and giving a list of all the species of that form with which I was acquainted, I took the opportunity of noticing some birds which had been referred to the same genus, which I had not then met with. Among these latter was the *Conirostrum ornatum* of Lawrence, described and figured in the Annals of the Lyceum of Nat. Hist. of New York for 1851. It is only lately that I have been successful in meeting with a specimen of this, I believe, rather rare species. As I had always supposed, I find it has nothing to do with the genus *Conirostrum*, but has been much more nearly rightly placed by Sundevall, who described it as *Ægithalus flaviceps* the year before Mr. Lawrence's name appeared. In my opinion, however, this latter position is not perfectly satisfactory for it. This little bird in fact seems to me to form a very natural member of the Parine genus *Psaltria*, of which some Asiatic species, including the type, are figured in the seventh Number of Mr. Gould's great work on the Birds of that continent.

Mr. Cassin, in a very useful Synopsis of the North-American *Parinæ*, given in his excellent volume on the Birds of California, Oregon, &c., p. 20, mentions two North-American species of this genus, *Psaltria minima* and *P. melanotis*, but says nothing of the present bird, with which he seems to have been unacquainted. Examples of both the former species are contained in the British Museum, and upon comparison agree in every essential character with this bird. It is true that its yellow face and chestnut bend of the wing are quite different in cast of colouring from what we meet with in the other species of this group, and I have little doubt that some naturalists who are fond of coining new names would consider this fact a sufficient excuse for making it the type of a new division. But I do myself think that generic characters ought only to be founded upon differences in structure; and as in the present instance there appears to be none such, I think we shall be quite accurate in registering the present bird as a third American species of the Asiatico-American genus *Psaltria* under the title of

Psaltria flaviceps.

Ægithalus flaviceps, Sund. Öfvers. af Vet. Ac. Förhand. vii. p. 129 note (1850).

Conirostrum ornatum, Lawrence, Ann. Lyc. New York, 1851, p. 113, pl. 5. fig. 1.

P. fuscescenti-cinereus, subtus dilutior: pileo et gutture flavescentibus: campteriis clare castaneis: alis caudaque intus nigricanti-brunneis: rostro et pedibus nigris: tectricibus subalaribus albis.

Long. tota 4·2, alæ 2·1, caudæ 1·9.

Hab. Texas (*Lawrence*).

Note.—Since writing the above, I have been enabled through Mr. Gould's kindness to compare *Psaltria flaviceps* with the type of the genus, *Psaltria exilis*, from Java. It certainly offers a more pointed beak and wing not so rounded as the latter bird, and may be considered as rather aberrant in form. Any naturalist, therefore, who is unwilling to class it with true *Psaltria* may use for it the generic term *Psaltriparus*, that name having been bestowed by Prince Bonaparte (Compt. Rend. Ac. Sc. Par. xxxi. p. 478) on *Psaltria melanotis* (Sandbach), with which species this bird agrees in every respect.

2. On a peculiar Variety of Mus Musculus. By John S. Gaskoin, F.L.S.

(Mammalia, Pl. XLI.)

Mus Musculus. Var. *Mus nudo-plicatus.*

I have thus designated this strange and novel form of the genus *Mus*, to give the more importance to the singularity.

In the spring of 1854 a labourer in the employ of Mr. Webster, a tenant on the Taplow-court estate, observed several little white creatures running about a straw-rick in the wood at the back of the lodge near Taplow paper-mills, Maidenhead Bridge, and succeeded in securing two of them;—the following day, on moving some of the straw in search of more, he disturbed two others, which he also captured; and disposed of the four to Bond, the Maidenhead Bridge boatman, for five shillings. Two died during the first night, probably from the rough usage they received when taken; there remained, to use Bond's expression, but "the old buck and a doe big with kit." In seven days she brought forth five young ones; and the next day removed from the nest two that were dead; the remainder were reared. One of the existing five was afterwards lost or killed. These little animals were readily recognized as a form of mouse, but of so extraordinary a conformation in their external structure as to attract the curiosity of the immediate neighbourhood, and obtained the not inappropriate name of the rhinoceros mice. The surmise of the people on the spot is, that they had escaped from one of the numerous barges which are constantly arriving at the paper-mills laden with rags, &c., principally of foreign importation. Bond having possessed them four months, offered them for sale to the Zoological Society of London, and the purchase being declined, I bought them, lest so singular a form in natural history should be lost to science and pass into oblivion; and it is to prevent this, that I now

beg to record their characters in the 'Proceedings' of this Society, They were shown at the meetings of this and the Linnean Societies. and to many other naturalists; and finally, were exhibited during four months in the small-quadruped house in the gardens of the Society, with the view of eliciting information respecting them, as to any similar conformation in the species or genus having before been observed; and expressions of surprise at their novelty of form were in every instance the only remarks obtained. At the period named of their exhibition all had died (three of them are now shown in spirit). Unfortunately they did not breed, although three of them were born, in captivity.

In size these animals somewhat exceeded the common mouse, measuring from the tip of the nose to the base of the tail $4\frac{2}{10}$ths inches; they were totally destitute of hairs, excepting some two or three dark-coloured labial hairs, or whiskers; the external integument pinkish white, and formed into coarse prominent plicæ, or duplicatures of itself, transversely traversing the body in an undulated shape, and increasing in width and projection as they descended from the dorsum to the most depending line on either side of the thorax and abdomen, and there forming pendulous flaps, extending from the arm of the fore to the thighs of the hind legs; so that all the legs being stretched asunder, as when on the wires of the cage, these flaps became expanded in the manner of the flying squirrel. The plicæ or duplications of the skin were on the sides of the body in a degree symmetrical; and on the face and head, particularly so, as will be observed in the plate, which represents the old male animal, very faithfully delineated by Wolf, to elucidate this paper; the ears of a dark or blackish colour, the tail ash-coloured, and the eyes black, indicating they were not albinos of the species. It was curious to observe the quickness and dexterity with which their little paws opened along the furrows formed by the plicæ or folds, to clean between them. So dissimilar, it will be observed, from the characters given, is the external formation of these animals from that of the domestic mouse, that opinions were risked as to their constituting a different species, but on investigating the teeth of the first one that died, and they proving identical, it was inferred they are a *lusus naturæ* of that species;—if such, however, be the fact, I believe this will prove the first instance on record in which the whole litter or brood of animals or birds, have all been in exactly the same state of abnormal condition, and that condition becoming permanent, and continued through successive generations; of which we have here the example of two or more generations, and have no knowledge whatever of when this abnormal state may have begun;—for, as in this exemplification, "like begets like"—"*similia similibus gignuntur*," it is fair to conclude that the two parents whose progeny resembled them, had also progenitors similar to themselves; especially as they in their breeding, like genuine species in the wild state, associated only with those of their own kind; thus, if the race be not extinct, successions with the same peculiarities will be produced, and give rise to a remarkable example of the

origin of a new species, or variety of a species, in the genus. I have made inquiries about the locality where these animals were found, as to whether others had ever been observed there before they were discovered, or have been met with since, and find these to have been the only known instances of their occurrence.

I am not aware that in the nests of the Rook, *Corvus frugilegus*, or the Black-bird, *Merula vulgaris* (which I mention as being those in whose productions *lusus naturæ* are the most frequently noticed), or in the nests of any other bird, more than one individual of a brood has been found, constituted in the healthy condition, and having the plumage white, and the red eye of the true albino; but variations in colour, &c., may occur in any number, as the results of physical impediments, and not natural production; however, with increase of strength and health, these generally obtain afterwards their proper-coloured plumage, and are not therefore true *lusus naturæ*. To quadrupeds I believe the rule equally applies.

In consequence of the interesting conversation which followed the reading of the foregoing paper, I think it proper to subjoin a few other observations.

The excellent condition and clean appearance of the animals, and their well feeding, and activity, left no doubt as to their healthy state during the six months they were alive in my possession and during the four months they were in that of Bond. A member present stated, that while they were in the gardens he had microscopically examined the lamellæ or branny scales which are ever separating, in larger or smaller particles, from the epidermis of animals, and found them the natural and healthy production. My own examination of these exfoliations had led me to the same opinion. I had the opportunity, and carried my inquiry still further; I carefully examined the surface and sections of the dermoid covering with low and with high microscopic powers, and with transmitted light, and as opake objects, with a view to discover any hair follicles or glandular bulbs from which hairs might have emanated, but could not discover a single indication of either, nor any recognizable vestige of their obliteration;—I therefore believe the organs for pilous production were absent, and *ab initio*. These little animals having been found in a straw-rick, I conclude, will sufficiently indicate their habits and general residence to be similar to those of the common mouse.

Note.—Having recently heard that a specimen of the same variety of *Mus* that I have described is preserved in the Museum of the College of Surgeons, I compared it with the examples I possess, and found it precisely the same in every character; it was caught by the late Mr. Clift in the fire-place of a room in his house in London, and is entered in the Catalogue of Monsters—"No. 121. A common Mouse (*Mus Musculus*), full-grown, which, from its birth, had not the slightest appearance of hair on its skin, being perfectly naked. Presented by Mr. Clift, 1820."

3. Description of the Animals and Teeth of Tylodina and other Genera of Gasteropodous Mollusca.

By Dr. John Edward Gray, F.R.S., V.P.Z.S., P.B.S. etc.

In the following paper I forward the description of the animal and the teeth of several genera of Mollusca which have not yet been recorded. It is interesting to find that the examination of the teeth justifies the position which was theoretically assumed for the genera in the different families before their teeth were known.

A. Proboscidifera Hamiglossa.

Fam. Muricidæ.

Fusus pallidus ("*F. turbinelloides*=*Pyrula lignaria*, Reeve").

The proboscis elongate, cylindrical, subclavate, entirely retractile; the lingual membrane elongate, narrow, yellow; teeth in three longitudinal series, 1·1·1, the central transparent, provided with a rounded front edge, armed with three rather elongate, conical, subequal denticles; the lateral teeth yellow, versatile, straight, with two compressed arched processes, the terminal one largest, the basal rather smaller, and with a small tooth on its outer edge. The operculum is horny, thick, ovate, subtrigonal, annular, as large as the mouth of the shell; the apex blunt, rather worn; the nucleus apical, scar large oblong, with a thick callous exterior margin.

Typhis tetrapterus.

Operculum horny, ovate, blunt, laminar; nucleus anterior apical, as large as the mouth of the shell, rather broader behind.

Pisania elegans. Panama.

The animal pale brown (in spirits); the foot folded up and across behind, and together longitudinally in front, leaving a ⌊-shaped groove; tentacles very small; proboscis elongate, thick, clavate, entirely retractile; lingual membrane elongate, thin; teeth in three longitudinal rows, 1·1·1, central far apart from each other, and the lateral teeth, lunate, with a slightly denticulated, nearly straight, front edge, and a rather strong concave tooth at each end; lateral teeth versatile, large, with a nearly equal basal and apical, conical, curved process. Male organ slender, elongate, tapering, yellow, compressed. Operculum ovate, acute, thick, horny, annular, nucleus apical.

Triumphis distorta. Panama.

Lingual membrane elongate; teeth in three longitudinal series, 1·1·1; central teeth very small, far apart; lateral large, versatile, with two basal unequal, and one larger terminal curved process. Operculum ovate, acute, very thick.

Cyclope (Nassa) neritinea.

Nucleus prominent above the surface of the apex of the semi-adult shell, turrited, spiral, dextral, of three or four transversely sulcated flat whorls, with a blunt tip, at length deciduous, leaving a flat, spiral, rather callous scar. The whorls of the shell of the hatched animal suddenly enlarged, thick; smooth, spotted, forming a sudden contrast to the whorls of the nucleus.

Risso formed a genus, name *Nanina*, from the young state of the shell.

Fam. Buccinidæ.

Cuma sulcata.

Operculum horny, ovate, triangular, with a deep notch on the middle of the broad side, with a broad callous margin on the inner angular edge of the inner surface. Body and foot with a deep groove on the inner side, formed by the fold on the inner lip of the shell, like the notch in the operculum; foot folded up behind and together in front, forming a ⅃-shaped groove, with a cross groove in front; tentacles close together at the base, diverging, short, compressed, sharp-edged, eyes on the outer side near the tips, which are more slender and acute above them; proboscis moderately elongate, cylindrical, subclavate, completely retractile; lingual membrane very narrow and elongate, horny; teeth dark-coloured when adult, in three longitudinal series, 1 · 1 · 1; the central teeth broad, transverse, about half the width of the lingual membrane, with seven distant conical denticulations on the front edge, the central denticle forming a continued central ridge, the lateral denticulations unequal, the central of the three larger, the outer one on the outer margin of the tooth; the lateral teeth small, conical, curved, acute, versatile with a simple rather elongate base.

B. Odontoglossa.

Fam. Fasciolariadæ.

Fasciolaria salmo.

Operculum ovate, acute, smooth, slightly concentrically wrinkled; apex of this individual reproduced and rather rounded. Animal bright red; foot, when contracted, folded together transversely behind and longitudinally in front; tentacles small, compressed, subulate, united together at the base, forming a small veil; eyes on the outer side, rather above the base, with a conical tentacle only slightly produced above the eyes; proboscis very long, slender, entirely retractile; lingual membrane very long, slender, with three longitudinal series of teeth in cross lines, 1 · 1 · 1, the central teeth narrow, square, with three small, subequal, acute denticulations, the central one rather the longest; the lateral teeth very broad, slightly arched, and more arched at the outer end, with a series of twenty-five or thirty equal, regular, elongate, subulate teeth, somewhat like the teeth of a coarse hair-comb; the central teeth are opposite the space between the lateral

teeth, that is, alternating with them. Male organ elongate, subcylindrical, compressed, of the same diameter the whole length, rounded at the end with a slight groove on its outer edges, which is not continued up the body as in *Malea*.

LEUCOZONIA ANGULATA.

Animal red; the foot, when contracted, folded up across behind, and longitudinally in front, leaving a ⌊-shaped groove; tentacles close together at their base, diverging, flat, with the eyes on the outer side rather below the tip, which is narrower and acute; proboscis completely retractile, clavate; lingual membrane elongate, rather narrow; teeth in three longitudinal series, the central series rather narrower than the lateral ones, square, with a rather arched anterior edge, with elongate, conical, acute denticulations, the central denticulation being the largest and longest; the lateral teeth bandlike, rather oblique, front edge with several distinct, conical, acute denticulations, the one at the edge of the inner margins near the central tooth being much the largest and longest; operculum ovate, acute, thick; nucleus apical.

C. TÆNIOGLOSSA.

Fam. DOLIIDÆ.

The proboscis of this family is very long, large, and more or less dilated, with an open rather trumpet-like mouth at the end.

MALEA RINGENS.

Animal like *Dolium*. Lingual membrane narrow, elongate, wider in front; teeth in seven longitudinal series, dark red, in each cross series, 3·1·3; the central teeth broad, lunate, thin, with a central recurved apex, and sometimes a small denticle for each side, halfway between the tooth and the end; the lateral teeth subulate, curved, acute at the top; cervical collar of two ovate, horny plates, covered with crowded converging subulate teeth; foot short, truncated in front, rounded behind; proboscis cylindrical, large, retractile into a sheath under the tentacular veil; mouth open at the end; tentacles subulate; eyes on short tubercles at the outer hinder side. Male organ very large, compressed, with marginal groove on the outer side, continued up the right side of the body by the side of the rectum, and with a slender filiform appendage near the tip. Operculum none.

Fam. TRITONIADÆ.

The animals of this family are intermediate in character between the *Proboscidiferæ* and the *Rostriferæ*. The proboscis is larger and thicker than in the other families of the *Proboscidiferæ*, is not so much retracted, and is contained in a more free sheath, and the end of the retracted trunk is often partly exposed beyond the margin of the sheath, giving the animal somewhat the external appearance of the *Rostriferæ*, and explaining why some of the French figures of

the animals of *Triton, Ranella,* &c. are represented as if they belonged to that division of the Gasteropods.

RANELLA CÆLATA.

Tentacles lateral, separated by a short, rather broad, truncated tubular veil; eyes on the outer side rather above the base; proboscis short, very large and thick, retracted to the edge of the veil, leaving the two rounded pale processes of its apex exposed, forming with the veil a rostrum-like projection, very unlike the elongate, slender, cylindrical retracted proboscis of *Murex, Purpura,* &c.; lingual membrane narrow, elongate; teeth in seven series, $3 \cdot 1 \cdot 3$, close together, rather crowded, the central rather narrow, with a central prominent denticle, having a smaller one on each side of the base; the lateral teeth subulate, curved.

SCUTIBRANCHIATA RHIPIDOGLOSSA.

Fam. TURBINIDÆ.

IMPERATOR, n. s.? Panama.

Eye-pedicel thick; tentacles elongate, slender, frontal lappets truncated, broad at the base, about $\frac{1}{3}$ the width of the forehead; foot folded longitudinally behind and transversely in front; lateral fringe of the right side most distinct; muzzle produced, annulated; lingual membrane elongate, rather narrow, linear, dark brown; central teeth $5 \cdot 1 \cdot 5$, the middle one broad, the side ones narrower, square, all with a recurved tip; the lateral teeth numerous, hairlike, the inner one wider.

CALLOPOMA SAXOSUM. Panama.

Foot folded across in the middle; back with a hoodlike process covering the front part of the operculum, and depositing the external callosity of it; eyes on short thick pedicels; tentacles linear, at the upper edge of the eye-pedicel; frontal lappet truncated, narrow at the base, at the inner side of the base of the tentacles; lateral fringe on each side, with three beards on the middle of the edge; lingual membrane broad, elongate; central series $5 \cdot 1 \cdot 5$; the central broad, with a recurved tip, the lateral one more narrow, equal; the lateral teeth numerous, hairlike.

Fam. TROCHIDÆ.

TEGULA PELLIS SERPENTIS. Panama.

Operculum horny, thin, orbicular, of many narrow, gradually enlarging whorls; foot folded together longitudinally when contracted; eyes on thin elongated pedicels; tentacles linear, sheathed at the base by the inner part of the base of the eye-pedicels; frontal lappet none; lateral fringe of left side distinct, with three beards just beneath it; lingual membrane elongate, broad; teeth in ten longitudinal series, in arched cross rows, elongate, with a rounded apex; lateral teeth linear, crowded, arched at the end.

Order Pleurobranchiata.

Fam. Aplysiadæ.

Aplysia depilans ? Genoa.

The small, polished, subglobular spiral (sinistral ?) nucleus or apex of the older shell is, with the subapical part of the shell, covered with a membranaceous reflection of the inner lip over its surface, which is only slightly adherent to the surface of the shell and nucleus, and easily removed from it, but which gradually become thicker; the top of the shell appears to be absorbed, or more or less obliterated in the older specimens.

According to Mr. Woodward, Mr. Hancock has observed in the adult specimen two or three shells one within the other, like the *Loligines* or *Sea slaves*.

Fam. Tylodinadæ.

Tylodina punctulata=*T. Rafinesquii*, Philippi.

Lingual membrane very broad, brown; teeth small, uniform, very numerous, in very numerous longitudinal lines, forming straight continued uniform lines across the membrane, with an indistinct central line; the tentacles subulate, slit on the outer side; the lips are produced and acute on each side, and twisted, leaving a slight cavity on the outer side of the tip; the mantle is thin, free all round the edge and slightly thickened just within the margin, rather thicker and more free over the front of the back; the gill is single on the hinder part of the right side just under the mantle, attached the whole of its length on the inner side by a central ridge to the side of the body; the outer side is furnished with a rather thick, rather zigzag central vessel, giving out pinnated vascular branches, nearly alternating with each other on each side of the great vessel; the foot is larger than the mantle and shell, expanded, rounded behind, truncated in front and slightly emarginate in the centre under the mouth; the sexual aperture not visible in the specimen in spirits. Shell conic, patelloid, thin, slightly pearly within, with a thin, hard, horny periostraca, which is produced beyond the edge of the shell, and radiately coloured, in the dry state brittle, hard, and contracted; the apex (of the shell) subcentral, with a rather produced polished top, nucleus subglobose, with a slightly convex spire of one and a half or two rapidly enlarging subconvolute whorls; aperture ovate, rather irregular, slightly dilated on the right side; cavity simple; muscular scar subannular, with an angular inflection rather behind the middle of the right side, the form of the scar is variable, sometimes square, broad all round; in the larger more developed specimens the scar is rather horse-shoe shaped, being rather dilated at the front part of each side, and the front portion over the back of the head is narrow, linear, and transverse.

The genus was first established by Rafinesque in 1814; Blainville, who only knew it from Rafinesque's imperfect descriptions, referred it to the *Patelloida*, but Menke, Philippi and Cantraine properly considered it allied to *Pleurobranchus*, and especially *Umbrella*, and very

lately Dr. Lovén stated that it was allied to *Turbonella* (Index Moll. Scand. 19). The examination of the teeth shows it to belong to the typical *Pleurobranchiata*, and the form and position of the gill its affinity with the genera *Pleurobranchus* and *Umbrella*; indeed it chiefly differs from the former genus in having an external conic patelloid shell, and from the latter in the head being produced and the mouth not sunken in a deep anterior pit.

In the British Museum there are two species of this genus.

1. *T. punctulata*, Rafin., *T. Rafinesquii*, Philippi, *T. citrina*, Joannis, Guérin, Mag. Zool. i. t. 36.

Shell thin, whitish; periostraca hard, opake, with dark brown rays. Mediterranean.

2. *T. atlantica* = *Umbrella Mediterranea*? MacAndrew, Ann. Nat. Hist.

Shell solid, bright yellow; periostraca — ? N. Atlantic, Madeira.

Fam. Umbrelladæ.

Umbrella mediterranea.

The nucleus of this genus is very like that of *Tylodina*, subglobose, polished, sinistral, of one and a half or almost two subcylindrical, rapidly enlarging whorls; the adult shell is irregular in the outline and rather expanded on the hinder part of the right side, over the gills; the muscular scar is annular, continued, and of nearly uniform breadth, but slightly interrupted in various parts. The chief difference between the shell of *Tylodina* and *Umbrella* is, that the shell of the former is more elevated, very thin, covered with a hard, rather paleaceous periostraca, and the muscular scar is furnished with an angular inflation on the hinder parts of the right side; a sinistral nucleus is found on several others; shells as the genera of *Pyramidellidæ*.

Fam. Proserpinidæ.

Proserpina.

Respiratory cavity open; mantle free from the back of the neck, with a double edge, the outer one rather reflexed; foot moderate, truncated in front, acute, and keeled above behind; muzzle short, truncated, annulated, with a triangular inferior mouth; tentacles 2, lateral, far apart, tapering and acute; eyes moderate, sessile, at the outer side of the base of the tentacles; the front part of the back of the foot concave, surrounded by a continuation of the mantle, forming a fleshy submarginal fringe, which is fuller (when contracted in spirits), crumpled and folded on itself on the left side. Operculum none.

4. Descriptions of Thirty-four New Species of Bivalve Mollusca (Leda, Nucula, and Pythina) from the Cumingian Collection. By Arthur Adams, F.L.S. etc.

B. M. 1. Pythina arcuata, A. Adams.

P. testa transversa, elongata, inæquilaterali, triangulari, latere antico breviore, subtruncato, ad umbonibus angulato, postico longiore, rotundato; margine ventrali arcuato, in medio sinuato, irregulariter hiante; alba concentrice striata, epidermide fusca radiatim striata induta.

Hab. Isle of Zebu, adhering to *Lingula anatina* at the upper edge, sandy mud, 3 fathoms. Mus. Cuming.

This is an arcuated triangular species with the anterior side of the valves angulated, and the surface covered with a fuscous epidermis striated towards the ventral margin.

B. M. 2. Pythina Cumingii, A. Adams.

P. testa tenui, elongato-transversa, subtrigonali, æquilaterali, umbonibus acutis medianis, epidermide tenui virido-fusca induta, concentrice striata, radiatim sulcata, sulcis ad marginem ventralem distinctioribus, umbonibus lævigatis, corrosulis, margine ventrali in medio sinuato, intus inciso-crenulato.

Hab. Gindulman, Isle of Bohol, sandy mud, 8 fathoms; Himmamailan, Isle of Negros, sandy mud, 3 fathoms. Mus. Cuming.

This is the largest species of *Pythina* yet known, the transverse diameter being about one inch. The shell is thin, nearly smooth, and covered with a brownish-green epidermis, and with the surface near the beak eroded.

3. Pythina paula, A. Adams.

P. testa parva, transverso-elongata, trigonali, æquilaterali, ad umbones subangulata, latere postico angustiore, antico rotundato; concentrice striata, albida, epidermide tenui fulvicante induta; margine ventrali sinuato, in medio excavato.

Hab. Raimes Island, Torres Straits (*Capt. Ince*). Mus. Cuming.

This is a small whitish species angulated near the beak and covered with a thin, pale yellowish epidermis.

B. M. 4. Pythina peculiaris, A. Adams.

P. testa parva, transverso-elongata, æquilaterali, triangulari, flexuosa, alba, concentrice striata, umbonibus minutis, medianis acutis, latere postico plica angulata obliqua instructo, margine ventrali medio valde sinuato.

Hab. Ceylon (*E. L. Layard, Esq.*). Mus. Cuming.

This species is of a very remarkable form, being slightly twisted laterally, and so deeply sinuated in the ventral margin as to appear bent on itself.

B. M. 5. Pythina triangularis, A. Adams.

P. testa parva, æquilaterali, trigonali, alba, in medio linea impressa

divisa, concentrice striata; umbonibus perparvis medianis; margine ventrali hiante, rectiusculo, medio subsinuato.

Hab. Bay of Manilla, sandy mud, 5 fathoms. Mus. Cuming.

This is a small white triangular shell with an impressed line in the centre of the valves, and with the ventral margin gaping and nearly rectilinear, although it is slightly notched in the middle.

B. M.

6. Leda electa, A. Adams.

L. testa elongato-transversa, compressa, vix æquilaterali, lactea, solidiuscula, utrinque hiante; latere antico acuminato, rotundato, postico attenuato, rostrato, oblique subtruncato; concentrice tenuissime plicato-lirata; plicis postice evanidis, distantioribus, margine ventrali arcuato.

Hab. Santos, Brazil (*Capt. Martin*). Mus. Cuming.

This is a very beautiful milk-white *Leda*, partaking, in many particulars, of the character of *F. crenifera* and *L. costellata*, Sowerby.

7. Leda siliqua, Reeve.

L. testa ventricosa, solidiuscula, subæquilaterali, epidermide nitida fusca induta, concentrice tenuissime sulcata; umbonibus prominentibus, latere antico rotundato, postico subrostrato, oblique truncato; area postica angulata, et carina obtusa ab umbonibus ad marginem ventralem extendente.

Hab. Arctic Seas (*Sir E. Belcher*). Mus. Cuming.

This is a fine pod-like Arctic species, covered with a dark fuscous epidermis, with the hinder side angulated and obliquely truncate, and with an obtuse ridge extending from the beaks to the ventral margin.

8. Leda concinna, A. Adams.

L. testa tenuiuscula, compressa, lateribus hiante, pallide fusca, concentrice lirata, liris angustis, regularibus, subdistantibus; latere antico breviore ac rotundo, postico longiore ac rostrato; rostro producto, tenui, subrecurvato, truncato; area lanceolata, angusta, carina crenata utriusque instructa.

Hab. New Zealand. Mus. Cuming.

A rather thin compressed species slightly gaping at both ends, of a light brown colour, concentrically lirate, and with a slender beak truncate at the end.

9. Leda inornata, A. Adams.

L. testa transversa, triangulari, ovata, gibbosula, fusca; umbonibus albidis, erosis; concentrice valide sulcata, latere antico breviore et rotundato, postico acuminato, subrostrato; area lanceolata, lata ad lateribus angulata, margine ventrali regulariter arcuato.

Hab. New Guinea. Mus. Cuming.

This species is founded on a small, rather gibbose shell, covered with a fuscous epidermis, from New Guinea, coarsely sulcate and slightly beaked posteriorly.

10. Leda fastidiosa, A. Adams.

L. testa transversim ovata sordido albido-fusca concentrice lirata fusca, nitida, concentrice tenuiter et regulariter sulcata; latere antico subproducto ac rotundato, postico angulato ac rostrato, rostro acuminato, margine ventrali postice subsinuoso et in medio subproducto.

Hab. New Zealand. Mus. Cuming.

A shining, pale fuscous, ventricose species, very gibbose in the middle, and beautifully grooved transversely; the beak slender, pointed and recurved.

11. Leda bellula, A. Adams.

L. testa transversim ovata, sordide albido-fusca, concentrice lirata, liris elevatiusculis subdistantibus, umbonibus prominentibus; latere antico rotundato, postico rostrato; rostro acuto, attenuato, recurvo; area lanceolata, valde impressa, liris confertis marginata.

Hab. Australia (*Mr. Strange*). Mus. Cuming.

This is a dull dirty white or light brown shell, concentrically lirate, and with a somewhat curved and pointed rostrum; the lanceolate area is deeply impressed, and has a prominent ridge on each side.

12. Leda inconspicua, A. Adams.

L. testa transversim ovata, ventricosula, nitida, fusca, concentrice subtilissime sulcata; latere antico breviore et rotundato, postico longiore, subacuminato ac oblique subtruncato; area lanceolata, obscura, nymphis prominentibus, margine ventrali regulariter arcuato.

Hab. Australia. Mus. Cuming.

A shining light-brown species, rather ventricose concentrically, very finely sulcate, with the posterior side produced attenuated, and with the end obliquely truncate.

13. Leda lugubris, A. Adams.

L. testa solida, subgibbosa, triangulari-ovata, nigro-fusca; latere antico declivo, lunula lanceolato-cordata, impressa; latere postico acuminato ac breviter rostrato; area lanceolata, lata, lævi; concentrice lirata, liris validis distantibus postice flexuosis; margine ventrali simplici.

Hab. ——? Mus. Cuming.

A dark, fuscous, solid shell, having very much the aspect of a *Crassatella*, with a broad impressed lunule and strong flexuous plicæ.

14. Leda lepida, A. Adams.

L. testa transversim ovata, ventricosa, nitida, pallide fulva, concentrice tenuiter sulcata; latere antico breviore et rotundato,

postico longiore, superne subangulato, inferne oblique rotundato; area lanceolata, utrinque carinata.

Hab. Philippines. Mus. Cuming.

This is a shining, pale fulvous, finely sulcate species, with the hinder side rather acutely angulated above and obliquely rounded below, and with the lanceolate area ridged on each side.

15. Leda decora, A. Adams.

L. testa transverso-oblonga, crassa, solida, utrinque subhiante, sordide alba, conferte et valde concentrice sulcata; latere antico rotundato, postico rostrato; rostro recurvato et oblique subtruncato; area lanceolata, depressa, carina valida crenata utriusque instructa.

Hab. West Indies. Mus. Cuming.

A transversely elongate species, with a strong crenate keel on each side of the lozenge, and somewhat resembling in appearance the *L. crenifera* of Sowerby.

16. Leda fulgida, A. Adams.

L. testa transversim ovata, lævi, pallide fusca, micante, perventricosa; antice breviore et rotundata, postice acuminata et rostrata; rostro subrecurvo, margine ventrali regulariter arcuato.

Hab. Port Essington. Mus. Cuming.

This is a smooth, shining, pale-brown shell, very ventricose, rounded and short anteriorly and rostrate posteriorly, and with the rostrum rather recurved.

17. Leda semisulcata, A. Adams.

L. testa transversim oblonga, compressiuscula, lactea, nitida, concentrice sulcata, sulcis ad partem posticam obsoletis; umbonibus acutis, subcentralibus; latere antico breviore, rotundato, postico acuminato, non producto; nymphis prominentibus, oblique sulcatis; margine ventrali regulariter arcuato.

Hab. Borneo. Mus. Cuming.

A shining, rather compressed, milk-white shell, with the sulci obsolete on the posterior half, and with the hind side acuminate but not produced.

18. Leda plicifera, A. Adams.

L. testa transverso-oblonga, alba, nitida, subventricosa, oblique sulcata; latere antico rotundato, plicis 3–4 validis radiantibus instructo, latere postico carina obliqua ab umbonibus ad marginem ventralem extendente; area lanceolata, carina crenata duplici utrinque instructa; margine postico truncato et valde emarginato, margine valvarum simplici.

Hab. China Seas. Mus. Cuming.

Strongly notched at the hind margin, and with three or four plicæ at the anterior part, and with a double crenate keel on each side of the lunule.

19. Yoldia lepidula, A. Adams.

Y. testa transversa, oblonga, utrinque hiante, tenui, inæquilaterali;

latere antico breviore rotundato, postico longiore, subangulato; pallide fusca, nitida, tenuiter concentrice sulcata, margine ventrali regulariter arcuato.

Hab. Coast of Borneo. Mus. Cuming.

A thin pale-brown species, with the hind side rather angulated, but not distinctly rostrate.

20. Nucula Bellotii, A. Adams.

N. testa oblique ovata, ventricosa, valde inæquilaterali; latere antico breviore; lunula cordata, conspicua; umbonibus erosis; epidermide crassa, nitida, olivacea induta, concentrice plicata, plicis validioribus ad marginem ventralem; area postica et antica pallidis.

Hab. Arctic Seas (*Sir E. Belcher*). Mus. Cuming.

The beaks are much eroded, and the valves are strongly plicate towards the ventral margin. I have dedicated this fine Arctic species to the memory of the gallant Bellot, who unfortunately lost his life in the search after Sir John Franklin and his brave companions.

B.M 21. Nucula nitidula, A. Adams.

N. testa perobliqua, gibbosa; latere antico oblique subtruncato, postico rotundato, producto; nitida, obscure sulcata, sub lente radiatim striata; umbonibus subacutis; pallide fusca, margine valvarum tenuiter crenulata.

Hab. New Zealand.

A very oblique gibbose species, radiately striated under the lens, and produced and rounded posteriorly; it is obscurely concentrically sulcate.

22. Nucula Layardii, A. Adams.

N. testa transversim ovata, compressiuscula, nitida vix lævi, obsolete concentrice sulcata; umbonibus margaritaceis; latere antico breviore excavato, ad partem ventralem subproducto; pallide viridi-fusca, margine valvarum simplici.

Hab. Ceylon (*E. L. Layard, Esq.*). Mus. Cuming.

A pale greenish-brown *Nucula*, with the anterior side short and excavated, and the surface obscurely sulcate.

23. Nucula margaritacea, A. Adams.

N. testa transversim ovata, sublævi, nacrea splendida tenuiter concentrice obsoletim striata; lunula et area lanceolata in medio prominentibus; latere antico subangulato et producto, margine valvarum simplici.

Hab. Malacca (*Dr. Traill*). Mus. Cuming.

This is a rather smooth ovate species, glistening with a nacreous lustre, especially towards the beaks.

24. Nucula Paytensis, A. Adams.

N. testa perobliqua, transversim ovata, gibbosa; latere antico brevissimo; epidermide fusca induta; lunula et area lanceolata,

valde transversim sulcatis, concentrice sulcata, decussatim striata, umbonibus erosiusculis, margine ventrali tenuiter crenulata.

Hab. Payta, Peru. Mus. Cuming.

A very oblique, ovate, gibbose species, concentrically grooved and decussately striated.

25. NUCULA GIBBA, A. Adams.

N. testa perobliqua, solida, gibbosa, pallide fusca; latere antico abrupte truncato; lunula lata, cordata; area lanceolata, utrinque serie tuberculorum transversorum instructa; lævi, nitida, obsolete radiatim striata, margine valvarum valde crenulato.

Hab. Australia (*Mr. Strange*). Mus. Cuming.

This is a very oblique, solid, gibbose species, with a wide cordate lunule, and with a row of transverse tubercles on each side of the lanceolate area.

26. NUCULA CRENULATA, A. Adams.

N. testa perobliqua, transversim ovata, fusca; latere postico producto, rotundato; area lanceolata, transversim valde sulcata; concentrice valde sulcata, interstitiis striis radiantibus crenulatis, pallide fusca; margine crenulato.

Hab. Guadaloupe. Mus. Cuming.

27. NUCULA SIMPLEX, A. Adams.

N. testa oblique ovata, tenui, compressa, pallide olivacea, vix lævi, concentrice obsolete striata; lunula lanceolata; nymphis prominulis; latere postico producto, rotundato, margine valvarum simplici.

Hab. Sydney (*Mr. Strange*). Mus. Cuming,

Like *N. Strangei*, but with the anterior side shorter and more truncate.

28. NUCULA STRANGEI, A. Adams.

N. testa oblique ovata, inæquilaterali, subcompressa; epidermide nitida, aureo-viridi induta; latere antico breviore, ad lunulam excavato, postico longiore rotundato; area lanceolata, elevata, superficie obscure concentrice sulcata.

Hab. New Zealand (*Mr. Strange*). Mus. Cuming.

29. NUCULA PAULULA, A. Adams.

N. testa perobliqua, gibbosula, latere antico declivi, umbonibus erosulis; fusca, concentrice irregulariter sulcata; latere postico rotundo et producto, margine ventrali crenulato.

Hab. Japan. Mus. Cuming.

A small brown, very inequivalve, solid, gibbose species.

30. NUCULA STRIOLATA, A. Adams.

N. testa compressiuscula, oblique ovata, umbonibus subacutis, pallide olivacea, obsolete concentrice sulcata, valde radiatim striata; margine ventrali crenulato.

Hab. China Seas. Mus. Cuming.

31. Nucula sulcata, A. Adams.

N. testa valde convexa, oblique ovata, umbonibus prominulis, latere antico breviore rotundato; pallide olivacea, concentrice valde sulcata, radiatim striata, striis ad marginem valvarum validioribus; margine valvarum crenulato.

Hab. New Zealand. Mus. Cuming.

B.M. 32. Nucula castanea, A. Adams.

N. testa ovali, perobliqua, subcompressa, castanea, latere antico breviore truncato, lunula in medio prominenti, latere postico declivi, rotundo; vix lævi, obsolete concentrice sulcata, obscure radiatim striata; margine valvarum creberrime crenulato.

Hab. New Zealand. Mus. Cuming.

An oval, very oblique, rather compressed *Nucula*, with the anterior side truncate and the lunule prominent in the middle, nearly smooth, but obsoletely striated, and with the margin very finely crenulated.

33. Mactra Mariæ, A. Adams.

M. testa ovato-transversa, compressiuscula, solida, inæquilaterali, latere antico paulo breviore, epidermide olivaceo-fulvicante induta, maculis rotundatis conglomeratis et distinctis rufo-fuscis irregulariter picta, umbonibus albidis, transversim sulcata, sulcis postice corrugato-plicatis; lunula areaque sulcatis; intus alba; pallii impressione margine inferiore remoto, sinu profundo, oblique triangulari.

Hab. ——? Mus. Cuming.

This is a large and handsome species of *Mactra*, ornamented with rounded, distinct, and oblong conglomerate spots, which are most numerous towards the beaks.

34. Scrobicularia Seychellarum, A. Adams.

S. testa transversim ovata, inæquilaterali, latere antico breviore rotundato, postico longiore declivi, subattenuato et rostrato, utrinque vix flexuoso, lactea, nitida, sulcis concentricis posticis et obliquis anticis divaricatim sculpta; cardine ligamento externo, cartilagine interno in fossa obliqua prominenti posito; sinu pallii impressionis valido et profundo.

Hab. Seychelles (— *Ricketts, Esq.*). Mus. Cuming.

This is a very peculiar shell, with the generic characters of *Scrobicularia*, or rather those of the subgenus forming the *Capsa* of Bosc, or *Scrobicularia b.* of Schumacher, and which are usually regarded as Tellinas.

5. Observations on Strongylus filaria and Botaurus stellaris. By Edwards Crisp, M.D.

Dr. Crisp exhibited specimens and drawings of *Strongylus filaria*, which he discovered had lately proved so destructive to lambs in

many parts of England. In several lambs examined by Dr. Crisp millions of these entozoa and their ova were found in the bronchial tubes and in the intestinal canal, and he believed that many of the ova of these worms had been mistaken for *Cysticerci*; but the various stages of development could be readily traced under the microscope. Dr. Crisp had tried many experiments on the living worms as to the effect of poisons and other agents, and he believed that salt or sulphur given with the food, and the inhalation of sulphurous gas, under proper superintendence, would be the most likely means of destroying these parasites.

Dr. Crisp also placed on the table some parts of the anatomy of the Common Bittern (*Botaurus stellaris*), two of which birds (now comparatively rare) had recently been shot on the eastern coast of Suffolk. The bird from which the specimens were taken was a fine male, measuring from the tip of each wing 4 feet 1 inch, and from the point of the beak (when extended) to the lower part of the tarsus 3 feet. Among the peculiarities alluded to, was the smallness of the sternum, which measured only 3 inches longitudinally; the depth of keel only $\frac{3}{4}$ of an inch, and the lateral margins the same. The trachea measured twelve inches in length, and consisted of 198 imperfect rings; the bronchi of 20 semicircular elastic cartilages, readily approximated, and hence the production of the peculiar sound from which the bird takes its name. The stomach which was exhibited was large, and contained near its cardiac orifice a circle of gastric glands. A roach, weighing about four ounces, was digested at this part, but the tail, which was in the œsophagus, was intact. To show the voracity and capacity of swallow of this bird, Dr. Crisp said, that Sir W. Jardine and Mr. Yarrell had both taken a Water Rail from the stomach and œsophagus, and in Mr. Yarrell's specimen there were six small fish in addition. The pectinated claw was also exhibited, Dr. Crisp believing that it served for the purpose of cleaning the beak and mouth of the bird.

April 8, 1856.

Dr. Gray, F.R.S., in the Chair.

The following papers were read:—

1. On Dinornis (Part VII.): containing a Description of the Bones of the Leg and Foot of the Dinornis elephantopus, *Owen*. By Prof. Owen, F.R.S., V.P.Z.S., &c.

Mr. Walter Mantell having, on his recent return from New Zealand, provisionally deposited his very extensive collection of remains of Dinornithic and other birds in the British Museum, I have gladly

acceded to the wishes of that successful and enterprising collector, and of my friend the able Keeper of the Mineralogical Department of the Museum, to devote the leisure at my command to the examination of this interesting and valuable collection.

I had advanced as far as the determination of the bones of the leg, and their classification according to their species, when the distinctive characters of one series of these bones irresistibly brought a conviction that they belonged to a species of *Dinornis* that had not previously come under my notice, and a species also which, for the massive strength of the limbs and the general proportions of breadth or bulk to height of body, must have been the most extraordinary of all the previously restored wingless birds of New Zealand, and unmatched, probably, by any known recent or extinct species of this class of birds.

I was so much struck by the form and proportions of the metatarsal bone described in the memoir read to the Zoological Society, June 23, 1846, and figured in pl. 48, figs. 4 and 5, vol. iii. of the 'Zoological Transactions,' that I alluded to it as "representing the pachydermal type and proportions in the feathered class*," and the bone unquestionably indicated at that period "the strongest and most robust of birds." By the side of the metatarsus of the species which I have now to describe, and for which I propose the name of *elephantopus*, that of the *Dinornis crassus*, however, shrinks to moderate, if not slender dimensions. But the peculiarities of the elephant-footed *Dinornis* stand out still more conspicuously when the bones of its lower limbs are contrasted with those of the *Dinornis giganteus*.

I propose, in the present memoir, to combine with the account of the leg- and foot-bones of the *Dinornis elephantopus*, that of the bones of the lower limb of the *Dinornis crassus*, which had not previously been described, and to bring out their characteristics by comparison with the bones of other species, especially those of the *Dinornis robustus*.

Commencing with the femur, I shall premise the following table of admeasurements of that bone in *Dinornis*:—

Dimensions of the femur in	*D. robustus.*		*D. elephantopus.*		*D. crassus.*	
	In.	Lines.	In.	Lines.	In.	Lines.
Length	14	2	13	0	11	10
Transverse breadth of proximal end	6	0	5	10	4	5
Fore-and-aft breadth of do.....	5	0	4	5	3	9
Transverse breadth of distal end ...	6	0	5	11	4	7
Fore-and-aft breadth of do.....	4	3	3	9	3	5
Circumference, least, of shaft	7	10	7	9	6	0

The above comparative dimensions bring out the characteristic proportions of the femur of the *Dinornis elephantopus*, as shown by its greater thickness and strength. As compared with the femur of the *Dinornis robustus*, this character is remarkably exemplified on a comparison of their articular extremities. Had these parts alone of the *Dinornis elephantopus* been preserved and submitted to me, I

* *Ib.* p. 325.

should have scarcely ventured upon a conclusion as to their specific distinction from the *Dinornis giganteus* or *Dinornis robustus*, the correspondence of configuration being so close, and the difference of size so slight.

The articular surface is continued from the head upon the upper part of the neck, expanding as it approaches the great trochanter, along the summit of which it is terminated by a ridge. In both species the surface for attachment of the ligamentum teres is formed, as it were, by a portion of the inner and back part of the hemisphere having been cut off obliquely with a slight excavation. The corresponding ligamentous surface in the head of the femur of the *Dinornis crassus* is relatively smaller, less depressed and less defined. The upper and fore part of the trochanter is less produced relatively to the breadth of the supra-trochanterian articular surface in the *Dinornis elephantopus*. In this species the sub-circular rough surface for the attachment of the *iliacus internus* muscle is relatively nearer to the head of the bone than in the *Dinornis robustus*; the rugged and thick fore part of the great trochanter descends lower upon the shaft; indeed, the shortness of the entire bone seems to depend chiefly on the shaft being relatively shorter in the *Dinornis elephantopus*. The intermuscular ridge continued from the trochanterian one seems to bifurcate sooner in the *Dinornis elephantopus*. The depression behind the trochanterian ridge is less deep in the *Dinornis elephantopus*. The oblique rotular channel is relatively as wide and deep as in the *Dinornis robustus*, but the inner boundary formed by the fore part of the inner condyle is shorter.

At the back part of the shaft the medullo-arterial foramen is relatively nearer the proximal end of the bone; the two tuberosities below this are closer together. The two sides of the fibular groove are at a more open angle, and the groove is less deep in the *Dinornis elephantopus*, the outer side being less produced.

The antero-posterior breadth of the outer and inner condyles is equal in the *Dinornis elephantopus* as in the *Dinornis robustus*; but in the *Dinornis crassus* that dimension of the outer condyle exceeds the same dimension in the inner one, and the fibular groove is more open or shallow than in the *Dinornis elephantopus*.

The generic modifications of the femur are, however, very closely preserved in each species, being strictly of the type ascribed to the genus *Dinornis* in my original memoir, Zool. Trans. vol. iii. p. 247.

Dimensions of the tibia in	*D. robustus.*			*D. elephantopus.*			*D. crassus.*		
	Ft.	In.	Lines.	Ft.	In.	Lines.	Ft.	In.	Lines.
Length	2	8	3	2	0	0	1	7	6*
				1	9	6*	1	6	6
Transverse breadth of proximal end		7	6		7	5*		6	2
					7				
Fore-and-aft breadth of do.....		4	9		4	6*		3	6
					4	3			
Least circumference of shaft.....		6	9		6	5		4	10
Transverse breadth of distal end...		4	4		4	2*		3	3
					4				

* The extremes of size in a series of several bones are here given.

The characters of the upper end of the tibia of the *Dinornis elephantopus* closely accord with those of the *Dinornis robustus*, and the difference of size, as exemplified in the foregoing table, is so slight, that had this extremity only of the bone reached me, I should most probably have referred it to the *Dinornis robustus*. The almost flat articular surface for the inner condyle of the femur is somewhat less in its shorter diameter; the epicnemial ridge is less extended transversely; the ectocnemial ridge curves more strongly outwards; but there are individual varieties in all these characters in the tibiæ before me. All the tibiæ, however, differ in the earlier subsidence of the ridge continued downwards from the procnemial plate, which ridge is continued in *Dinornis robustus* uninterrupted by that above the inner division of the distal trochlea. The space between the ecto- and pro-cnemial plates in the *Dinornis crassus* is relatively greater than in either of the above larger species; the ridge continued from the procnemial plate is interrupted as in the *Dinornis elephantopus*. The fore part of the tibia internal to the procnemial ridge is impressed by irregular vascular grooves. The fibular ridge is interrupted by a smooth tract, in or near which is the orifice of the canal for the obliquely descending medullary artery in all the species of *Dinornis*. The upper division of the ridge is shorter in the *Dinornis elephantopus* than in the *Dinornis robustus*, and relatively shorter than in the *Dinornis crassus*. The surface between the fibular ridge and the inner border of the shaft at the back part is concave transversely in *Dinornis elephantopus*, not merely flat as in *Dinornis robustus* and *Dinornis crassus*, and, as it descends, it continues longer a flat surface before it changes gradually to a convex one. The oblong rough insertional surface above the inner condyle is relatively shorter and better defined in the *Dinornis elephantopus* than in the *Dinornis robustus*. On the characteristic fore part of the lower end of the tibia, that bone in the *Dinornis elephantopus* repeats all the modifications ascribed to the *Dinornis* in my memoir on the *Gastornis*, or large fossil bird from the Paris eocene*.

The tendinal canal inclines obliquely inwards parallel with the inner border of the expanding end, near which it is placed; the bony bridge spans across it from a flattened tubercle developed from the lower part of the outer pier. The outlet of the canal is as wide as in the *Dinornis robustus*; its aspect is obliquely forwards and downwards. External to the tubercle is an oblique rough depression, relatively narrower and better defined than in the *Dinornis robustus*. The inner condyle is relatively narrower and more produced forwards than in the *Dinornis robustus*, resembling more the proportions of that part in the *Dinornis crassus*. The general form and oblique direction of the wide distal trochlear articulation are closely repeated in all the species, the canal being rather more sharply defined behind in the *Dinornis elephantopus* than in the *Dinornis robustus*. The depression on the entocondyloid surface is less deep in the *Dinornis elephantopus* than in the *Dinornis robustus*.

The above-specified differences, as well as all that I have noticed in

* 'Proceedings of the Geological Society.'

the tibiæ of other species of *Dinornis*, are so inferior in degree to those which I have found in closely allied genera, and even in different species of the same genus, of other large land- and wading-birds, as *e. g.* in species of *Ciconia*, and in the existing Struthious genera, as to leave a strong impression on my mind of the generic affinity of the species which I have referred to *Dinornis* and *Palapteryx*, and which species have been divided, with a more liberal imposition of terms, by Dr. Reichenbach into the nominal genera *Anomalopteryx*, *Movia*, *Emeus*, *Syornis*, &c., no additional facts or characters being given by that nomenclator than are to be found in the pages or plates of my own memoirs.

The fibula of the *Dinornis elephantopus* remains, as in other *Dinornithes*, and as in the existing struthious genera, permanently distinct from the tibia; as a general rule in birds, it soon becomes anchylosed to that bone. In the species now defined it is a straight styliform bone, 14 inches 6 lines in length. The head is subcompressed and produced, as if slightly bent backwards; the upper articular surface is convex from before backwards, almost flat transversely. The head of the bone is flattened on the inner side, almost flat, but a little convex on the outer side. The fore-and-aft dimension is 2 inches 9 lines, the transverse diameter 1 inch 3 lines. Below the head the bone assumes a trihedral form, with the sides convex, gradually tapering, and blending into a shape elliptic in transverse section, and ending in a point about 9 inches above the ankle-joint. The outer surface of the shaft of the fibula is impressed by two oblong rough surfaces for the insertion of muscles, the upper one 2 inches 9 lines in length; the inner part, which is ridge-like, dividing the fore from the back surface of the bone, presents a rough surface with a median interruption, for the ligamentous attachment to the fibular ridge of the tibia.

Dimensions of the Metatarse of.....	*D. giganteus.*		*D. robustus.*		*D. elephantopus.*		*D. crassus.*	
	In.	Lines.	In.	Lines.	In.	Lines.	In.	Lines.
Length	18	6	15	9	9	3	8	8
Transverse breadth of proximal end ...	4	3	4	6	4	5	3	3
Transverse breadth of distal end.....	5	4	5	3	5	4	3	9
Least breadth of shaft.....	2	3	2	0	2	5	1	9
Fore-and-aft breadth of proximal end...	3	2	3	2	2	10	2	5
Circumference of ditto.....	12	0	12	9	12	0	9	3
Least circumference of shaft	6	3	5	3	6	6	4	6
Breadth of middle trochlea.....	1	10	2	3	2	2	1	8
Length of do. following the curve	5	9	5	4	5	3	4	0

I had hitherto regarded the metatarse of the *Dinornis crassus* (Zoological Transactions, vol. iii. pl. 48, figs. 4 and 5), as presenting the most extraordinary form and proportions of all the restored species of huge wingless birds of New Zealand; but it is strikingly surpassed in robustness and in great relative breadth and thickness by the same bone of the present species, which chiefly on that account I have proposed to name *elephantopus*. Only in the great Maccaws and Penguins do I know of a metatarse with similar proportions to that of this most robust-legged of birds. But the Parrot

tribe present those peculiar modifications of the distal trochleæ, with the strong articulation for the back toe, which relate to the scansorial modifications of the bird's foot; and the Penguins associate with their broad and short metatarse a characteristic retention of much of the primitive separation of the three constituent bones. In the *Dinornis elephantopus* these elements have become as completely coalesced as in any other species, and the general characters of both proximal and distal ends accord with those in previously described species. On a more special comparison of the metatarse of the *Dinornis elephantopus* with that of its nearest congener, the *Dinornis crassus*, the following differences present themselves:—The entocondyloid depression is deeper, its fore-and-aft diameter is greater, and its transverse diameter less, than in the ectocondyloid one; but the breadth of the entocondyloid depression is relatively greater, and its depth somewhat less in the *Dinornis elephantopus* than in the *Dinornis crassus*. The transverse convexity dividing the two condyloid depressions is relatively broader in the *Dinornis elephantopus*; and the rough surface external to the anterior intercondyloid prominence is more strongly marked. The two calcaneal ridges present an equal prominence in *Dinornis elephantopus*; the ectocalcaneal one is the more prominent in *Dinornis crassus*. The anterior surface of the metatarse differs chiefly in the proportions indicated in the table of admeasurements from that in the *Dinornis crassus*; like most of the metatarses of that species, one or more vascular foramina occur above the subcircular rough surface of insertion of the *flexor pedis*, which occupies the lower part of the shallow depression in the upper and fore part of the shaft. Along the lower half of the shaft, the median longitudinal, and progressively widening prominence, due to the middle of the coalesced metatarsal bones, is rather more marked than in *Dinornis crassus*. The inner side of the shaft is marked at its upper half by the oblique rough tract indicative of the insertion of the powerful aponeurosis of the gastrocnemii muscles. At the back surface the upper part of the middle metatarsal is relatively less prominent than in *Dinornis crassus*. The two vascular foramina occupy corresponding relative positions. All other notable differences are those of size and proportion.

From the metatarse of the *Dinornis robustus* that of the *Dinornis elephantopus* differs most strikingly in its proportions of length to breadth, being little more than half the length, but of nearly equal breadth; the distant trochleæ, however, being relatively less expanded than in the *Dinornis robustus*.

The anterior vascular perforation is less than in the *Dinornis robustus*; the insertional roughness for the *tibialis anticus* below the foramen is of equal size. The upper half of the fore part of the metatarse of the *Dinornis robustus* is longitudinally channeled in the *Dinornis robustus*, not in the *Dinornis elephantopus*. The corresponding part of the back part of the shaft is much more prominent in the *Dinornis robustus*. The characteristics of the metatarse of the *Dinornis elephantopus* are more strongly manifested in the comparison with that of the *Dinornis giganteus*, of which bone

it has only half the length, other dimensions being equal or even greater.

Of the depression, which is very faint, in the *Dinornis robustus* for the ligamentous attachment of the rudimental back toe there is no trace in the metatarse of the *D. elephantopus*.

The bones of the foot I shall compare with those of the *Dinornis robustus*,* to which they make the nearest approach in size. Equalling, or nearly equalling, the phalanges of that bird in breadth and thickness, they differ chiefly in shortness, but in a less degree than the metatarsi differ. These proportional characters of the species are best and easiest given in the plates. A few minor differences, however, may be noticed: the outer portion of the proximal end of the first phalanx of the inner toe is broader in proportion to its fore-and-aft diameter in *Dinornis elephantopus*. The inner portion of the proximal end of the first phalanx of the outer toe presents the like difference: the general form of that articular surface is less triangular and more oval in both the specified phalanges of the *Dinornis elephantopus*, one, the under side, being indented as usual in the proximal phalanges of the inner and outer toes.

The modifications in the other phalanges, besides those of size and proportion, are not greater or other than might be expected in different species of the same genus.

The first evidence of the *Dinornis crassus* reached me from a turbany deposit at Waikawaite, in the Middle Island; it formed part of the collection there made by Mr. Earl. I have never received any evidence of the species from the North Island.

In like manner the bones of the much larger bird, which I have called *Dinornis robustus*, and which I was formerly inclined to regard as a variety of the *Dinornis giganteus*, appear to be peculiar to the Middle Island; or at least have not hitherto been found in any locality of the North Island.

The richer series of illustrations of both the *Dinornis robustus* and *Dinornis crassus* in the collection of Mr. Walter Mantell are from localities in the Middle Island; and the abundant illustrations of the *Dinornis elephantopus* are exclusively from one locality in that island; they were obtained at Ruamoa, three miles south of Oamaru Point, or that called the 'Vast Rocky Head' in the new Admiralty map. This fact might give rise to the idea that the original range or locality of the *Dinornis elephantopus* had been a restricted one, unless, at the period when the species flourished, the geographical extent of the Middle Island was widely different from what it now is. Yet Mr. W. Mantell has obtained strong, if not unequivocal evidence, that the *Dinornis elephantopus* and *Dinornis crassus* existed contemporaneously with Maori natives. The bones described in the foregoing pages are in a recent and most perfect condition. They retain the usual proportion of animal matter and have undergone no mineral change.

From the sum of our present information respecting the localities of the several species of *Dinornithidæ*, we may infer that most, if not all,

* See Trans. Zool. Soc. vol. iv. pl. 1.

the species of the North Island were distinct from those of the South Island. To birds that could neither fly nor swim—at least swim well,—the channel called Cook's Straits would prove an effectual bar to any migration from one island to another. With each successive addition of materials for a complete history of this most remarkable family of birds, I feel, however, chiefly impressed with the conviction of how little comparatively we still know respecting them, and how much more is likely, through the enlightened co-operation of active, resolute, and accomplished explorers, like Mr. Walter Mantell, to be, hereafter, contributed towards a perfect history of the New Zealand wingless birds.

Of the very remarkable species of *Dinornis* based upon the powerfully developed limbs, the bones of which are described in the foregoing pages, Mr. Mantell's collection includes right and left femora, right and left tibiæ, right and left fibulæ, right and left metatarsi, and a considerable collection of toe-bones, from which, probably, other entire feet might be reconstructed, in addition to the one of the left foot now submitted to the Society. There are also the two femora and the two metatarsi of an immature bird, apparently, by their proportions, from one individual, to which may also belong the proximal end of a tibia, wanting the articular epiphysis. The femora, as in the other birds, retain the two articular ends, which are simply rougher than in the adult, having been covered by a thicker cartilage, but are not developed upon distinct osseous pieces, as in land mammals. The proximal epiphysis is wanting in both the immature metatarsi, exhibiting the separate expanded ends of the three constituent bones terminating in the three prominent trochleæ below. The length of the femur of this young bird is 11 inches, that of the metatarse $7\frac{1}{2}$ inches. They already present the characteristic robustness of the adult bird*.

2. On a new Turkey, Meleagris mexicana. By J. Gould, Esq., F.R.S., &c.

In the lapse of time the origin of several of the animals which man has subjected to his dominion, and which are of the greatest service to his necessities or his pleasures, has become involved in obscurity. As instances in point we may cite among quadrupeds the Camel, the Horse, the Dog, &c., and among birds the various *Gallinaceæ*, *Anatidæ* and *Columbidæ*, all of which were derived from Asia. The productions of the New World have not yielded such ready obedience to his sway, since no one of its quadrupeds has yet been domesticated, and only one of its birds—the Turkey; but a like fate, if I mistake not, has attended the origin of this solitary acquisition, which, although the bird has not been known to us more than 300 years, is equally wrapped in uncertainty.

* This paper will appear in the Transactions of the Society, illustrated with figures of the bones.

"So involved in obscurity," says Mr. Martin, "is the early history of the Turkey, and so ignorant do the writers of the sixteenth and seventeeth centuries appear to have been about it, that they have regarded it as a bird known to the ancients by the name of 'Meleagris,' namely, the Guinea-fowl or Pintado, a mistake which was not cleared up until the middle of the eighteenth century. The appellation of Turkey which the bird bears in our country, arose, according to Willoughby, from a supposition that it came originally from the country so called. Mexico was first discovered by Grijalva in 1518. Oviedo speaks of the Turkey as a kind of peacock abounding in New Spain, which had already, in 1526, been transported in a domestic state to the islands and the Spanish Main, where it was kept by the Christian colonists. It is reported to have been introduced into England in 1524, and is enumerated as among the dainties of the table in 1541. In 1573 it had become the customary Christmas fare of the farmer." Every author who has written on the subject since the days of Linnæus has considered it to be derived from the well-known wild Turkey of North America, but on account of the great differences which are met with among our domestic Turkeys, and the circumstance of the wild Turkeys recently imported from North America not readily associating or pairing with them, I have for some years past entertained a contrary opinion. This opinion may be met by some persons with the remark, that similar and even greater differences occur among our domestic poultry. True—but I believe that these differences are due to an admixture of two, three, or more species, and that in no case would the domestication of a single species produce characters so decided as those exhibited by the two birds now on the table.

In Canada and the United States the Turkey is partially migratory, visiting those countries during the summer, for the purpose of breeding, and although some writers state that it is a native of Mexico, I can hardly think it likely that it ranges very far south in the latter country, for, from the southern boundary of Canada to Mexico is nearly 2000 miles, and it is unlikely, I think, that a bird of the cold regions of Canada should also be indigenous to the hotter country of Mexico, whence, and not from North America, the Turkey was originally introduced into Europe by the Spaniards early in the sixteenth century.

Believing this bird to be distinct from the North American species, it becomes necessary that one of them should receive a new name, and a question then arises to which of the two should it be given. My opinion is, that it will be better to retain the term *Gallopavo* for the North American species, and to call the present one *Mexicana*, after the country of which it is a native. Linnæus' *Meleagris Gallopavo* is founded upon the *Gallopavo sylvestris* of Brisson's 'Ornithologie,' vol. i. p. 162, and upon Ray's New England Wild Turkey, both of which names appertain to the North American species; consequently the term *Mexicana* would be a fit appellation for the present bird. I may mention, that it is the only example of a Turkey I have ever seen from Mexico, and that it was brought to this country by the

late Mr. Floresi, a gentleman whose energy as a collector was only equalled by the honourable career of a moderately long life, during which he was connected with the Real del Monte Mines in Mexico. Mr. Floresi travelled himself, and kept collectors, who penetrated into the remotest parts of that country; and many were the fine species he by this means communicated to the world of science. I may mention the splendid *Picus imperialis*, *Calurus neoxenus*, and many Humming Birds, as some of the species which but for his researches would have been unknown to us.

In size this new Turkey exceeds that of the largest specimens of the North American species; but it has shorter legs, a considerably larger and more broadly expanded tail, conspicuously zoned with brown and black, and terminated with white; the tail coverts are very profusely developed, largely tipped with white, and bounded posteriorly with a narrow line of black, their basal portions being rich metallic bronze. The same arrangement of colouring also prevails on the feathers of the lower part of the flanks; and on the under tail coverts, where it is particularly fine; the centre of the back is black, with green, purplish and red reflexions; the back of the neck, upper part of the back, and shoulders, are in some lights bronzy, in others the colour of fire; the greater wing coverts are uniform bronzy brown, forming a conspicuous band across the wing; all the primaries are crossed by mottled bars of blackish brown and white, freckled with brown; all the under surface is fiery copper, intensely brilliant in certain lights, and becoming darker towards the flanks.

Total length 4 feet 4 inches; bill $2\frac{1}{2}$ inches, wing $21\frac{3}{4}$ inches, tail 16 inches, and when spread about 24 inches across; tarsi $6\frac{3}{4}$.

In the Report of an expedition down the Zuni and Colorado Rivers by Captain L. Sitgreaves, lately published in America, the following passage occurs at p. 94, in reference to Wild Turkeys:—

"They are also found in New Mexico, in the neighbourhood of the copper-mines. I am told by our officers that those found there are of enormous size. Mr. Leroux, our guide, informed me that the Turkeys of the Gila River were different from those found east of the Rio Grande, and that they have much white about them."

These are doubtless identical with the bird under consideration.

Since the above remarks were in type, I have been informed by J. H. Gurney, Esq., M.P., that he some years since received the skin of a Wild Turkey from the neighbourhood of the Real de Monte mines in Mexico, which he considers to be the same as the bird above described; this specimen is now in the Museum at Norwich.

3. Synopsis Avium Tanagrinarum. — A descriptive Catalogue of the known Species of Tanagers.

By Philip Lutley Sclater, M.A. F.Z.S., &c.

Part I. containing the genera *Pitylus*, *Orchesticus*, *Diucopis*, *Saltator*, *Psittospiza*, *Lamprospiza*, *Cissopis*, *Oreothraupis*, *Arremon*, *Phœnicophilus*, *Buarremon* and *Chlorospingus*.

Genus I. Pitylus.

Pitylus, Cuv. Regn. An. 1829, ii. p. 413.
Cissurus, Reich. Av. Syst. Nat. pl. 77.
Periporphyrus, Reich. l. c.
Caryothraustes, Reich. l. c.

Rostrum maximum, breve, altum, latum, quasi coccothraustinum; mandibulæ superioris marginibus fortiter sinuatis et mandibulam inferiorem tegentibus; culmine multum incurvo: alæ modicæ, remigibus tertia, quarta et quinta longissimis: cauda plus minusve elongata, plerumque rotundata: tarsi robusti.

The birds of this genus are the most finch-like of the Tanagers, and I have some doubts whether they are not as closely allied to *Guiraca*, *Hedymeles*, and other *Coccothraustine* forms, as to the present group. We want more information as to their habits and internal structure before this point can be satisfactorily settled.

a. *Pitylus*.

1. Pitylus grossus.

Coccothraustes americana cærulea, Briss. Orn. vi. App. p. 89.
Grosbec bleu d'Amérique, Buff. Pl. Enl. 154.
Loxia grossa, Linn. S. N. i. p. 307.
Pitylus grossus, Gray, Gen. p. 362; Schomb. Guian. iii. 677; Bp. Consp. p. 503; Cab. M. H. p. 143.
White-throated Grosbeak, Lath. G. H. v. 268.

Cano-cærulescenti-schistaceus; facie, gutturis lateribus et cervice antica nigris; gula media alba. ♀ *minus cærulescens et nigro colore carens.*

Long. tota 7·2, alæ 3·7, caudæ 3·3.

Hab. Cayenne; British Guiana (*Schomb.*); Bogota; Pebas, Upper Amazon (*Castelnau* et *Deville*).

Mus. Brit., Paris., Derbiano, &c.

2. Pitylus fuliginosus.

Loxia fuliginosa, Daud. Orn. ii. 372 (1801).
Coccothraustes cærulescens, Vieill. Nov. Dict. xiii. 546 (1817), et Enc. Meth. 1016.
Fringilla gnatho, Licht. Verz. d. Doubl. p. 22; Max. Beit. iii. 552.
Pitylus atrochalybeus, Jard. et Selb. Ill. Orn. i. pl. 3.
Tanagra psittacina, Spix, Av. Bras. ii. p. 44, pl. 57, fig. 2.
Pitylus erythrorhynchus, Sw. Class. ii. p. 282.
Pitylus gnatho, Gray's Gen. ii. p. 362; Bp. Consp. p. 503.

Saltator psittacinus, Bp. Consp. p. 490; Gray's Gen. ii. p. 363.
Pitylus cærulescens, Cab. M. H. p. 143.
Sooty Grosbeak, Lath. G. H. v. p. 269.

Cærulescenti-niger, gutture et pectore antico intensioribus, nigris: rostro rubro. ♀ *unicolor, magis fusca, neque cærulescens.*
Long. tota 9·0, alæ 4·1, caudæ 4·3.
Hab. South-east Brazil, Rio di Janeiro (*Spix*); Bahia (*Max.*).
Mus. Brit., Paris., Derbiano.

b. *Periporphyrus.*

3. Pitylus erythromelas.

Loxia erythromelas, Gm. S. N. ii. 859.
Coccothraustes erythromelas, Vieill. N. D. d'H. N. xiii. 547; Enc. Meth. 1017; Gal. des Ois. i. p. 70, pl. 59.
Pitylus erythromelas, Gray, Gen. p. 362.
Periporphyrus erythromelas, Bp. Consp. p. 503.
Black-headed Grosbeak, Lath. G. H. v. 237, pl. 88.

Ruber, capite toto cum gutture nigris: rostro plumbeo. ♀ *brunneo-flava capite (sicut maris) nigro.*
Long. tota 7·6, alæ 4·0, caudæ 3·8.
Hab. Cayenne; Para (*Wallace*).
Mus. Brit., Paris., &c.

4. Pitylus celæno.

Fringilla celæno, Licht. Preis-Verz. d. S. u. V. no. 72 (1831).
Pitylus atro-purpuratus, Lafr. R. Z. 1838, p. 224 (♂); Gray's Gen. p. 362.
Pitylus atro-olivaceus, Lafr. R. Z. 1838, p. 224 (♀); Gray's Gen. p. 362.

Pyranga mexicana, Less. R. Z. 1839, p. 41; Gray's Gen. p. 364; Bp. Consp. p. 241.
Caryothraustes atro-olivaceus, Bp. Consp. p. 503.
Periporphyrus atro-purpuratus, Bp. Consp. p. 503.

Niger: torque cervicali postica cum lateribus pectoris et ventre rubris: tectricibus subalaribus roseis: rostro plumbeo. ♀ *olivacea, subtus flavescentior; pileo toto et gutture nigris.*
Long. tota 8·4, alæ 4·0, caudæ 3·5.
Hab. South Mexico, Papantla (*Deppe*).
Mus. Paris., Lugdunensi, Berolin.

c. *Caryothraustes.*

5. Pitylus viridis.

Coccothraustes canadensis, Briss. Orn. iii. 229.
Grosbec de Cayenne, Buff. Pl. Enl. 152, fig. 2 (fig. pess.).
Loxia canadensis, Linn. S. N. i. 304; Gm. i. 856; Lath. Ind. Orn. i. 379; Daud. ii. 373; Shaw's Zool. ix. 269.
Pitylus canadensis, Gray, Gen. p. 362; Schomb. iii. 667.

Coccothraustes viridis, Vieill. Enc. Meth. p. 1017.
Caryothraustes viridis, Cab. Mus. Hein. p. 144; Sclater, Tan. Cat. Sp. p. 3.
Caryothraustes cayanensis, Bp. Consp. p. 514 (*partim*).
Pitylus personatus, Less. Rev. Zool. 1839, p. 42; Descr. d. Mamm. et Ois. p. 344.
Canada Grosbeak, Lath. G. H. v. p. 382.

Supra flavo-olivaceus, pileo flavescentiore; subtus flavus: loris et gula tota nigris.
Long. tota 5·9, alæ 3·5, cauda 2·5.
Hab. Cayenne (*Buff.*); British Guiana (*Schomb.*).
Mus. Brit., Paris., &c.

6. Pitylus brasiliensis.

Fringilla viridis, Max. Beit. iii. 555.
Fringilla cayanensis, Licht. Verz. p. 22 (excl. Syn.).
Caryothraustes brasiliensis, Cab. Mus. Hein. p. 144.

Similis Pitylo viridi, *sed major, rostro fortiore et nigredine gulari magis extensa.*
Long. tota 6·8, alæ 3·7, caudæ 3·0.
Hab. South Brazil, prov. Bahia (*P. Max.*).
Mus. Berolin., &c.

7. Pitylus poliogaster.

Pitylus poliogaster, Dubus, Bull. Ac. Brux. xiv. pt. ii. p. 105 (1847); Rev. Zool. 1848, p. 245; Gray's Gen. App. p. 16.
Pitylus flavocinereus, Cassin, Pr. Ac. Phil. iv. p. 47 (1848).
Fringilla episcopus, Licht. in Mus. Berol.
Caryothraustes episcopus, Bp. Consp. p. 504.
Canada Grosbeak, var. A. Lath. G. H. v. p. 282?

Olivacescenti-flavus: tectricibus alarum dorso proximis, dorso postico et abdomine cinereis: loris et gula nigris.
Long. tota 7·0, alæ 3·7, caudæ 3·0.
Hab. Mexico, Cosamaluapan (*Deppe*); vic. of Cordova (*Sallé*); Guatimala (*Dubus*).
Mus. Berolin., Lugdunens., Philadelph. Academ. et Bruxell.

Genus II. Orchesticus.

Orchesticus, Cab. Mus. Hein. p. 143 (1851).

Rostrum modicum, breve, altum, latum, tumidum; mandibulæ superioris marginibus non sinuatis, culmine incurvo; alæ modicæ, remigibus secunda, tertia, quarta et quinta longissimis: cauda subrotundata.

1. Orchesticus abeillii.

Pyrrhula abeillei, Less. Rev. Zool. 1839, p. 40.
Tanagra occipitalis, Natt. in Mus. Berol.
Orchesticus occipitalis, Cab. Mus. Hein. p. 143.

Diucopis leucophæa, Bp. Consp. p. 491 (excl. syn.).
Schistochlamys abeillei, Sclater, Tan. Cat. Sp. p. 4.
Tangara roux, Less. Tr. d'Orn. p. 464.

Olivascenti-cinereus, pileo plumbescente, fronte, alis caudaque rufis: subtus dilutior, ochracescenti-rufus; lateribus obscurioribus: rostro plumbeo.

Long. tota 7·4, alæ 3·4, caudæ 3·5.
Hab. South Brazil, Bahia (*J. Verreaux*).
Mus. Paris., Brit., Berol., &c.

This curious bird has long been common in European collections, being often transmitted from Bahia. From its appearance one would suppose it to be a female, but M. Jules Verreaux (who has himself shot it in the island of Itaparica) informs me that the natives consider it a distinct species.

Lesson's description of his *Pyrrhula abeillei* "*corpore isabellino: occipite, dorso et cauda supra brunneo-isabellinis: infra fronte et collo lætè isabellinis: alarum pennis nigris extus rufis*," is, I think, sufficiently accurate to warrant us using his specific name for this bird.

2. Orchesticus capistratus.

Saltator ruficapillus, Vieill. Nouv. Dict. xiv. 108; Enc. Méth. p. 793; Puch. Arch. Mus. Paris. vii. 355?
Tanagra capistrata, P. Max. Reise n. Bras. ii. 500 (1821), et Beitr. iii. 500; Spix, Av. Bras. ii. p. 41, pl. 54, fig. 1.
Pitylus capistratus, Sw. Class ii. p. 282.
Tachyphonus? capistratus, Gray's Gen. p. 365.
Diucopis capistrata, Bp. Consp. p. 491.
Schistochlamys capistrata, Sclater, Tan. Cat. Sp. p. 4.
Tanagra leucophæa, Licht. Verz. d. Doubl. p. 32, 1823.
Schistochlamys leucophæa, Cab. Mus. Hein. p. 141.
"*Tanagra conspicillata*, Mus. Paris." Bp. Consp. p. 491.

Schistaceus, pileo brunnescentiore: rostri cærulescentis ambitu nigro: subtus pallide ochraceo-rufus, ventre medio albescente, lateribus schistaceis.

Long. tota 6·7, alæ 3·3, caudæ 3·0.
Hab. South-east Brazil, prov. Bahia, et Minas Geraes (*P. Max.*); Rio (*Spix*).
Mus. Brit., Paris., &c.

3. Orchesticus ater.

Tangara à cravatte noire de Cayenne, Buff. Pl. Enl. 714, fig. 2.
Tanagra atra, Gm. S. N. 898.
Saltator ater, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 36; Cab. in Schomb. Reis. iii. 677.
Nemosia atra, Bp. Consp. p. 236.
Diucopis atra, Bp. Consp. p. 492.
Schistochlamys atra, Cab. Mus. Hein. p. 141; Sclater, Tan. Cat. Sp. p. 4, et P. Z. S. 1855, p. 154.
Tanagra melanopis, Lath. Ind. Orn. i. p. 422; Max. Beitr. iii. 504.

Saltator melanopis, Vieill. Nouv. Dict. xiv. p. 103, et Enc. Méth. p. 790; d'Orb. Voy. p. 291; Tsch. F. P. p. 210.
Le Camail, Desm. Tan. pl. 42.
Black-faced Tanager, Lath. G. H. vi. p. 12.

Cinereo-griseus, subtus dilutior: pileo antico et capitis lateribus cum gutture toto juguloque nigris. Junior ex cinereo olivascens unicolor, nigredine vix perspicua.

Long. tota 6·2, alæ 3·3, caudæ 2·9.

Hab. British Guiana (*Schomb.*); Cayenne; Trinidad; New Grenada, Bogota; North-east Peru, wood-region (*Tsch.*); Bolivia, Moxos and Chiquitos (*d'Orb.*); Goyaz and Albuquerque, Rio Paraguay (*Cast.* et *Dev.*); South Brazil, prov. Rio and Espiritu S. (*P. Max.*).

Mus. Brit., Paris., &c.

Genus III. Diucopis.

Diucopis, Bp. Consp. p. 491 (1850).
Schistochlamys, Reich. Av. Syst. Nat. pl. 77 (1850).

Rostrum subexiguum, rectum, conicum; alæ brevissimæ, remige prima secundam subæquante, hac cum tertia, quarta et quinta æqualibus et longissimis: cauda modica, subquadrata.

1. Diucopis fasciata.

Tanagra fasciata, Licht. Verz. d. Doubl. p. 32; Max. Beit. iii. 493; Bp. Consp. p. 238.
Tanagra axillaris, Spix, Av. Bras. ii. 41, pl. 54, fig. 2.
Tachyphonus axillaris, Gray, Gen. p. 365.
Diucopis fasciata, Bp. Consp. p. 491.
Schistochlamys fasciata, Sclater, Tan. Cat. Sp. p. 3.

Schistacea, subtus albescentior: loris, regione oculari et tectricibus alarum nigris: gutture et ventre toto cum fascia alari albis.

Long. tota 6·9, alæ 2·9, caudæ 2·6.

Hab. South-east Brazil, prov. San Paolo (*Licht.*); Minas and Bahia (*P. Max.*).

Mus. Brit., Paris., Derbiano.

This bird differs from the members of the genus *Orchesticus*, with which it has been lately associated, in the smaller straighter bill, very short wings, and more squared tail.

2. Diucopis speculigera.

Schistochlamys speculigera, Gould, P. Z. S. 1855, p. 68, et Ann. N. H. xv. p. 345.

Nigra: speculo alarum, tectricibus subalaribus et macula sub nuchæ pennis obtecta cum corpore subtus albis: lateribus et dorso postico schistaceis.

Long. tota 6·7, alæ 3·1, caudæ 2·8.

Hab. East Peru, river Ucayali (*Hawxwell*).

Mus. Brit.

Mr. Gould's types are the only specimens I have seen of this peculiar bird. They were collected by Mr. Hawxwell in August 1852 upon the Ucayali, and are marked "*Irides red.*" I rather doubt this being the true place of this species, but at present I am unable to indicate a better one.

Genus IV. Saltator.

Saltator, Vieillot, Analyse, p. 32 (1816).

Rostrum forte, elongatum, incurvum, vix sinuatum sed apice dentata: alæ rotundatæ, remigibus tertia, quarta et quinta fere æqualibus et longissimis: cauda admodum longa et plerumque rotundata: ptilosis olivacea, schistacea, fulva, brunnea: sexus similes.

1. Saltator atriceps.

Saltator atriceps, Less. Cent. Zool. pl. 69; Gray, Gen. p. 363; Bp. Consp. p. 489; Cab. M. H. p. 142.

Arremon giganteus, Bp. P. L. Z. 1837, p. 117; Gray, Gen. p. 361.

Pyrrhula raptor, Cabot, Boston Journ. v. p. 90.

Saltator raptor, Gray's Gen. App. p. 16; Bp. Notes s. l. coll. Delattre, p. 23.

Flavo-olivaceus: capite toto cum mento et vitta cervicem anticam cingente nigris: superciliis a fronte curtis et plaga gulari media albis: abdomine cinereo, crisso ochraceo-rufo.

Long. tota 9·5, alæ 4·7, caudæ 4·7.

Hab. South Mexico, Papantla (*Deppe*); vic. of Cordova (*Sallé*); Guatimala (*Bp.*); Escuintla (*Mus. Brit.*); Yucatan (*Cabot*).

Mus. Brit., Parisiensi, &c.

This is the largest and finest species of the genus. Prince Bonaparte (Notes Orn. s. l. coll. Delattre, p. 23) seems to consider Dr. Cabot's *Pyrrhula raptor* distinct, but Mr. Cassin, in his communication on Dr. Cabot's birds given in 'Jardine's Contributions,' 1852, p. 96, states it to be identical with the present bird, and the description given by Prince Bonaparte is applicable in every respect to this species.

2. Saltator magnoides.

Saltator magnoides, Lafr. R. Z. 1844, p. 41; Gray, Gen. App. p. 10; Bp. Consp. p. 489.

Saltator gigantodes, Cab. M. H. p. 143.

Supra olivaceus; capite cinereo, pileo viridi mixto: subtus schistaceus, mento albo, gutture et crisso ferrugineis: vitta lata gutturem undique cingente nigra.

Long. tota 7·5, alæ 4·0, caudæ 3·6.

Hab. Mexico (*Lafr.*); vic. of Cordova (*Sallé*); Coban (*Mus. Brit.*); Chiriqui (*Bridges*).

Mus. Brit. et Heineano.

The *S. magnoides* is very like the preceding species but much smaller in size, and with but slight supercilia. Besides, the chin is

white and the throat brown like the *crissum*. I have seen the type of *S. gigantodes* in Herr Heine's museum, and consider it the same as *magnoides*.

3. Saltator magnus.

Tangara des grands bois de Cayenne, Buff. Pl. Enl. 205 (fig. pess.).
Tanagra magna, Gm. S. N. p. 890; Lath. Ind. Orn. i. p. 422; Max. Beitr. iii. 525.
Le griverd de Cayenne, Buffl. Pl. Enl. 616 (fig. pess.)?
Coracias cayana, Bodd. Table d. Pl. Enl.
Coracias cayennensis, Gm. S. N. p. 381.
Saltator virescens, Vieill. Nouv. Dict. xiv. 104, et Enc. Méth. p. 790?
Saltator olivascens, Vieill. Nouv. Dict. xiv. 108; Enc. Méth. p. 794, et Gal. des Ois. p. 103, pl. 77; Tsch. F. P. p. 209.
Saltator cayennensis, d'Orb. Voy. p. 290.
Saltator magnus, Gray's Gen. p. 363; Bp. Consp. p. 489; Cab. Mus. Hein. p. 142.

Supra flavescenti-olivaceo-viridis, capitis lateribus cinereis, superciliis ante oculos curtis albis: subtus fulvescenti-cinereus: gula media alba, utrinque nigro-marginata, cervice antica crissoque pallide rufis: rostro nigro.

Long. tota 8·0, alæ 4·0, caudæ 3·7.

Hab. Cayenne (*Poiteau* in Mus. Paris.); British Guiana (*Schomb.*); Bogota (*Mus. Brit.*); East Peru, wood-region (*Tsch.*); Pintobamba (*Cast.* et *Dev.*); Bolivia, Yuracares (*d'Orb.*); Brazil, Rio (*P. Max.*).
Mus. Brit., Paris., &c.

This *Saltator* seems very widely distributed over the South American continent, and is in that respect different from the rest of its congeners. It may be at once distinguished by its uniform bright olive-green upper plumage (not of so yellowish a tint as in *Saltator atriceps*), and the brownish blotch on the foreneck: from *S. magnoides* it differs in the want of the black throat-band.

The Brazilian skins are of rather larger dimensions than the Cayenne birds, but do not otherwise differ.

4. Saltator icteropygius.

Saltator icteropyga, Dubus, Esq. Orn. pl. 13; Gray, Gen. App. p. 16.

Supra saturate cinerascenti-fuscus: superciliis, mento et gutture albis: pectore et epigastrio fulvescenti-cinereis: ventre dilute fulvo: hypochondriis cinereo-fulvis: crisso citrino: remigibus fuscis, extus cinereo limbatis: rectricibus supra nigris viridi-æneo submicantibus cinereoque extus limbatis: lateralibus quatuor utrinque macula magna alba in medio pogonii interni notatis: rostro corneo: pedibus fuscescentibus.

Hab. Mexico.

The Vicomte Dubus has given the above description of this curious *Saltator*, of which there is a specimen in his collection. Prince

Bonaparte, in his 'Conspectus,' states, on the authority of Baron de Lafresnaye, that it is merely the common *S. magnus* supplied with the tail of a *Ptilogonys*. But Dr. Hartlaub, who has lately inspected the bird, is quite convinced of its being a good and distinct species. (See Journ. f. Orn. 1854, p. 255.)

5. SALTATOR SIMILIS.

Tanagra superciliaris, Max. Beitr. iii. 518?

Saltator similis, Lafr. et d'Orb. Syn. Av. i. p. 36; d'Orb. Voy. p. 290, pl. 28, fig. 2; Gray, Gen. p. 363; Tsch. F. P. p. 209?; Bp. Consp. p. 489; Cab. Mus. Hein. p. 143.

Saltator gutturalis, Licht. in Mus. Berol.

Supra cinereus; interscapulio et alarum marginibus olivaceo-viridibus: superciliis longis albis: subtus albido-cinerascens, medialiter fulvo tinctus: gutture toto pure albo, utrinque nigro marginato: crisso rufescente: rostri inferioris basi alba.

Long. tota 9·0, alæ 4·0, caudæ 4·0.

Hab. South Brazil, Corrientes (*d'Orb.*); Peru, wood-region and coast (*Tsch.*).

Mus. Paris., Brit.

This bird is common among the collections of Brazilian skins so frequently imported of late years. Comparing it with *S. magnus*, we find the olive colour, which there pervades the entire upper surface, confined in the present species to the middle of the back and edgings of the wings, the rest of the upper plumage being cinereous. The throat too is pure white, and wants the rufous blotch on the fore-neck.

6. SALTATOR OLIVASCENS.

Saltator olivascens, Cab. in Schomb. Reise, iii. 676; Bp. Consp. p. 490; Cab. Mus. Hein. p. 142.

Saltator plumbeus, Bp. Notes Orn. p. 23.

Fusco-cinereus unicolor; superciliis ante oculos curtis et gutture albis, hoc utrinque nigro marginato: subtus albo-cinereus, pectore cinerascentiore; ventre medio albescentiore, inferiore cum crisso pallide rufescenti-ochraceis: rostro nigro.

Long. tota 8·0, alæ 3·75, caudæ 3·3.

Hab. British Guiana (*Schomb.*); Cayenne (*Mus. Paris.*); Venezuela, Cumana (*Mus. Eytoni*); S. Martha (*Bp.*); Trinidad (*Lord Harris*).

Mus. Bremensi; Eytoni; Berolin.; Heineano.

There is no trace of green colour on the plumage of this *Saltator*, the upper surface being uniform blackish-cinereous, as in *Saltator grandis*, to which it is very closely allied. But the latter bird may be distinguished by the blacker sides of the head and ear-coverts, and the greater breadth of the stripes on each side of the throat, which leave only a narrow longitudinal white band in the middle of it. And in the Central American bird the ochraceous colour of the crissum extends all over the abdomen more or less, while in the present species the middle of the belly is nearly white.

I have Prince Bonaparte's type of *S. plumbeus* in my possession, and consider it clearly the same as Dr. Cabanis' species.

7. Saltator grandis.

Tanagra grandis, Licht. Preis-Verz. no. 67 (1831).
Saltator rufiventris, Vig. Beechey's Voy. Pac. p. 19?
Saltator vigorsi, Gray, Gen. p. 363?; Bp. Consp. p. 489; Cab. Mus. Hein. p. 143; Bp. Notes Orn. p. 23.
Saltator icterophrys, Lafr. Rev. Zool. 1844, p. 40; Gray's Gen. App. p. 16; Bp. Consp. p. 490 (juv.?)??
Saltator grandis, Licht. in Mus. Berol.
Saltator nigrigenis, Sclater, MS.

Supra nigrescenti-cinereus, lateribus capitis nigris: superciliis albis: gutturis stria mediali alba, utrinque late nigro marginata: abdomine cinereo fulvo tincto: ventre imo et crisso rufescentibus. Junior (S. icterophrys, Lafr.?). *Supra olivaceo indutus, superciliis et camplerio flavidis: ventre rufescentiore.*

Long. tota 7·75, alæ 4·0, caudæ 4·0.

Hab. South Mexico, Jalapa (*Mus. Berol.*); Orizaba (*Boteri*); vic. of Cordova (*Sallé*); Guatimala (*Constancia*).

I have already stated the characters which distinguish this species from the preceding, which is its representative in the more northern portions of the South American continent, while *S. azaræ* seems to take its place in Bolivia.

I am glad to be able to adopt Lichtenstein's name for the present bird, because I can only very doubtfully refer the other synonyms to this species, and in this state of uncertainty have occasionally applied to it the MS. name *nigrigenis*. But since I have seen the types of *S. grandis* at Berlin, and have ascertained that they are really the same as my *nigrigenis*, I have adopted Lichtenstein's name, which was published, although with rather insufficient specific characters, in 1831.

8. Saltator mutus.

Tanagra superciliaris, Spix, Av. Bras. ii. 44, pl. 57?
Saltator superciliaris, Cab. Mus. Hein. p. 142, *certe*.
Saltator cærulescens, Tsch. F. P. p. 209? (teste Cab.).
Tanagra muta, Licht. in Mus. Berol.

Supra nigricanti-cinereus unicolor; subtus albescenti-cinereus: superciliis ante oculos curtis et gutture medio albis, hoc nigro marginato: ventre medio albescentiore, crisso pallide rufescente: rostro nigro.

Long. tota 8·5, alæ 4·3, caudæ 4·0.

Hab. North Brazil, Lower Amazon, island of Mexiana (*Wallace*).
Mus. Berol.

The description and figure given by Spix of his *S. superciliaris* are as applicable to this species as any other; but without examining the type (which I vainly sought for the last time I was at Munich), it is impossible to be sure of being right in using his name for the present

bird, and I have therefore adopted for it Lichtenstein's term *mutus*, by which it is known in the Berlin museum. In fact, the names *superciliaris* and *cærulescens* have been applied to so many of this group of species, and the original descriptions upon which these terms rest are so indefinite, that it only produces further confusion to continue to employ them.

The *Saltator mutus* is rare in collections. Besides the example at Berlin I have only seen the specimens collected by Mr. Wallace in the neighbourhood of Para, from one of which my characters are taken. It is distinguished from all its allies by the uniform blackish-gray colouring of the plumage, the same below as above, only much lighter and more white, without any tinge of green, brown or rufous, except on the crissum. The supercilia only extend to the top of the eye. The bill is deep black and more elongated than in its congeners.

9. Saltator azaræ.

Saltator azaræ, d'Orb. Voy. p. 287: Bp. Consp. p. 490.

Supra nigricanti-cinereus, dorso virescente tincto: alis nigricantibus cinereo limbatis: superciliis curtis et gutture medio albis, hoc anguste nigro marginato: abdomine summo albescente, cinereo et ochraceo tincto, imo autem cinnamomescenti-ochraceo.

Long. tota 9·0, alæ 4·3, caudæ 4·3.

Hab. Bolivia, prov. Moxos and S. Cruz de la Sierra (*d'Orb.*).

Mus. Brit., Paris.

The closest allies of this bird are certainly *S. grandis* and *olivascens*, particularly the latter; but it is larger than either of them. From *S. olivascens* it may be also known by its cinereous back, having rather a greenish than a brownish tinge, and a deeper cinnamomeous colouring extending from the vent up to the middle of the belly, which in the *S. olivascens* is nearly white. From *S. grandis* it differs in its shorter bill and narrow throat-stripes, besides its superior size.

10. Saltator cærulescens.

Habia ceja blanca, Azara, Pax. i. p. 344.

Saltator cærulescens, Vieill. Nouv. Dict. xiv. 105, et Enc. Méth. p. 791; Hartl. Ind. Az. p. 6; d'Orb. Voy. p. 287.

"*Saltator superciliaris*, Spix," d'Orb. *ib.*

Fusco-brunneus, virescente paululum tinctus, alis extus olivaceo marginatis: subtus cinerascenti-albus: gutture medio albo, utrinque nigro marginato: ventre et crisso rufescente indutis, crisso saturatiore: superciliis a fronte ad nucham albis.

Hab. Paraguay (*Azara*); Corrientes in rep. Arg. (*d'Orb.*).

Mus. Parisiensi.

I have only seen one specimen of this species, which is in the Paris Museum, and was brought by d'Orbigny from Corrientes. It is certainly very closely allied to the Bolivian '*azaræ*.' But the bill is shorter and thicker, and there is a greenish colouring on the back

and wings, of which there are no traces in the other bird, though I have some doubt whether this may not be due to the individual not being fully adult.

11. Saltator gularis.

Loxia gularis, Less. Tr. d'Orn. i. p. 448.
"*Saltator cærulescens*, Vieill.," Cab. Mus. Hein. p. 142.
Saltator superciliaris, Licht. in Mus. Berol.
Saltator gularis, Lafr. in Mus. suo.

Supra nigrescenti-plumbeus, superciliis longis a fronte ad imam cervicem albis: subtus fulvescens, gutture utrinque nigro marginato; pectore et cervicis lateribus cinerascentibus: ventre medio albescentiore: rostro brevissimo, crassissimo, nigro, apice uncinata: mandibula superiore juxta nares aurantia.

Long. tota 8·5, alæ 4·0, caudæ 4·0.
Hab. Monte Video (*Cab.*).

12. Saltator maxillosus.

Saltator maxillosus, Cab. Mus. Hein. p. 142 (note).

Similis S. gulari, *sed rostro adhuc majore, subtus minus ferrugineus, et alis olivaceo perfusis: a* S. muto *autem gula non alba sed sordide flavescenti-grisea et crisso clarius ferrugineo, necnon rostro forti dignoscendus.* (Cab. l. c.)

Hab. Monte Video (*Cab.*).
Mus. Berol.

I examined the type of this species when at Berlin, and was rather doubtful about its real distinctness from the preceding. I possess a specimen very much resembling it, as far as I can recollect and can gather from Cabanis' description. The bill of this example is not thicker than in one specimen of *S. gularis*, but is uniform black, and the back and wings are olive-green as in that in the Berlin Museum. But I think it is probable that this may be an immature stage of *S. gularis*.

13. Saltator rufiventris.

Saltator rufiventris, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 35; d'Orb. Voy. p. 289, pl. 28, fig. 1; Gray's Gen. p. 363; Bp. Consp. p. 489.

Saturate plumbeus: superciliis elongatis albis: abdomine castaneo.

Long. tota 9·0, alæ 4·4, caudæ 4·0.
Hab. Bolivia (*d'Orb.* et *Bridges*).
Mus. Brit. et Paris.

M. d'Orbigny found this species very common in the environs of Enquisivi, in the province of Sicasica, and near Palca, in the province of Ayupaya in Bolivia. Mr. Bridges' specimens in the British Museum are also from Bolivia. It is a well-marked bird, and not likely to be confounded with any of its congeners.

14. Saltator aurantiirostris.

Habia pico naranjado, Azara, Pax. i. p. 349.

Saltator aurantiorostris, Vieill. N. D. d'H. N. xiv. p. 103, et Enc. Méth. p. 789; d'Orb. et Lafr. Syn. Av. in Mag. de Zool. 1837, p. 35; d'Orb. Voy. p. 288; Gray, Gen. p. 363; Bp. Consp. p. 490.

Supra cinereus, pileo obscuriore: capitis lateribus, vitta subgutturali conjunctis, nigris: superciliis postice dilatatis et gutture albis: abdomine ochracescenti-albido: cauda nigra, rectricibus lateralibus albo terminatis: rostro aurantio.

Long. tota 8·5, alæ 4·0, caudæ 3·75.

Hab. Paraguay (*Azara*); Corrientes, La Plata (*d'Orb.*); Bolivia, Sicasica, Mizque, Valle-grande, Ayupaya, Cochabamba and La Paz (*d'Orb.*); Peru, Echarate (*Cast.* et *Dev.*).

Mus. Brit., Paris. &c.

This species, which may be always recognized by its bright orange bill, seems rather variable in some respects. There is a fine series of specimens of it in the Paris Museum, collected by d'Orbigny and Castelnau and Deville. In what seem to be the fully adults, the front sides of the head, throat and breast, are all deep black, a post-superciliary stripe and middle of the throat only being white. Others, which I suppose are immature, have the white space on the throat much larger, the black guttural band being confined to a mere ring, which in some specimens is hardly apparent.

15. Saltator albicollis.

Saltator albicollis, Vieill. N. D. d'H. N. xiv. 107, et Enc. Méth. p. 793; Gray, Gen. p. 363; Bp. Consp. p. 489.

Fusco-olivaceus; subtus albo-subvirescens fusco maculatus: superciliis gulaque albidis. (Bp.)

I have examined the type-specimen at Paris upon which Vieillot founded this species, and from which Prince Bonaparte took the short characters above given. It seems to be an immature bird, and I think the locality, *Cayenne*, is most likely wrong. I suspect it was probably from Trinidad, in which island there is a *Saltator* belonging to this section with the flammulated under-plumage. Of this I possess an example which may be described as follows:—

"Above greenish-olive; head darker, uropygium more cinereous; small yellowish supercilia before the eye; wings bordered with bright olive-green; tail brown like the wing-feathers inside, rectrices edged basally with cinereous; under-surface white, regularly flammulated with olive-green, middle of the throat and belly nearly all white, just the shafts of the feathers only being olive; under wing-coverts white; bill black, with the apex yellow. Whole length 7·5; wing 3·5, tail 3·3."

There is a peculiar twist in the commissure in this bird which seems to agree with what Vieillot says of his *S. albicollis*; and I think it very probable that it is this Trinidad species that ought to bear that name.

But until an accurate comparison can be made between a series of individuals of each of the five members of this section of the genus, I think it almost hopeless to determine the species satisfactorily.

16. Saltator striatipectus.

Saltator striatipectus, Lafr. R. Z. 1847, p. 73; Gray, Gen. App. p. 16; Bp. Consp. p. 489.

Supra olivaceus: uropygio caudaque cinereis: linea a naribus ad oculos, palpebrisque pallide sulphureis: subtus albus, pectore parum ochraceo tincto et striis fusco-olivaceis flammulato: gula, ventre et ano albis: gutturis albedine lateraliter vitta fusca marginata: rostro nigro-corneo, apice pallescente.

Long. tota 7·4.

Hab. Caly in New Grenada (*Lafr.*).

Mus. Lafresnayano.

17. Saltator maculipectus.

Saltator maculipectus, Lafr. R. Z. 1847, p. 73; Gray, Gen. App. p. 16; Bp. Consp. p. 489.

Supra fusco-griseus, dorso supremo parum olivaceo tincto: remigibus fuscis olivaceo marginatis: macula ante oculos, palpebrisque vix conspicue albescentibus: subtus albus; collo antico pectoreque maculis sordide griseis, quæ supra ventrem et hypochondria in strias angustas mutantur, variegatis.

Long. tota 6·8.

Hab. New Grenada (*Lafr.*).

Mus. Lafresnayano.

M. de Lafresnaye says of this species, that it differs from the preceding by its smaller size, grey and not olive tinge on the head and neck, belly white and not washed with olive, and beak shorter and yellow at the point.

18. Saltator guadalupensis.

Saltator guadalupensis, Lafr. R. Z. 1844, p. 167; Gray, Gen. App. p. 16; Bp. Consp. p. 489.

Supra olivaceus; uropygio caudaque sordide griseis; vitta superciliari angusta a naribus ad occiput ducta albido-virescente: subtus griseo-rufescens; hypochondriis griseo-obscurioribus; ano pallide rufescente; pectore et ventre flammulis obscurioribus parum conspicuis variegatis: gutture colloque antico albis, utrinque vitta nigra marginatis: rostro basali et medio brunneo-nigris, apicali albido-flavo.

Long. tota 7·9.

Hab. Island of Guadaloupe (*Ricord*).

Mus. Parisiensi.

19. Saltator martinicensis.

Saltator martinicensis, Bp. Consp. p. 489.

Similis S. guadalupensi, *sed rostro minus robusto* (!). (Bp.)

Hab. Island of Martinique.

Mus. Parisiensi.

There are six specimens of this *Saltator* from the island of Mar-

tinique in the museum of the Jardin des Plantes, presented by M. Alexander Rousseau in April 1842. I cannot see any specific difference between them and the Guadaloupe bird.

20. Saltator orenocensis.

Saltator orenocensis, Lafr. R. Z. 1846, p. 275; Gray, Gen. App. p. 16; Bp. Consp. p. 490; Cab. M. H. p. 143.
Saltator genalis, Licht. in Mus. Berol.

Supra griseo-plumbeus; alis caudaque nigris, remigibus primariis strictissime secondariis et tertiariis late cinereo terminatis: tectricibus omnibus ejusdem coloris: rectricibus supra basi et extus griseo quasi vittatis, infra grisescentibus: vitta lata superciliari, gutture, collo antico, maculaque parva ad mandibulæ basin niveis: genis cum capitis, colli et pectoris lateribus atris: subtus pallide ochraceus, hypochondriis et subcaudalibus ferrugineis: rostro nigro aut nigro-plumbeo: pedibus fuscis.

Long. tota 6·8.

Hab. Venezuela, Angostura (*Mus. Bremensi*); Trinidad (*Mus. H. E. S.*).

Mus. Berolinensi, Heineano.

21. Saltator atricollis.

Habia gola negra, Azara, Pax. i. p. 348.
Saltator atricollis, Vieill. N. D. d'H. N. xiv. 104, et Enc. Méth. p. 790; Less. Descr. d. Mamm. et Ois. p. 344; d'Orb. Voy. p. 288; Gray's Gen. ii. p. 363; Bp. Consp. p. 490.
Tanagra atricollis, Spix, Av. Bras. ii. p. 43, pl. 56, fig. 2.
Habia robustona, Azara, Pax. i. p. 350.
Saltator validus, Vieill. N. D. d'H. N. xiv. 106; Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 35.
Tanagra jugularis, Licht. Doubl. p. 31.
Fringilla jugularis, Max. Beitr. p. 558.
"*Loxia capsicum*, Val.," Less. Tr. d'Orn. i. 448.
Saltator sordidus, Less. Echo d. M. S. 1845, p. 295.

Fusco-rufescens: alis caudaque et pilei pennis subtus nigricantibus: capite laterali et gutture toto nigris: abdomine albo-rufescente, ventre saturatiore: rostro aurantio, culmine nigro.

Long. tota 8·0, alæ 3·75, caudæ 3·75.

Hab. Eastern Brazil, prov. Minas Geraes (*Spix*); San Paolo (*Licht.*); Rio; Bolivia, Chiquitos (*d'Orb.*); Paraguay (*Azara*).

Mus. Brit., Berol., Paris. &c.

Genus V. Psittospiza.

Psittospiza, Bp. Compt. Rend. xxxi. p. 424 (1850).
Chlorornis, Reichb. Av. S. N. pl. 77 (1850).

Rostrum rectiusculum, elongatum, culmine incurvo, gonyde ascendente, dente finali distinctissimo: alæ elongatæ, remigibus secunda, tertia et quarta longissimis: cauda quadrata: ptilosis nitide viridis.

1. Psittospiza riefferi.

Tanagra riefferi, Boiss. R. Z. 1840, p. 4.
Saltator riefferi, Gray, Gen. p. 363, pl. 89 ; Tsch. F. P. p. 210.
Tanagra prasina, Less. Echo d. M. S. 1843, p. 947.
Psittospiza prasina, Bp. Consp. p. 492.
Chlorornis prasina, Cab. Mus. Hein. p. 141.
Saltator elegans, Tsch. Wiegm. Archiv, 1844, p. 288.

Lætissime viridis, lateribus capitis et gula summa cum ventre imo castaneis : rostro aurantio : pedibus flavis.

Long. tota 7·2, alæ 4·5, caudæ 3·5.

Hab. New Grenada, Bogota ; Ecuador, forests of the Andes near Quito (*Jameson*) ; wood-region of East Peru (*Tsch.*).

Mus. Brit., Paris, &c.

Genus VI. Lamprospiza.

Lamprospiza, Cab. Wiegm. Arch. 1847, p. 246.

Rostrum Saltatoris, *sed debilius : alæ elongatæ, remigibus quatuor primis fere æqualibus : cauda modica, quadrata.*

1. Lamprospiza melanoleuca.

Saltator melanoleucus, Vieill. Nouv. Dict. xiv. 105, et Enc. Méth. p. 791.
Divaricated Tanager, Lath. G. H. vi. p. 40.
Tanagra duplicata, Lath. in Mus. Derb.
Psaris habia, Less. Cent. Zool. p. 186, pl. 59.
Tityra habia, Gray, Gen. p. 253.
Lamprospiza habia, Cab. Wiegm. Arch. 1847, p. 246 ; Bp. Consp. p. 492.
Tangara double croissant, Less. Tr. d'Orn. p. 379.
Lamprospiza melanoleuca, Sclater, Tan. Cat. Sp. p. 4.

Supra æneo-niger ; subtus albus ; gutture toto et vitta utrinque a medio pectore ad latera transeunte cum tibiis et cauda tota nigris, dorso concoloribus : rostro rubro. ♀ *dorso toto pallide cinereo.*

Long. tota 6·0, alæ 3·6, caudæ 2·5.

Hab. Cayenne.

Mus. Brit., Paris., Derbiano.

Genus VII. Cissopis.

Cissopis, Vieill. Analyse, p. 40 (1816).
Bethylus, Cuv. Regn. An. (1817).

Rostrum altum, compressiusculum ; culmine multum incurvo ; dente finali indistincto : alæ modicæ, remigibus tertia, quarta et quinta longissimis : cauda longissima et multum rotundata, rectricibus gradatim crescentibus : ptilosis albo-nigra : sexus similes.

1. Cissopis leveriana.

Magpie Shrike, Lath. Gen. Syn. i. p. 192.

Lanius leverianus, Gm. S. N. i. p. 302.
Lanius picatus, Lath. Ind. Orn. i. p. 73.
Corvus leverianus, Shaw, Mus. Lever. p. 241.
Le pie piegrieche, Le Vail. Ois. d'Afr. ii. p. 33. pl. 60.
Corvus collurio, Daud. Orn. ii. p. 246.
Cissopis leverianus, Gray, Gen. p. 362.
Bethylus leverianus, Bp. Consp. p. 491.

Albus, capite toto undique cum collo ad medium dorsum triangulariter descendente et pectore simili modo triangulariter terminante splendenti-violaceo-nigris: alis caudaque nigris: tectricibus alarum minoribus albis, majoribus autem et secondariis albo extus limbatis; rectricibus omnibus albo terminatis: rostro et pedibus nigris.

Long. tota 10·5, alæ 4·3, caudæ 6·0.
Hab. South East Brazil.
Mus. Brit., Paris., &c.

2. Cissopis media.

Cissopis bicolor, Vieill. N. D. d'H. N. xxvi. 417, et Enc. Méth. p. 750 (*partim*); Vieill. Gal. Ois. p. 226. pl. 140 ?
Cissopis minor, Cab. Schomb. Reis. iii. 677.
Bethylus medius, Bp. Consp. p. 491.
Cissopis media, Sclater, Tan. Cat. Sp. p. 5.

Medius: dorso dimidiato albo: rostro crasso incurvo. (Bp.)
Hab. British Guiana (*Schomb.*).
Mus. Paris.

The Guiana *Cissopis* is rather smaller than the common Brazilian species, and the steel-black colour does not extend so far down the back. The Paris Museum specimen of this bird seems to want the white wing-spots. I am not confident as to the correctness of separating this and the Brazilian bird.

3. Cissopis minor.

Saltator bicolor, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 36 ?
Bethylus picatus, d'Orb. Voy. p. 269 ?; Tsch. Wiegm. Archiv, 1844, p. 288.
Cissopis minor, Tsch. Faun. Per., p. 211.

Minor: dorso omnino albo: rostro minus valido, brevi, rectiusculo.

Long. tota 9·5, alæ 4·2, caudæ 5·2.
Hab. Bolivia, Yuracares (*d'Orb.*); Eastern wood-region of Peru (*Tsch.*); New Grenada, Bogota.
Mus. Brit., Paris.

The Bogota *Cissopis* seems distinct from the Brazilian, having merely the upper neck steel-black, and the back all white. I am not quite certain whether d'Orbigny's Bolivian examples are best referable here. They seem to come pretty near the Cayenne bird.

Genus VIII. Oreothraupis.

Rostrum validum, tomiis mandibulæ superioris medio turgidis et mandibulam inferiorem tegentibus, sicut in genere Lanione, *sed brevius, altius, latius et medio minus uncinatum: alæ breves, rotundatæ: cauda sicut in genere* Arremone.

1. Oreothraupis arremonops.

Saltator arremonops, Jard. Edinb. N. Phil. Journ. 1855, ii. p. 119; Sclater, P. Z. S. 1855, p. 84. pl. xcii.

Rufo-brunneus, olivaceo parum tinctus; pectore multo clariore et rubescentiore: capite toto mentoque nigris; vitta mediali verticis et superciliari utrinque postice elongatis cum medio ventre cinereis: alis intus et cauda nigricantibus: rostro et pedibus nigris.

Long. tota 7·25, alæ 3·2, caudæ 3·5.

Hab. Andes in the vicinity of Quito (*Jameson*).

Mus. Gul. Jardine, Baronetti.

This peculiar Tanager in style of plumage and general habit corresponds most closely with the members of the genus *Arremon*, but the bill is altogether abnormal, the upper mandible swelling in the middle and overlapping the under, as in the genus *Lanio*, though not developed into a decided hook: but it is much shorter, broader and deeper than in the last-named genus, and has more general resemblance to that of some of the *Saltatores*.

Genus IX. Arremon.

Arremon, Vieill. Analyse (1816), p. 32.

Rostrum rectum, altum, breve, conicum, apice vix dentata: alæ breves, remigibus quarta, quinta et sexta longissimis: cauda breviuscula, rotundata.

1. Arremon silens.

Le Tangara de la Guyane, Buff. Pl. Enl. 742.

Tanagra silens, Bodd. Table de Pl. Enl.; Lath. Ind. Orn. p. 432; Max. Beit. iii. 507.

Arremon torquatus, Enc. Méth. p. 794, et Vieill. Gal. Ois. p. 105. pl. 78.

Arremon silens, Gray, Gen. p. 361; Bp. Consp. p. 487.

L'oiseau silentieux, Desm. Tan. t. 38, 39, 40.

Silent Tanager, Lath. G. H. vi. p. 22.

Olivaceus: capite et vitta pectorali nigris: tænia verticali cinerea: superciliis a fronte ad nucham, cum gutture albis: abdomine albido, lateribus cinerascentibus: campterio flavo: rostro nigro.
♀ *Supra mari similis: subtus fulvo tincta nec cinerascens: torque gutturali vix apparente.*

Long. tota 5·0, alæ 2·8, caudæ 2·4.

Hab. Cayenne; North Brazil, Capin river (*Wallace*); South East Brazil (*P. Max.*).

Mus. Brit., Paris., &c.

The Brazilian specimens of this bird are slightly larger in size than those from Cayenne, and of rather a more yellowish green on the back. This species may be distinguished from all its nearest allies by its black bill.

2. Arremon d'orbignii, sp. nov.

Embernagra silens, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 34 (*partim*).

Arremon silens, d'Orb. Voy. p. 281 (*partim*).

Supra olivascens: tænia verticali cinerea: superciliis a fronte incipientibus cum corpore subtus albis; hoc nigro torquato: rostro flavo; mandibulæ superioris parte culminali nigra.

Hab. Bolivia, prov. Yungas (*d'Orb.*).

Mus. Parisiensi.

This Bolivian species comes nearest to *A. flavirostris*, but there is more black on the upper mandible, and the superciliary stripes begin from the front, as in *A. silens*.

3. Arremon flavirostris.

Tordo de bosque torqüato, Azara, i. p. 331?

Arremon silens, Hartl. Ind. Az. p. 5?

Arremon flavirostris, Sw. An. in Men. p. 347; Gray, Gen. p. 361; Bp. Consp. p. 487.

Supra olivascens: tænia verticali cinerea: superciliis ab oculo incipientibus et corpore subtus albis; hoc nigro torquato: lateribus cinerascentibus: rostro flavo: ipso culmine tantum nigro.

Hab. Brazil, Cametá (*Mus. Berol.*).

Mus. Berol., Derbiano.

4. Arremon devillii, sp. nov.

Arremon devillii, Bp. in Mus. Paris.

A. schistaceus, olivaceo paululum tinctus: tænia verticali dorso concolore: superciliis ab oculo incipientibus et corpore subtus albis, hoc nigro torquato: tectricibus alarum superioribus olivaceis: rostro superiore nigro, inferiore flavo.

Long. tota 6·0, alæ 2·2, caudæ 2·1.

Hab. prov. Goyaz in Brazil (*Cast.* et *Dev.*).

Mus. Parisiensi.

This bird is intermediate between *A. flavirostris* and *A. polionotus*. Unlike the latter, it has the whole upper mandible black and the back tinged with olive, and is besides of smaller size, and possesses a vertical band. From the former it appears distinguishable by its differently coloured bill and less olivaceous back.

5. Arremon polionotus.

Arremon polionotus, Bp. Consp. p. 488

Supra plumbeus: capite et torque angusta pectorali nigris: superciliis postocularibus et corpore subtus albis; lateribus cinerascen-

tibus: tectricibus alarum olivaceis, ipsa flexura flava: rostro albo, mandibulæ superioris culmine nigro.

Long. tota 6·0, alæ 2·9, caudæ 2·7.

Hab. Corrientes, La Plata (*Bp.*); Brazil, Cuyaba (*Natt.*).

Mus. Paris. et Vindob.

This species may be distinguished from the *A. silens* by its cinereous back, narrower throat-band and differently coloured bill.

6. Arremon abeillii.

Arremon abeillei, Less. R. Z. 1844, p. 435; Gray, Gen. App. p. 16.

Schistaceus; capite toto et torque gutturali nigris: superciliis et corpore subtus albis: rostro nigro; pedibus luteis.

Hab. Guyaquil (*Less.*).

Mus. Baronis de Lafresnaye et Princ. Car. Bonaparte.

I have seen specimens of this species in the collections of the Baron de la Fresnaye and Prince Charles Bonaparte. It appears very like the preceding, but has the bill black.

7. Arremon semitorquatus.

Arremon semitorquatus, Sw. An. in Men. p. 257; Gray, Gen. p. 361; Bp. Consp. p. 488.

Supra olivaceus: capite et plaga utrinque cervicali (quasi semitorquem formante) nigris: vitta mediali verticis et cervice postica cum lateribus corporis et crisso cinereis: superciliis elongatis, gutture et abdomine medio albis: tectricibus alarum dorso concoloribus: mandibula superiore nigra, inferiore flava.

Long. tota 6·0, alæ 2·9, caudæ 2·9.

Hab. South Brazil.

Mus. Brit., &c.

8. Arremon axillaris.

Arremon axillaris, Sclater, P. Z. S. 1854, p. 97, et Tan. Cat. Sp. p. 15.

Supra olivaceo-viridis; capite atro; superciliis productis albis; vitta verticali et cervice postica cinereis: subtus niveus, lateribus cinerascentibus; plaga utrinque cervicali (vittam quasi imperfectam formante) mentoque summo atris; remigibus rectricibusque nigricantibus: tectricibus alarum majoribus flavo-olivaceis, minoribus et campterio læte flavis: mandibula superiore nigra, inferiore flava: pedibus clare brunneis.

Long. tota 3·8, alæ 2·2, caudæ 1·4.

Hab. New Grenadian Andes, Bogota.

Mus. Brit. et Paris.

This species very much resembles *A. semitorquatus*, but has the bend of the wing bright yellow, instead of olive-green. I have only seen it in collections from Bogota.

9. Arremon spectabilis.

Arremon spectabilis, Sclater, P. Z. S. 1854, p. 114. pl. 67.

Supra aurescenti-olivaceus; capite nigro, vitta verticali cinerea: superciliis albis: axillis lætissime croceis: subtus albus; mento summo et torque gutturali nigris, lateribus cinerascentibus: rostro flavo.

Long. tota 5·8, alæ 2·8, caudæ 2·5.

Hab. Province of Quixos in Cisandean Ecuador.

Mus. Britannico; Gul. Jardine.

This beautiful species is from the Upper Rio Napo, where it traverses the province of Quixos on the eastern slope of the great Andean range. Specimens in Sir William Jardine's collection are labelled as having been prepared by M. Villavicencio, a Spanish naturalist resident in that locality.

10. Arremon erythrorhynchus.

Arremon erythrorhynchus, Sclater, P. Z. S. 1855, p. 83. pl. 89.

Olivaceus; capite nigro; vitta mediali verticis, nucha cervicisque lateribus cinereis: superciliis et corpore subtus albis: torque gutturali angusta nigra: lateribus cinerascentibus: campterio flavo: pedibus albis: rostro elongatiore, incurviore, rubro.

Long. tota 5·8, alæ 3·0, caudæ 2·7.

Hab. New Grenadian Andes, Bogota.

Mus. Brit.

This *Arremon*, of which I have only yet seen one example—a Bogota skin, formerly in Mr. Gould's collection—may be distinguished from the preceding species by its more lengthened, incurved and brilliant orange-red bill, and the yellow bend of the wing.

11. Arremon aurantiirostris.

Arremon aurantiirostris, Lafr. R. Z. 1847, p. 72; Des Murs, Icon. Orn. pl. 55; Gray, Gen. App. p. 16; Bp. Consp. p. 488.

Brunnescenti-olivaceus; capite et vitta lata pectorali nigris: vitta mediali verticis dorso concolore: superciliis elongatis cum gutture toto et ventre medio albis: campterio flavo: rostro albescenti-aurantio.

Long. tota 6·5, alæ 2·9, caudæ 2·5.

Hab. Isthmus of Panama (*Delattre*).

Mus. Brit.; Derbiano; Acad. Philadelph.

This bird may be distinguished from its congeners by the broadness of the pectoral band, and its large wholly yellow bill.

12. Arremon schlegeli.

Arremon schlegeli, Lafr. M. S.; Bp. Consp. p. 488.

Supra cinereus, dorso et tectricibus alarum superioribus flavescenti-olivascentibus: capite toto et plaga utrinque gutturali (quasi semitorquem formante) nigris: carpo flavo: subtus albus, lateraliter cinerascens: rostro flavo, culmine vix nigro.

Long. tota 5·7, alæ 2·8, caudæ 2·3.

Hab. Littoral of New Grenada, S. Martha (*Verreaux*); Cartagena and Caraccas (Mus. Paris).

Mus. Brit., Paris., Lugdunensi.

This fine *Arremon* is at once recognizable by its black head, which is without the usual supercilia or medial band.

Genus X. Phœnicophilus.

Phœnicophilus, Strickl. Cont. Orn. 1851, p. 104.

Rostrum Buarremonis, *sed elongatius · alæ elongatæ, remigibus tertia, quarta et quinta longissimis : cauda breviuscula, quadrata, rectricibus inter se æqualibus.*

1. Phœnicophilus palmarum.

Le palmiste, Briss. Orn. ii. p. 301. (♀.)
Le palmiste à tête noire, Briss. Orn. ii. p. 303. (♂).
Turdus palmarum, Linn. S. N. i. 295; Vieill. Ois. de l'Am. Mér. ii. p. 16. pl. 69 ♂ 70 ♀.
Le palmiste de Cayenne, Buff. Pl. Enl. 539. fig. 1.
Tachyphonus palmarum, Vieill. N. D. d'H. N. xxxii. 359, et Enc. Méth. p. 803.
Arremon palmarum, Gray, Gen. Suppl. p. 16.
Phœnicophilus palmarum, Strickl. Cont. Orn. 1851, p. 104.
Dulus palmarum, Bp. R. Z. 1851, p. 78, et Note s. l. Tang. p. 29.
Dulus poliocephalus, Bp. R. et M. de Zool. 1851, p. 78, et Note s. l. Tang. p. 29. (♀.)
Phœnicophilus poliocephalus, Strickl. Cont. Orn. 1851, p. 104 (♀).

♂ flavescenti-olivaceus : cervice postica et corpore subtus cinereis : gutture toto et abdomine medio albis : pileo nigerrimo ; maculis utrinque, alia in fronte, alia supra oculum et alia sub oculo, niveis : rostro nigro. ♀. pileo plumbeo ; gutture fere omnino cinereo.

Long. tota 7·5, alæ 3·7, caudæ 3·0.
Hab. Island of S. Domingo.
Mus. Brit., Paris.

Genus XI. Buarremon.

Buarremon, Bp. Consp. p. 483.
Chrysopoga, Bp. Consp. p. 480.
Pipilopsis, Bp. Consp. p. 485.

Rostrum rectum, plus minusve elongatum, conicum ; apice vix dentata : alæ longiores, remigibus quarta, quinta et sexta longissimis : cauda elongata et multum rotundata : ptilosis olivascens : sexus similes.

a. Buarremon.

1. Buarremon torquatus.

Embernagra torquata, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 34.
Arremon affinis, d'Orb. Voy. p. 282.
Buarremon torquata, Bp. Consp. p. 483.

Clare olivascens: capite nigro, tænia verticali et cervicis lateribus cinereis : superciliis ab oculo incipientibus et corpore subtus albis :

pectore nigro torquato : lateribus et crisso viridescenti-olivaceis ; cauda cinerea, viridescenti-olivaceo limbata : rostro nigro : pedibus clare brunneis.

Long. tota 7·0, alæ 3·1, caudæ 2·9.
Hab. Bolivia, prov. Yungas (*d'Orb.*).
Mus. Parisiensi.

This bird is very like the *B. assimilis* so common in Bogota collections, but distinguishable by its black collar and white supercilia.

2. Buarremon phæopleurus, sp. nov.

Clare olivascens : capite nigro, tænia verticali et lateribus cervicis cinereis : superciliis a fronte incipientibus et corpore subtus albis : hoc nigro torquato : ventris lateribus et crisso brunnescentibus : cauda brunnea, olivaceo tincta : rostro nigro : pedibus clare brunneis.

Long. tota 7·2, alæ 3·2, caudæ 2·8.
Hab. Venezuela, Caraccas (*Levraud*).
Mus. Paris.

I have had a specimen of this bird in my possession for some time, but only lately discovered its distinctness from the preceding species, on comparing them together at the Jardin des Plantes. The Venezuelan form may be distinguished by the brown colour on the flanks and crissum, the brownish olive tail, and the commencement of the supercilia from the front. The examples of this *Buarremon* at Paris were sent to the Museum from Caraccas by M. Levraud.

3. Buarremon assimilis.

Tanagra assimilis, Boiss. Rev. Zool. 1840, p. 67.
Arremon assimilis, Gray, Gen. p. 361.
Buarremon assimilis, Bp. Consp. p. 484.

Olivaceus ; pileo nigro : capitis vittis tribus cum cervice postica et laterali cinereis : subtus albus, lateribus et ventre imo crissoque cinerascenti-olivaceis : rostro nigro : pedibus brunneis.

Long. tota 7·0, alæ 3·3, caudæ 3·3.
Hab. Bogota ; Western declivity of Andes near Quito (*Jameson*).
Mus. Paris., Brit.

4. Buarremon virenticeps.

Fringilla quadrivittata, Licht. in Mus. Berol.
Buarremon virenticeps, Bp. Compt. Rend. Oct. 22, 1855.

Similis Buarremoni assimili *sed capitis striis et cervice tota olivascentibus, dorso concoloribus : rostro nigro : subtus magis cinereus.*

Hab. Mexico.
Mus. Berol.

5. Buarremon brunneinuchus.

Embernagra brunneinucha, Lafr. R. Z. 1839, p. 97 ; Boiss. R. Z. 1840, p. 68 ; Gray, Gen. p. 361.

Arremon frontalis, Tsch. Wiegm. Arch. 1844, p. 239 et F. P. p. 213.

Buarremon brunneinucha, Bp. Consp. p. 484.

Buarremon xanthogenys, Cab. Mus. Hein. p. 141.

Olivaceus: alis caudaque brunnescentioribus: pileo postico et nucha castaneis, striga utrinque cinnamomea: fronte et lateribus capitis nigris, illa albo trimaculata: subtus albus, nigro torquatus: lateribus et ventre imo cinereis, olivaceo indutis: rostro nigro.

Long. tota 7·0, alæ 3·2, caudæ 3·2.

Hab. Mexico (*Lafr.*); Guatimala; Bogota; East Peru (*Tsch.*); Venezuela, Caraccas.

Mus. Brit., Paris.

I have seen the type of *B. xanthogenys* in Herr Heine's beautiful collection of birds at Halberstadt. I think it is only an accidental variety of the *B. brunneinuchus*, because other examples from the same locality—Caraccas—seem perfectly identical with New Grenadian specimens.

b. Chrysopoga.

6. Buarremon chrysopogon.

Zonotrichia ? aureigula, Bp. M. S.

Atlapetes chrysopogon, Bp. in Mus. Paris.

Chrysopoga typica, Bp. Consp. p. 480.

Brunnescenti-griseus, subtus dilutior, ventre medio cinereo-albescentiore: capite nigro, vitta mediali alba: gutture flavo: rostro nigro, pedibus brunneis.

Hab. California ?

Mus. Parisiensi.

This bird, of which I have only seen the specimen in the Paris Museum, resembles the better known *C. albinuchus*, but has only the throat, and not the whole under-surface, yellow.

7. Buarremon albinuchus.

Embernagra albinucha, d'Orb. et Lafr. R. Z. 1838, p. 165; Gray, Gen. p. 361.

Buarremon albinucha, Bp. Consp. p. 484.

Atlapetes albinucha, Cab. M. H. p. 140.

Embernagra mexicana, Less. R. Z. 1849, p. 42 ?

Supra cinerascenti-olivaceus; capite nigro, vitta mediali alba: subtus flava, lateribus et crisso olivascentibus: rostro nigro.

Long. tota 6·5, alæ 3·0, caudæ 3·2.

Hab. Cartagena (*Candé*).

Mus. Paris.

8. Buarremon gutturalis.

Arremon gutturalis, Lafr. R. Z. 1842, p. 97; Gray, Gen. p. 361.

Buarremon gutturalis, Bp. Consp. p. 484.

Olivascenti-fuscus: capite nigro, vitta mediali flavescenti-alba: subtus grisescenti-alba, gutture flavo: rostro nigro.

Long. tota 6·5, alæ 3·1, caudæ 3·4.

Hab. New Grenada, Bogota.

Mus. Lafresnayano.

c. Carenochrous.

9. Buarremon latinuchus.

Arremon rufinucha, Tsch. Consp. Av. in Wiegm. Arch. 1844, p. 289; Tsch. F. P. p. 212 ?

Buarremon latinuchus, Du Bus, Bull. Ac. Brux. xxii. p. 154.

Schistaceus: pileo toto et cervice postica castaneis: lateribus capitis nigris: subtus flavus, lateribus et crisso cinerascentibus.

Long. tota 6·5, alæ 3·1, caudæ 3·3.

Hab. Vicinity of Quito (*Jameson*); Eastern wood-region of Peru (*Tsch.*).

Mus. Jard.

M. DuBus considers this bird, which has been generally considered as the same as the Bolivian *rufinuchus,* distinct from that species. The principal difference apparent from d'Orbigny's figure seems to be the want of the lateral gular stripes, but I have seen indications of these in some Quitian specimens.

10. Buarremon rufinuchus.

Embernagra rufinucha, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1839, p. 35; *Arremon rufinucha,* d'Orb. Voy. p. 283. pl. 27. fig. 2; Gray, Gen. p. 361; *Buarremon rufinucha,* Bp. Consp. p. 484 (*partim*).

Supra nigra; subtus flava, lateribus et crisso olivascentibus: macula ante oculos sulfurascente: pileo et nucha cinnomomeo-rufis: lateribus capitis et vitta angusta utrinque ad latera gutturis nigris: rostro nigro.

Long. tota 6·3, alæ 3·0, caudæ 3·0 (*d'Orb.*).

Hab. Bolivia, (*d'Orb.* et *Bridges*).

Mus. Brit., Parisiensi.

11. Buarremon leucopterus.

Arremon leucopterus, Jard. Edinb. N. Phil. Journ. n. s. iii. p. 92.

Buarremon leucopterus, Sclater, P. Z. S. 1855, p. 214, pl. 109.

Schistacescenti-niger, alis caudaque obscurioribus: capitis lateribus nigris: pileo ochraceo-rufo: macula utrinque ante-oculari et speculo alari cum corpore toto subtus albis, lateribus in cinereum trahentibus: tectricibus alarum inferioribus albis: rostro pedibusque nigris.

Long. tota 6·2, alæ 2·8, caudæ 2·7.

Hab. Western slope of the Andes near Quito (*Jameson*).

Mus. Gul. Jardine, Baronetti.

12. Buarremon pallidinuchus.

Arremon pallidinucha, Boiss. R. Z. 1840, p. 69; Gray, Gen. p. 361; Bp. Consp. p. 484; Less. Descr. d. Mamm. et Ois. p. 351.

Buarremon pallidinucha, Bp. Consp. p. 484.

Atlapetes pallidinucha, Cab. Mus. Hein. p. 140.

Olivascenti-fuscus, alis caudaque nigricantibus : capite nigro : vitta lata a fronte ad nucham antice latiore cinnamomea, postice angustiore albescente : subtus flavus, lateribus et crisso olivascentibus.

Long. 6·3, alæ 3·2, caudæ 3·1.

Hab. Bogota.

Mus. Brit.

13. Buarremon albifrenatus.

Arremon albifrenatus, Boiss. R. Z. 1840, p. 68 ; Gray, Gen. p. 361.

Buarremon albifrenatus, Bp. Consp. p. 484.

Arremon mystacalis, Sclater, R. et Mag. de Zool. 1852, p. 8; Cont. Orn. 1852, pl. 99, p. 131.

Olivaceus : pileo castaneo : fronte et lateribus capitis nigris : subtus flavus : gutture et mystace utrinque ab hoc linea nigra divisa albis : rostro nigro : pedibus rubellis.

Long. tota 6·3, alæ 3·0, caudæ 3·0.

Hab. Bogota.

Mus. Paris., Brit.

14. Buarremon schistaceus.

Tanagra (*Arremon*) *schistaceus*, Boiss. R. Z. 1840, p. 69.

Arremon schistaceus, Gray, Gen. p. 361.

Buarremon schistaceus, Bp. Consp. p. 484.

Atlapetes schistaceus, Cab. M. H. p. 140.

Nigricanti-schistaceus, subtus pallidior, albescentior ; alis caudaque nigris, speculo alari albo : pileo intense castaneo : gutture albido ; capitis lateribus et stria utrinque gutturali nigris.

Long. tota 6·5, alæ 3·0, caudæ 3·1.

Hab. Bogota.

Mus. Brit.

d. Pipilopsis.

15. Buarremon semirufus.

Tanagra (*Arremon*) *semirufus*, Boiss. R. Z. 1840, p. 69.

Arremon semirufus, Gray, Gen. p. 361.

Pipilopsis semirufus, Bp. Consp. p. 485 ; Cab. M. H. p. 139.

Olivaceus ; capite et collo undique toto cum pectore cinnamomeis : abdomine flavo : lateribus olivascentibus : rostro plumbeo : pedibus rubellis.

Long. tota 6·5, alæ 3·0, caudæ 3·2.

Hab. Bogota ; Cumana (*Dyson*).

Mus. Brit., Paris.

16. Buarremon fulviceps.

Emberiza fulviceps, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 77 ; d'Orb. Voy. p. 362. pl. 46. fig. 2.

Pipilopsis fulviceps, Bp. Consp. p. 485 ; Cab. Mus. Hein. p. 138.

Olivaceo-viridis : capite et stria laterali gutturis castaneis : macula utrinque ante-oculari et corpore subtus ad medium ventrem flavis : lateribus olivaceo-viridibus.

Hab. Bolivia, prov. Mizque (*d'Orb.*).

Mus. Parisiensi.

This bird very closely resembles the *B. semirufus* in colour, but has the lores, middle of the throat, rictal striæ and breast yellow, the chestnut occupying the sides of the throat and dividing it from the striæ. The bill is rather more finch-like than in the former species.

17. Buarremon personatus.

Arremon personatus, Cab. in Schomb. Reise, iii. 678.

Pipilopsis personatus, Bp. Consp. p. 485.

Pyrrhocoma personata, Cab. M. H. p. 138.

Fusco-cinereus : dorso subolivascente : subtus flavus : pileo, gula collique lateribus rufis.

Hab. British Guiana, Roraima Mountains (*Schomb.*).

Mus. Berolinensi.

Genus XII. Chlorospingus.

Chlorospingus, Cab. Mus. Hein. p. 139.

Hemispingus, Cab. l. c.

Rostrum Buarremonis *sed tenuius, debilius, dente finali pæne obsoleto : alæ longiusculæ, remigibus tertia, quarta et quinta æqualibus : cauda elongata et rotundata : ptilosis olivacea et schistacea : sexus similes.*

This group forms a series, the first members of which are closely allied to the *Buarremones*, and have the bill nearly as strong, and of the same form as in that genus. But they grow gradually more tenuirostral, and ultimately show striking affinities towards *Trichas* and other forms of the *Mniotiltinæ*, with which they might at first sight be easily confounded.

a. Chlorospingus.

1. Chlorospingus ophthalmicus.

Arremon ophthalmicus, Du Bus, Bull. Ac. Brux. xiv. pt. 2. p. 107 (1847) ; R. Z. 1848, p. 247 ; Gray's Gen. iii. Supp. p. 16.

Chlorospingus leucophrys, Cab. Mus. Hein. p. 139.

Pipilopsis albitemporalis, Bp. Consp. p. 485 (*partim*).

Supra brunnescenti-olivaceus, pileo et lateribus capitis obscure nigricanti-brunneis : palpebris et macula postoculari albis : loris, gula et abdomine medio albis : pectore, hypochondriis et crisso flavescenti-olivaceis.

Long. tota 5·25, alæ 2·75, caudæ 2·25.

Hab. Mexico, vic. of Jalapa (*Cab.*) ; Cordova (*Sallé*).

Mus. Bruxell., Berolin., H. E. Strickland.

2. Chlorospingus albitemporalis.

Tachyphonus albitemporalis, Lafr. R. Z. 1848, p. 12 ; Gray, Gen. Supp. p. 17 ; Bp. Consp. p. 237.

Chlorospingus ophthalmicus, Cab. Mus. Hein. p. 139 (note).

Chlorospingus albitemporalis, Sclater, P. Z. S. 1855, p. 155; List of Bog. B. p. 27.

Supra læte olivaceus: pileo et lateribus capitis nigricanti-brunneis: loris subobsolete fulvescentibus: pennulis oculum postice tangentibus albis: gutture pallide fulvescenti-albido, striis minutis nigris asperso: pectore aureo, fulvo tincto: abdomine medio pure albo; lateribus et crisso viridescenti-flavis.

Long. tota 5·2, alæ 2·75, caudæ 2·25.

Hab. Bogota (*Lafr.*); Venezuela (*Levraud*); Bolivia (*Bridges.*).

Mus. Britannico.

This South American species may be distinguished from the Mexican *C. ophthalmicus* by its rather brighter olive colour above, its lores and throat tinged with fulvous-brown (in the other bird these parts are nearly pure white), and the fulvous-yellow breast, which in *C. ophthalmicus* is greenish yellow like the sides.

3. Chlorospingus flavipectus.

Arremon flavipectus, Lafr. R. Z. 1840, p. 227; Gray, Gen. p. 361.

Tachyphonus flavipectus, Lafr. R. Z. 1848, p. 11; Bp. Consp. p. 237.

Pipilopsis flavipectus, Bp. Consp. p. 485.

Chlorospingus flavipectus, Cab. Mus. Hein. p. 139.

Olivaceus; pileo et cervice postica nigrescenti-cinereis, lateribus capitis saturatioribus, loris pallidioribus: gula albida, fulvescente tincta: abdomine viridescenti-flavo; ventre medio albo.

Long. tota 5·4, alæ 2·7, caudæ 2·6.

Hab. Bogota.

Mus. Brit., Paris., &c.

This is a very common species in Bogota collections.

4. Chlorospingus canigularis.

Tachyphonus canigularis, Lafr. R. Z. 1848, p. 11; Bp. Consp. p. 237; Gray, Gen. App. p. 17.

Pipilopsis canigularis, Bp. Consp. p. 485.

Chlorospingus canigularis, Cab. Mus. Hein. p. 139.

Hemispingus Veneris, Bp. Notes Orn. p. 22.

Similis C. flavipectori, *sed rostro breviore, maxilla alba nec nigra, gula cinereo-alba nec brunnescenti-alba, capite nigrescentiore.*

Long. alæ 2·9.

Hab. Bogota.

Mus. Paris.

Prince Bonaparte's *Hemispingus veneris*, of which the type is in the Paris Museum, seems to me to be the same as this bird. It is certainly very closely allied to the common *C. flavipectus*, but I have no doubt it is really a distinct species.

5. Chlorospingus olivaceus.

Poospiza ! olivacea, Bp. Consp. Av. p. 473.

Chlorospingus olivaceus, Sclater, Tan. Cat. Sp. p. 6.

Brunnescenti-olivaceus; capite nigricante; vertice et nucha pallidioribus, cinerascentibus; macula postoculari candida; loris et lateribus cervicis griseis: subtus pallide flavus, gutture et ventre medio grisescenti-albis.

Hab. Central America ?

Mus. Paris.

This bird is of exactly the same cast of plumage as *C. flavipectus* and *canigularis*, but may be distinguished by the colouring of its head, which has a broad longitudinal paler band, and is darker, almost black, over the eyes and again beneath them, and by the white postocular spot. A specimen in my possession seems to be of Delattre's preparation, and agrees with that in the Paris Museum, upon which Prince Bonaparte established his *Poospiza olivacea*.

6. Chlorospingus flaviventris, sp. nov.

Olivaceus; capite cinereo, viridi paulum apparente; gûla albescenti-cinerea: abdomine toto flavo: rostro nigro, mandibulæ inferioris basi albescente.

Long. tota 5·5, alæ 2·5, caudæ 2·25.

Hab. Trinidad (*Mus. Jard.*); Bolivia ? (*Mus. H. E. S.*).

I have seen two specimens of this apparently unrecognized *Chlorospingus*, which agrees in form with the preceding species, but is distinguished by its wholly yellow abdomen. One of these specimens is in Sir William Jardine's possession, the other in the collection of the late Mr. H. E. Strickland.

7. Chlorospingus spodocephalus.

Chlorospingus spodocephalus, Bp. Notes Orn. p. 22.

Flavo-olivaceus, subtus aurantius: capite toto cinereo, gula dilutiore: rostro nigro: pedibus rubellis. (Bp.)

Hab. Nicaragua (*Delattre*).

Mus. —— ?

8. Chlorospingus flavigularis.

Pipilopsis flavigularis, Sclat. R. Z. 1852, p. 8; Cont. Orn. 1852, p. 131, pl. 98.

Olivaceus: gutture flavo: abdomine et mento cinereis; ventre medio albescentiore; crisso flavescente: rostro plumbeo, basi albo notata; pedibus plumbeis.

Long. tota 5·5, alæ 3·25.

Hab. Bogota.

Mus. Parisiensi.

I have never seen any specimen of this bird except the type in the Paris Museum. The bill resembles that of *C. flavipectus*, but is rather stronger.

b. Hemispingus.

9. Chlorospingus atripileus.

Arremon atripileus, Lafr. R. Z. 1842, p. 335; Gray, Gen. p. 361.

Pipilopsis atripileus, Bp. Consp. p. 485.
Chlorospingus atripileus, Sclater, Tan. Cat. Sp. p. 6.

Olivaceus; pileo nigro; superciliis longis a fronte ad nucham antice flavidis, postice albis: subtus dilutior; gutture, pectore et ventre medio sordide flavis.

Long. tota 5·9, alæ 2·8, caudæ 3·0.
Hab. Bogota; vicinity of Quito (*Prof. Jameson*).
Mus. Brit., Jardinii, &c.

10. Chlorospingus melanotis.

Chlorospingus melanotis, Sclater, P. Z. S. 1854, p. 158. pl. 68; 1855, p. 155.

Supra nigro-plumbeus, dorso imo brunnescentiore: alis caudaque brunnescentibus, illis penitus nigricantibus: loris et capitis lateribus cum regione auriculari nigris: subtus pallide ochraceo-rufus: mento summo nigricante; ventre medio dilutiore: rostro nigro: pedibus pallidis.

Long. tota 5·25, alæ 2·5, caudæ 2·25.
Hab. Bogota.
Mus. Brit.

This little species, of which there are two examples in the British Museum, both apparently Bogota skins, differs from all its congeners in the colouring of the lower surface of the body, which is of a pale reddish buff, growing much whiter in the middle of the belly. Above the plumage is lead-coloured, with a greenish tinge superinduced towards the lower part of the back. The wings and tail are brown, with slight greenish edgings; the ear-coverts and whole side of the face are black. In the second specimen, apparently not so mature, there is a light-coloured spot on the front, just above the nostrils. The bill of this species agrees with that of *Chlorospingus atripileus* in size, but is rather straighter in form, as in *C. verticalis*.

11. Chlorospingus rubrirostris.

Arremon rubrirostris, Lafr. R. Z. 1840, p. 227; Gray, Gen. p. 361.
Nemosia rubrirostris, Lafr. R. Z. 1848, p. 11.
Pipilopsis rubrirostris, Bp. Consp. p. 485.
Hemispingus rubrirostris, Cab. Mus. Hein. p. 138.
Chlorospingus rubrirostris, Sclater, P. Z. S. 1855, p. 155.

Olivaceus, capite cinerascentiore: gutture toto pallide cinereo: abdomine flavo, lateribus olivascentibus: rostro rubro: pedibus pallidis.

Long. tota 5·7, alæ 3·1, caudæ 2·7.
Hab. Bogota.
Mus. Brit., &c.

12. Chlorospingus superciliaris.

Arremon superciliaris, Lafr. R. Z. 1840, p. 227; Gray, Gen. p. 361.
Nemosia superciliaris, Lafr. R. Z. 1848, p. 227.
Pipilopsis superciliaris, Bp. Consp. p. 485.

Hemispingus superciliaris, Cab. Mus. Hein. p. 138.
Chlorospingus superciliaris, Sclater, P. Z. S. 1855, p. 155.
Hylophilus leucophrys, Lafr. R. Z. 1840, p. 227.

Olivaceus : pileo antico cinereo : fronte et superciliis cum macula suboculari albidis : subtus flavus : rostro plumbescente : pedibus pallide brunneis.

Long. tota 5·2, alæ 2·7, caudæ 2·5.
Hab. Bogota.
Mus. Brit., &c.

13. Chlorospingus xanthophrys.

Chlorospingus xanthophrys, Sclater, P. Z. S. 1856, p. 30.

Brunnescenti-olivaceus : loris nigricantibus : superciliis curtis a fronte ad oculum summum et corpore mediali subtus flavis : rostro nigro : pedibus pallide brunneis.

Long. tota 4·7, alæ 2·5, caudæ 2·4.
Hab. Bogota.
Mus. P. L. S.

I possess a single example of this small *Chlorospingus*. It is closely allied to *C. superciliaris*, but is inferior in size, has short yellow instead of longer whitish supercilia, and the body beneath only yellow quite in the middle, the sides being olive. Its olive plumage is also of a more brownish tinge, and the feet are pale brown or flesh-coloured, not plumbeous.

14. Chlorospingus verticalis.

Nemosia verticalis, Lafr. R. Z. 1840, p. 227 ; Bp. Consp. p. 236 ; Gray, Gen. p. 366.
Chlorospingus verticalis, Sclater, P. Z. S. 1855, p. 155.

Cinereus, subtus dilutior, ventre medio albo : alis caudaque nigricantibus : capite toto cum gula nigris ; vitta lata a fronte ad nucham fumoso-brunnea : rostro et pedibus nigris.

Long. tota 5·0, alæ 2·8, caudæ 2·8.
Hab. Bogota.
Mus. Brit., Berol.

15. Chlorospingus lichtensteini.

Nemosia verticalis, Licht. in Mus. Berol (*partim*).
Chlorospingus lichtensteini, Sclater, P. Z. S. 1856, p. 30.

Supra cinereus, alis caudaque nigricantibus : pileo atro, vitta mediali verticis ochracescenti-albida : subtus albidus, lateribus cinerascentibus.

Long. tota 6·3, alæ 3·0, caudæ 3·1.
Hab. New Grenada.
Mus. Berolinensi.

One specimen of this bird, which I observed in the Berlin Museum, was marked as having been received from M. Boissoneau of Paris, along with examples of the preceding species, from which it appeared not to have been distinguished. It is closely allied to that

bird, but may be recognized by its rather larger size, and the black colouring of the head not extending round to the throat, as in *C. verticalis*, but the whole under surface being cinereous, growing white in the middle.

April 22, 1856.

Dr. Gray, F.R.S., in the Chair.

The following papers were read:—

1. On Two New Species of Birds (Nestor notabilis and Spatula variegata) from the Collection of Walter Mantell, Esq. By John Gould, F.R.S.

Mr. Gould brought before the notice of the meeting two species of birds from the New Zealand group of islands which he conceived to be new to science; one, a magnificent Parrot, pertaining to the genus *Nestor*; the other, an equally interesting species of Duck, belonging to the genus *Spatula*. Both these birds had been placed in his hands for the purpose of describing, by Walter Mantell, Esq.

The *Nestor*, which is called "*Keá*" by the natives, is by far the largest of the three species of the form now known, and is certainly one of the most interesting of the ornithological novelties lately discovered. It not only differs from its near allies *N. hypopolius* and *N. productus* in its greater size, but in the greater uniformity of its colouring, in the yellow toothed markings of the inner webs of the primaries and secondaries, and in the orange toothed markings of the inner webs of the tail feathers; the yellow colouring of the under mandible is another of the peculiarities by which it may be distinguished.

Mr. Mantell informed Mr. Gould that he first heard of the existence of the *Keá* about eight years ago from some old natives whom he was questioning as to the birds of the Middle Island. They said the *Keá* somewhat resembled the *Káka* (*Nestor hypopolius*), but that, unlike that bird, it was green, and added, that it used formerly to come to the coast in severe winters, but that they had not seen it lately. Mr. Mantell has only obtained the two specimens exhibited of this fine bird; they were shot in the Murihiku country, and for one of them he was indebted to Mr. John Lemon of Murihiku.

The following is a description of this new species, for which Mr. Gould proposes the name of

Nestor notabilis.

General hue olive-green; each feather tipped in a crescentic form with brown, and having a fine line of the same colour down the shaft; feathers of the lower part of the back and the upper tail-coverts washed near the tip with fiery orange-red; primaries brown,

margined at the base with greenish-blue; tail dull green; inner webs of the lateral feathers brown toothed on their basal two-thirds with orange-yellow; all the tail-feathers crossed near the extremity with an indistinct band of brown, and tipped with olive-brown; feathers of the axillæ fine scarlet; under wing-coverts scarlet tipped with brown, the greater ones banded with brown and with yellow stained with scarlet; basal portion of the primaries and secondaries largely toothed with fine yellow, which is not perceptible on the upper surface unless the wings are very widely spread; upper mandible dark horn colour; under mandible yellow, becoming richer towards the point; feet nearly yellowish-olive.

Total length, 18 inches; bill, $2\frac{1}{2}$; wing, $12\frac{1}{2}$; tail, $7\frac{1}{2}$; tarsi, $1\frac{5}{8}$.

Hab. The Middle Island, New Zealand.

The Shoveller forms the fifth species known of the genus *Spatula*, and is distinguished from the other members by the dark crescentic markings which decorate the feathers of the breast, sides of the neck and scapularies. The species of this well-defined form previously described are *Spatula clypeata*, which inhabits Europe, North America, India and China; *S. rhynchotis*, which is found throughout Australia; *S. maculatus*, the habitat of which is Chili, and probably the neighbouring countries of Peru and Bolivia; and *S. capensis* of South Africa. For the fifth, or New Zealand species, Mr. Gould proposes the name of

SPATULA VARIEGATA.

Crown of the head and space surrounding the base of the bill brownish-black; on either side of the face between the bill and the eye a lunar-shaped streak of white, bounded posteriorly with speckles of black; cheeks, sides and back of the neck dark grey with greenish reflexions; front of the neck dark brown, each feather narrowly fringed with white; back brownish-black, the feathers of the upper part margined with greyish-brown; feathers of the breast, sides of lower part of the neck, the mantle and scapularies white, with a crescent of blackish-brown near the tip; under surface dark chestnut blotched with black; flanks lighter chestnut barred with black; lesser wing-coverts dull greenish-blue; greater wing-coverts dark brown, fringed at the tip with white; first elongated scapularies blue-grey, with a conspicuous line of white on the outer web next the shaft, bounded posteriorly with black; the next blue-grey, margined on the inner web with white; the remainder greenish-black, with a lengthened lanceolate mark of dull or brownish-white down the centre of the apical half; speculum deep green; primaries dark brown with lighter shafts; under surface of the shoulder white; on each side of the vent a patch of white freckled with black; under tail-coverts black, tinged with shining green; tail dark brown; irides bright yellow; bill dark purplish-black, the under mandible clouded with yellow; legs and feet yellow.

Total length, $16\frac{1}{2}$ inches; bill, 3; wing, $9\frac{1}{4}$; tail, $4\frac{1}{2}$; tarsi, $1\frac{5}{8}$.

Hab. New Zealand.

Remark.—This is by far the handsomest species of the genus.

2. Descriptions of Two New Species of true Cuckoos (Genus Cuculus as restricted).

By John Gould, F.R.S.

Cuculus strenuus, Gould.

Crown of the head, back of the neck, cheeks and chin dark grey; all the upper surface, including the upper tail-coverts, olive-brown, with shining purplish reflexions; tail olive-brown, crossed by four bands of darker brown, and tipped with buffy white; throat white, passing into the chestnut, which forms a band across the lower part of the chest, each feather also has a double mark of black and chestnut down the centre; breast and upper part of the abdomen white, crossed by semicrescentic bands of very dark brown bordered with pale chestnut-red; edge of the shoulder, lower part of the abdomen, vent and under tail-coverts white; upper mandible olive; lower mandible yellow; irides and feet rich yellow.

Total length, 15½ inches; bill, 1¼; wing, 9⅜; tail, 9.

Hab. Manilla.

Remark.—In outward appearance this species so nearly resembles the *Cuculus sparverioïdes*, that one description would nearly serve for both; but in size it so far exceeds that bird, as well as every other true Cuckoo I have yet seen, that I have no doubt of its being distinct, and I have therefore assigned it a separate specific appellation, and have selected the term *strenuus*, as indicative of its great size and strength.

The specimen from which the above description was taken now forms part of the collection at the British Museum.

Cuculus hyperythrus, Gould.

Crown of the head, all the upper surface and wings dark slate-grey; spurious wings white; lores, ear-coverts, moustache, and a spot on the chin black; throat white, with a fine line of brown down the shaft of each feather; under surface dull rusty-red; tail grey, crossed by two narrow irregular bands of black bordered with brown, and by a very broad band of black near the extremity, the tip being reddish-brown; upper mandible black; lower mandible and feet yellow.

Total length, 11½ inches; bill, 1⅛; wing, 8; tail, 6½.

Hab. China.

Remark.—In size this species is rather less than the *Cuculus canorus* of Europe, and is altogether less elegant in its general contour. The rufous colouring of the breast and under surface, and the black marks on the cheeks and throat, characters seldom seen among the *Cuculidæ*, are the features by which it may be distinguished.

The specimen described, like the preceding, is deposited in the National Collection.

3. Note on Buglodytes albicilius, *Bp.* By Philip Lutley Sclater.

Prince Bonaparte, in his "*Notes Ornithologiques sur les collections rapportées par M. A. Delattre*," read before the French Academy in 1853, has instituted a new genus, *Buglodytes*, allied to *Campylorhynchus*, Spix, and described but one species as belonging to it under the title of *B. albicilius*.

Having had an opportunity of examining this type (which is now in the British Museum), I have to state, that I believe that it is the same bird as was long ago named by Mr. Swainson "*Furnarius griseus*," and is the type of Cabanis' genus *Heleodytes*. It has, however, nothing to do with *Furnarius*, and seems, as Prince Bonaparte has remarked, intermediate between *Campylorhynchus* and *Donacobius*. These forms appear to connect the American *Miminæ* very closely with the Wrens, and to render the position of the former group among the true Thrushes rather doubtful. The synonymy of *Buglodytes albicilius* will stand as follows:—

Furnarius griseus, Sw. An. in Men. p. 325.

Campylorhynchus griseus, Schomb. Reise in Brit. Guian. iii. p. 674.

Heleodytes griseus, Cab. Mus. Hein. p. 80; G. R. Gray, List of Gen. and Subgen. p. 26, no. 404.

Buglodytes albicilius, Bp. Notes Orn. p. 26; G. R. Gray, List of Gen. and Subgen. p. 32, no. 499.

My specimen of this bird is from Trinidad. Schomburgk's were collected in British Guiana. The examples upon which the name *Buglodytes albicilius* was founded were obtained by MM. Verreaux's collector in the vicinity of Santa Martha, on the north coast of New Grenada.

From Trinidad also I possess a bird which seems to be the *Heleodytes minor* of Cabanis. It is so similar to *Heleodytes griseus* in every respect except in size, that I question whether it may not be a variety of age or sex of that species.

4. On some New or Imperfectly-known Species of Synallaxis. By Philip Lutley Sclater.

1. Synallaxis ruficapilla.

Synallaxis ruficapilla, Vieill. N. D. d'H. N. xxxii. p. 810; Enc. Méth. p. 622; Gal. Ois. pl. 174.

Sphenura ruficeps, Licht. Doubl. p. 42.

Synallaxis cinereus, Max. Beitr. iii. 685.

Synallaxis olivascens, Eyton, Cont. Orn. 1851, p. 150.

Olivascenti-brunnea, pileo toto cum nucha, alis extus et cauda rufis: striga superciliari flavida: loris et regione auriculari

nigricanti-cinereis: subtus albicanti-cinerea, hypochondriis et crisso brunnescentibus, ventre medio albicantiore cinereo.

Long. tota 6·0, alæ 2·1, caudæ 3·0.

Hab. Brazil.

2. Synallaxis Spixi, sp. nov.

Parulus ruficeps, Spix, Av. Bras. i. pl. 86, p. 85 (♂).
Synallaxis ruficapilla, Reich. Handb. d. Sp. Orn. p. 158.

Supra olivaceo-brunnea, pileo et alis extus rufis, cauda dorso concolore sed minus olivascente: capitis lateribus et corpore subtus cinereis: gutturis pennis intus nigris, extus argentescenti-albis: ventre medio albo: lateribus et crisso brunnescente tinctis.

Long. tota 6·5, alæ 2·1, caudæ 3·5.

Hab. Brazil.

These two *Synallaxes*, which appear to me to be very distinct birds, have always hitherto been confounded together. Specimens of *S. Spixi* are rather the most abundant in collections, and are usually marked *ruficapilla* or *ruficeps*, names both originally applied to the former species.

The *S. Spixi* may be distinguished by its brown tail, nearly the same colour as the back, not rufous like the head, as is the case in *S. ruficapilla;* by having no traces of yellowish supercilia, the whole sides of the head being uniform grey like the breast, and by its smaller and shorter bill, and longer, narrower and more pointed tail-feathers. The throat-feathers are black, finely edged with silvery white, which gives an appearance of a black patch on the throat when the plumage is slightly raised. In *S. ruficapilla* the throat and breast are uniform cineraceous white, and there is more olive-brown on the flanks than in the other species.

Another bird, very closely allied to these two, is *S. elegans*, which I have lately described in these Proceedings*, from Bogota. *S. pallida*, Max., is also very similar to *S. ruficapilla*, but has conspicuous white supercilia, and the under parts pale brown. *S. albescens*, Temminck, (which has been also united to *S. ruficapilla* by Prince Bonaparte and other writers) is likewise different, and more closely resembles *S. Spixi*, from which, however, it is to be distinguished by having only the back part of the head rufous. A sixth nearly allied species is the Bolivian *S. Azaræ*, d'Orb.

3. Synallaxis caniceps, sp. nov.

S. dorso, alis caudaque cinnamomeo-rufis: capite toto cervicequegrisescentibus, pileo albescentiore: subtus lactescenti-alba: rostro et pedibus pallidis: remigibus intus nigricantibus: rostro elongato, parum incurvo, flavicante: pedibus pallide brunneis.

Long. tota 5·5, alæ 2·3, caudæ 2·1.

Hab. Brazil.

Mr. Eyton was obliging enough to send me his specimens of

* P. Z. S. 1856, p. 25.

Synallaxes for examination a short time since, and most liberally offered to allow me to describe any I might think new. A single example of the present species which was in the collection seems different from any previously named. I have therefore taken advantage of Mr. Eyton's kindness to give characters to it under the specific title of *S. caniceps*. There is no other member of the genus that I am acquainted with that much resembles it in colouring. The rectrices are ten in number.

Mr. Eyton's *S. modesta*, described in 'Contributions to Ornithology' (1851, p. 159), of which the types are in his collection, is one of a small group of species from Bolivia, Chili and Patagonia, consisting of *S. flavigularis*, Gould, *S. sordida*, Less. and *S. brunnea*, Gould; but I am doubtful whether all the four are really specifically distinct.

Professor Reichenbach, in his '*Handbuch der Speciellen Ornithologie*,' has chopped up the genus *Synallaxis* into seven or eight different sections. Some of these ought no doubt to be adopted, but the Professor has unfortunately referred some of the most closely allied species to different sections, and I think it better therefore to continue the employment of the old name for the whole of them, until a more accurate revision and arrangement of the whole of the species can be made.

5. On the Position of the Genus Proserpina in the System, and a Description of its Dentition.

By Dr. J. E. Gray, F.R.S., P.B.S., etc.

In the Synopsis of the British Museum for 1840 (p. 129), I mention amongst the genera of *Helicidæ* which have a thin edge to the mouth of the shell a genus named *Proserpina*. It is peculiar amongst land shells for having a series of laminæ revolving in the throat, and the outer surface of the shell polished. This genus has been adopted by Sowerby, Pfeiffer, Jonas, and most other authors.

Mr. Duclos referred the species to the genus *Carocolla*; Adams, Pfeiffer, and Jonas in some of their earlier works having considered them as species of the extended genus *Helix*.

M. d'Orbigny in his work on the Mollusca of Cuba, renamed the genus *Odostoma*, and referred it with doubt to the family *Cyclostomidæ*.

Though the shell is far from uncommon in the West Indies, Cuba, and some parts of the American continent, the animal escaped the researches of Guilding, Adams, Chitty, d'Orbigny and other observers. In 1854, when in Berne, my friend, Dr. Shuttleworth, informed me it had two subulate tentacles, with the eyes sessile on the outer side of their base; and Mr. Bland has mentioned that the animal has no operculum, and absorbs the septa between the upper whorls of the spire, like some species of the genera *Neritina*, *Auricula*, *Helicina*, *Stomastoma*, and a few *Helices*.

These observations induced me to place the family in my most modern arrangement near *Oligyradæ*.

Mr. Cuming has kindly brought to me a specimen of the genus, with its animal, which Mr. Salle discovered under leaves in the mountains of Mexico, some distance from the sea.

The species is allied to *Proserpina eolina*, but differs in the spire being much more convex; I hence propose to call it *P. Salleana*. Like *P. eolina*, it differs from all the others I am acquainted with in the upper surface of the whorls being rugose, and only smooth on the lower surface, as is the case with many *Naninæ*, showing, if the smoothness and polish of the surface depend on the extension of the mantle of the animal, the extension in this kind is confined to the under surface of the shell, as is proved by the examination of the animal itself.

This being the case, I am inclined to form this shell and *P. eolina* into a new genus under the name of *Ceres*, characterized by the roughness of the upper surface and the non-dilatation of the front edge of the mantle, which is believed to be dilated in all the other species of the true *Proserpinæ*.

It will be seen that most authors have placed these Mollusca either with *Helices* or *Oligyræ*, and I was much inclined to follow their example, even after a cursory examination of the animal itself. It has much the external appearance of the animals of the lateral family, having a short, broad, annulated muzzle with a triangular mouth, two subulate lateral tentacles, with the eyes sessile on the outer side of their base; a moderately short foot, truncated in front, acute and keeled above-behind, without any appearance of beards or any membranous ridge on the sides; the shell is slightly sunk into a cavity in the front of the upper keeled part of the foot, as if it possessed an operculum; the edge of the mantle is free from the back of the neck, producing an open nuchal respiratory cavity like *Cyclostoma* and *Oligyra*, and other operculated and unisexual land shells.

When the animal is more closely examined, it is found that there is no operculum, the concavity on the front part of the foot into which the under surface of the shell fits is furnished with a continuation of the mantle, having a raised crumpled edge evidently capable of being expanded over the under surface of the shell, and explaining the polished surface of this part of the shell;—a structure I have not observed in any other Mollusca. This extension of the mantle might be mistaken for the mantle of the operculum, which, as far as I know, is always quite distinct and separate from the mantle of the shell, but in this animal the fringed edge of the concavity is in direct continuity with the true or shell-forming mantle, both at the columnar and the outer external angle of the mouth of the shell.

The teeth of the lingual membrane are unlike those of *Cyclostoma* and *Helicina*, which agree with those of *Littorina* and other marine Rostriferous univalves. The teeth resemble those of the typical *Riphidoglossæ*, as in the families *Neritinidæ*, *Turbonidæ*, *Trochidæ*, *Roliolidæ*, &c. All the Mollusca hitherto known belonging to these

families are aquatic, and all but the genera *Neritina* and *Navicellus* are truly marine. They all have well-developed gills, and the greater part have a more or less developed lateral membrane on each side of the body, furnished with three or more beards on its lower surface, and almost all have the eyes placed on a more or less distinct peduncle at the outer side of the base of the tentacles, all characters absent in *Proserpina*. But notwithstanding all these peculiarities, I am inclined to arrange the family *Proserpinidæ* (including *Proserpina* and *Ceres*) in the order *Scutibranchia*, section *Raphidoglossa*, and to form a suborder for it under the name *Pseudobranchia*, in the same manner as the families *Cyclophoridæ* and *Helicinidæ* form the suborder *Phaneropneumona* of the order *Rostriferæ*.

It may be thus characterized:—

Pseudobranchia. Gills vascular, branched on the inner surface of the mantle; body and shell spiral; eyes sessile; operculum none.

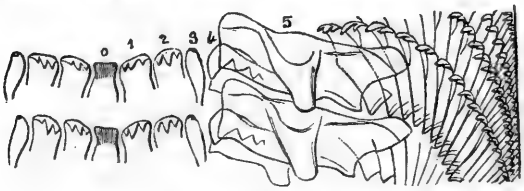
The open respiratory cavity, the separate sexes and the form of the teeth, preclude its being arranged with the *Pulmonobranchiata*, with which it has been hitherto placed on account of its terrestrial mode of life; but as our knowledge of the structure of Mollusca extends, it is found that some *Pulmonobranchiata* are marine, as *Siphonariadæ* and *Amphibolidæ*, in the same manner as the terrestrial *Cyclophoridæ* and *Oligyradæ* are properly arranged in the marine and fluviatile *Rostrifera*. The *Proserpinadæ* might be arranged with the latter families, as was proposed before the teeth were known; but there can be little doubt that the animals which have the very numerous rows of such peculiar-formed teeth as the *Raphidoglossa*, must have very different habits and modes of life from those which have only seven rows of nearly uniform teeth, of the *Tænioglossa* or Rostriferous Mollusca.

And though the animal of the *Proserpinadæ* differs from the more typical *Raphidoglossæ*, yet all the peculiarities, except the vascular organs of respiration and terrestrial mode of life, are found in some of the genera of the suborder. Thus the eyes of *Fissurella* are sessile on the outer side of the base of the tentacle; the whole family of *Neritinidæ* and some of the genera of *Fissurelladæ* are destitute of any lateral fringe or beards; so that though these organs are the usual characteristic of these animals, their absence is no proof that the family does not belong to the group, especially when we consider that the teeth have all the peculiarities, indeed, are perfectly typical in form with this well-marked and very peculiar tribe, and very probably it may prove that many terrestrial Mollusca may properly belong to the order.

The lingual membrane elongate, broad, with numerous longitudinal series of close-set teeth; the central teeth in 11 longitudinal series, 5. 1. 5. the two outer teeth on each side being large and irregular; the lateral teeth are numerous, crowded, compressed, linear, nearly equal, transparent, with recurved tip.

In *Ceres Salleana* the lingual membrane is broad, elongate, with close-set teeth. Teeth .00. 5. 1. 5.00. in numerous longitudinal series; the central tooth is oblong, with a smooth recurved tip, the

1st and 2nd lateral teeth rather broader than the central, with three-toothed recurved tip, the 3rd narrow, elongate, with a slight recurved end, the 4th and 5th much larger, oblong and irregular shaped, the 4th about half the width of the 5th, with 3 or 4 denticles on the inner side of the upper edge; the 5th very large, broad, with a large subcentral reflexed lobe; the lateral teeth are very numerous, subequal, compressed, transparent, with a recurved tip, which in the inner teeth of the series is bifid.



Teeth of *Ceres Salleana*.

1. Ceres Salleana, Gray.

Shell yellow, upper surface conical, convex, rugulose, with numerous close, parallel, granular concentric striæ; lower surface smooth, polished; keel acute, expanded.

Hab. Cordera, State of Vera Cruz, Mexico, in dense woods, under dead leaves (*M. A. Sallé*).

2. Ceres eolina. *Proserpina eolina*, Duclos, Mag. Zool.

The shell orange; upper surface flat, rugulose, with numerous short, parallel, diverging, narrow, sharp ridges; keel very acute, bent up; lower surface convex, subhemispherical, polished, orange; axial callosity thin, semitransparent, whitish.

6. Remarks on Nika edulis, Risso. By William Thompson.

The possession of a healthy specimen of *Nika edulis* has enabled me to offer the following remarks, which, I trust, may add something new to what is already known of this species.

The first specimen I obtained by dredging on the 2nd July, 1853. I find by my notes, which were made at the time, that it was a female, and in spawn; the ova were darkish green, the animal itself was of a cream colour, and spotted with red dots; the spots were of different sizes, perfectly round, and rather thickly and regularly placed. This specimen was dead before I examined it, and this will account for the difference of colour as contrasted with the specimen, the more immediate subject of the present paper. I had previously obtained one specimen, and a third specimen, also in spawn, was

brought to me on the 20th July, 1855; the ova were bright green, and the animal of a cream colour. This specimen was dead when examined.

The subject of the present paper was brought to me alive by my dredger on the 21st February in this year, and lived three weeks. It was dredged in Weymouth Bay, near the mouth of the harbour. The colour in this living specimen was very different from that of the dead specimens I had previously obtained. When first brought to me, the whole animal was a light greenish-drab, irregularly and thinly sprinkled with pure white stars; the carapace and covering of the abdomen were alike transparent, and the intestines could be easily seen beneath. I could also detect the breathing apparatus placed on each side at the back of the mouth; the movement was similar to that of a long rope when gently waved at one end. After a few days' confinement it changed colour, five or six broadish bands of a lovely rose colour appeared, the bands of colour being restricted to the back portion of each segment of the body; the tail also changed to the same rosy hue, in the course of two or three days the animal again assumed its original colour. I have noticed this change of colour in many of the *Palæmonidæ* and *Crangonidæ*, and I believe it to arise from the transparency of the cuticle enabling any change in the body itself to be seen through it, and that the change of colouring of the body is occasioned by fear or some instinct. In all the specimens of *Nika* I have obtained the shell is soft as in a new-moulted Prawn, and in piercing them with a fine pin for preserving, the shell bends before it. Is this of any value as a generic character? M. Milne-Edwards says they resemble *Athanas* "in possessing but a small rostrum;" they also resemble them in their mode of locomotion, as they then carry the external pedipalps and first pair of feet extended before them in a line with their body; their movements are also slow and deliberate, and they appear to progress by walking and not by swimming; when alarmed they shoot backwards by striking forward with their tail, as is the habit of all the long-tailed Crustaceans.

I now proceed to lay before you the information I have obtained as to its habits.

I may assert that *Nika* is essentially a burrowing genus. I was not prepared to find it so, as I considered its slender limbs and its prominent eyes but ill-adapted for the purpose; however, we live and learn, and I have learned that practice is far better than theory; had I relied on the latter I should have insisted that *Nika edulis* was not a burrower.

In accordance with a plan which I have formed of attempting to study the habits of any of our rarer marine animals I may have the good fortune to meet with, I placed my prisoner in a vase with a few weeds and some pebbles, that being the nature of the ground on which it was dredged; I left it in this vessel for two days, and found out it was not at home, and, in fact, that a pebbly bottom was not its choice. I therefore removed it to a large earthenware pan in which I had previously placed a few weeds, having filled it also to the depth of three inches with coarse gravel; I then left it for an

hour, and on examining the vessel I could not find my friend; I searched on the table, thinking it might have thrown itself out, but it was without success; I turned over the stones and weeds, and with the like result. I then commenced turning over the gravel, and at last found that *Nika edulis* was a burrowing Crustacean. I accordingly transferred it for facility of observation to a vase, and placing in it the same material, namely, the coarse gravel and weeds, in this gravel it buried itself three several times. Burrowing in this loose material was evidently a difficult matter; it required great patience and perseverance to overcome the difficulty occasioned by the loose gravel constantly falling in on the excavator; it took the animal ten minutes to burrow to about the depth of three parts of its length. I afterwards transferred it to a vase with sand to the depth of three or four inches at the bottom; in this it quickly disappeared, three minutes sufficing to completely cover itself. In this vase it was that I made the following observations on it.

Its mode of mining is extraordinary: lying at the bottom of the vase, it commenced proceedings by probing the sand around with its third pair of feet, and inserting them to some depth in it; when it found a spot suited for the purpose, that is, free from any large stones, it at once commenced excavating. These operations were carried out by the external pedipalps, which are very long and strong, and also by the first, third and fourth pairs of legs; the second pair of legs, as may be supposed, are for this purpose perfectly useless: they are as much as possible placed out of the way, being bent up snugly with the hand turned backwards: the only motion I could detect was a nervous action in the moveable finger, constantly attempting to clutch objects, but not seizing anything. The fifth pair of feet have a simple though useful office assigned them: it is to support the body in the proper position until the burrowing has progressed sufficiently to enable the burrower to do without their support; they are then immediately called into more active employment, and assist in the work of excavation. The spot for burrowing having been selected, the little animal steadies its body by means of its fifth pair of legs, and this allows the greatest freedom of action to the body. The pedipalps perform a prominent part in the burrowing; the nail on the last joint is curved slightly forward, and the advantage of this is clearly seen, as in digging, the pedipalps are forced into the sand or shingle, and are thus forced forward and outwards, and they prevent the side of the burrow from falling in; the third and fourth pairs of feet are in constant motion, probing the sand and loosening it, thus lightening the labour for the pedipalps; all these movements take place very regularly and at the same time. A small hollow having been made, the animal raises its body by means of its fifth pair of legs to nearly a right angle with the bottom; its eyes, which are very large and carried at right angles with the body, are thus suddenly thrown forward with a spring in a line with the rostrum, and the hollow is surveyed; should it not be of a sufficient depth the body is again lowered and the burrowing continues, the eyes resuming their original position; when the hole

is sufficiently deepened, the eyes are again brought forward, the antennæ are thrown back in a line with the body, and the animal forces its head in the hole it has made; this is facilitated by the body being gradually raised by means of the fifth pair of legs; the head being inserted, the burrowing continues with increased energy, and the animal assumes the position as in photograph No. 2; this view shows the sand which has been thrown up accumulated in a heap under the body.

I have occasionally found it continue in this position, but generally it burrows perpendicularly, until only the tips of the antennæ are visible.

I placed my captive in a glass vase, and he having selected the side of the glass for burrowing (probably from the glass forming one firm side to the work), enabled me to watch every movement; the sand appeared to be passed to the mouth of the hole by the legs and false legs, when it filled round the body and filled in as the animal passed downwards. The antennæ are delicately sensitive. I believe this sensitiveness depends on the sense of touch: the slightest contact with them sets the animal in motion (and this when it is buried some depth), using every exertion to burrow deeper. It is evidently a night-feeding genus, as it remained buried and inactive during the day, but the state of the sand in the tank in the morning proved that it had not been idle during the night.

From these facts I am justified in stating that *Nika edulis* is a burrowing species (if not of a burrowing genus), and that its burrowing is only by day to hide itself from its enemies, and not to procure food.

The description I have given of the colouring of this species will be found to be different from that given by Risso, as stated by Mr. Milne-Edwards. I should have great diffidence in differing from these eminent naturalists had I not imagined that their descriptions might have been taken from cabinet specimens. Had I waited to describe my specimen until after its death, I must have described it as it now is, namely, *flesh-red*; I find all the thinner-shelled Crustacea change more or less of a flesh-red, with the exception of the *Crangonidæ*.

The different plans of burrowing in the different genera are very interesting, and may probably be given in another paper.

The photographs to illustrate these notes represent

No. 1 and No. 1*a*.—*Nika edulis* (natural size) taken from a living specimen (on a collodion plate) in two different positions.

No. 2.—The same (natural size) when partially buried. This view shows the sand accumulated under the body of the animal.

No. 3.—A view of a portion of Weymouth Bay, taken by a collodion negative. The camera being sunk in two fathoms of water, the line of demarcation between the water and air is here plainly visible.

No. 4.—A photograph of *Aphrodita aculeata* taken (in two different positions) from a living specimen two-thirds of its natural size.

Dr. Crisp placed before the Society drawings of the viscera, of the size of life, of a large Pike (*Esox lucius*). The subjoined are the dimensions of the fish and the weight of the body and of the viscera:—

Weight of body, 28 lbs.; length, 3 feet 7 inches; largest circumference, 23 inches. Weight of heart, 160 grains; of liver, 10 oz.; of kidney, 1 oz.; of spleen, 171 grains; of brain, 75 grains. The diameter of the eye was 13 lines, and the largest tooth (maxillary) was 7 lines in length.

Alimentary canal.—Œsophagus, 6 inches; stomach, 9 inches; intestines, 3 feet 3 inches. Total, 4 feet 6 inches.

The kidney, which was very thin, measured 19 inches in length; the air-bladder, 18 inches.

The gall-bladder, seated at the upper part of the unlobed liver, of a pyramidal shape; it contained about 3 drachms of bile.

Portions of a carp were found in the stomach, which, judging from the scales and some of the cranial bones, must have been of large size; probably 2 or 3 lbs. The most interesting fact, however, that presented itself was the large size of the oviducts. These weighed 7 lbs., and measured 22 inches in length. As near as could be computed, the number of ova amounted to about 700,000. The fish was taken in Holland about the 8th of the present month, April, and the ova appeared to be matured.

The diameter of the blood-corpuscle of this fish was the same as that of the blood-corpuscle of smaller specimens.

Dr. Crisp had not been able to find any account of the dissection of a large Pike, and for this reason he had placed an outline of the visceral anatomy before the Society.

Dr. Crisp exhibited the drawing of a hairless Mouse, with the skin corrugated in the same manner as in those exhibited by Mr. Gaskoin at a recent meeting of the Society. The specimen, No. 120, is in the Museum of the College of Surgeons; it was found alive in the kitchen of the late Mr. Clift, and is thus described in the College Catalogue under the head Monstrosities:—"A common Mouse, which from its birth had not the slightest appearance of hair upon its skin, being perfectly naked."

May 13, 1856.

Dr. Gray, F.R.S., in the Chair.

The following papers were read :—

1. Description of a New Trogon and a New Odontophorus. By John Gould, F.R.S., V.P.Z.S., &c.

Trogon aurantiiventris, Gould.

Male: Forehead, face and chin dull black; head, sides of the neck, breast, back and upper tail-coverts golden-green; wings slaty-black, the coverts and secondaries finely freckled, and the primaries margined at the base with white; two centre tail-feathers bronzy-green, narrowly tipped with black; the two next on each side bronzy-green on their outer webs, the inner webs and the tips black; three outer tail-feathers on each side black, crossed by numerous narrow bars of, and narrowly tipped with, white; under surface rich orange, separated from the green of the chest by a semilunar mark of white; thighs black; bill orange; feet dark grey.

Total length, 10 inches; bill, $\frac{7}{8}$; wing, $5\frac{3}{8}$; tail, 6.

Female: Head, all the upper surface and breast orange-brown; wing-coverts brown, minutely freckled with brownish-black; abdomen pale orange; two central tail-feathers reddish-brown, narrowly tipped with black; the two next on each side brown on their outer webs, the interior webs and tips black; three lateral feathers black at the base, their outer webs and apical portions white, minutely freckled with black, and a narrow irregular band of black near the tip.

Hab. near David, Veragua.

Remark.—This species is very closely allied to *Trogon puella*: being precisely similar in every character, except that of the colouring of the breast, which is orange instead of scarlet; both these species are remarkable for the regularity of the markings of their tail-feathers, and for the markings extending to the tip.

Odontophorus veraguensis, Gould.

Male. Crown of the head and crest dark rust-red; throat black, with a line of white down the centre of each feather; back reddish-brown, freckled with black, and a faint line of white down the centre of each feather; wings brown, mottled and freckled with black, and with a small indistinct spot of buff near the tip of each of the coverts; scapularies brown, with a light stripe down the centre, and with a large blotch of brownish-black near the apex of the inner web; rump pale brown, obscurely spotted with black; under surface light chocolate-brown, with a spot of white more or less encircled with black near the tip of each feather.

Female: Differs in having the forehead and upper feathers of the

crest slaty-brown; and the spots on the breast smaller and less conspicuous.

Total length, 10 inches; bill, $\frac{5}{8}$; wing, $5\frac{3}{8}$; tail, $2\frac{3}{4}$; tarsi, $1\frac{5}{8}$.

Hab. Veragua.

Remark.—This species is nearly allied to *Odontophorus guttatus*, but differs in the lighter colouring of the breast and the redder hue of the crest. Specimens were procured by Dr. Seemann at Panama, and by Mr. Bridges from near David in Veragua.

2. Synopsis Avium Tanagrinarum.—A descriptive Catalogue of the known Species of Tanagers.

By Philip Lutley Sclater, M.A., F.Z.S., &c.

Part II.—containing the genera *Pyrrhocoma, Nemosia, Cypsnagra, Tachyphonus, Trichothraupis, Eucometis, Lanio, Phœnicothraupis, Lamprotes, Orthogonys, Pyranga* and *Ramphocelus*.

Genus XIII. Pyrrhocoma.

Pyrrhocoma, Cab. Mus. Hein. p. 138 (1851).

Rostrum breviusculum, incurvum, dente finali subobsoleto, mandibula superiore tumida: alæ subbreves, rotundatæ, remigibus quarta et quinta tertiam superantibus et longissimis: cauda modica.

1. Pyrrhocoma ruficeps.

Tachyphonus ruficeps, Strickl. Ann. N. H. 1840, p. 419; Gray, Gen. p. 365; Bp. Consp. p. 237.

Pipilopsis ruficeps, Bp. Consp. p. 485.

Pyrrhocoma ruficeps, Cab. Mus. Hein. p. 138.

Schistaceus, capite toto et gutture castaneis: fronte, loris et mento summo nigris.

Long. tota 5·6, alæ 2·6, caudæ 2·5.

Hab. Brazil; S. Paolo (*Sw.* in Mus. Cantab.); Paraguay (*Natterer*); Ypanema (*Von Olfers*).

Mus. Brit., Paris., Berol., &c.

Genus XIV. Nemosia.

Nemosia, Vieill. Analyse, p. 32 (1816).

Hemithraupis, Cab. Mus. Hein. p. 21 (1851).

Thlypopsis, Cab. Mus. Hein. p. 138 (1851).

Rostrum tenue, elongatum, incurvum, acutum, dente finali fere nullo: alæ elongatæ, remige prima longa, tribus proximis paulo longioribus, æqualibus et longissimis: cauda modica, subquadrata: sexus dissimiles.

a. *Nemosia.*

1. Nemosia pileata.

Tangara à coiffe noire de Cayenne, Buff. Pl. Enl. 720. fig. 2.
Tanagra pileata, Bodd. Table d. Pl. Enl.; Gm. S. N. 898.
Nemosia pileata, Vieill. N. D. d'H. N. xxii. p. 490; Enc. Méth. p. 787; Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 28; d'Orb. Voy. p. 261; Gray, Gen. p. 366; Bp. Consp. p. 236.
Hylophilus cyanoleucus, Max. Beitr. iii. p. 734 (♂).
Hylophilus cæruleus, ib. p. 731 (♀).
Tangara à coiffe noire, Desm. Tan. pl. 41.
Hooded Tanager, Lath. G. H. vi. p. 13.
Pico de punzon negro azul y blanco, Azara, no. 105 (♂).
P. d. p. azul y blanco, id. no. 110 (♀).

Plumbescenti-cærulea, pileo supero cum capite et cervice laterali nigris: striga præoculari et corpore subtus albis: rostro nigro: pedibus flavidis.—♀ *supra minus cærulescens et nigro colore omnino carens; subtus minus pure alba.*

Long. tota 4·7, alæ 2·8, caudæ 1·8.

Hab. Cayenne; Brazil, Para (*Wallace*), Mexicana (*Wallace*), Bahia (*P. Max.*); Nauta (*Cast.* et *Dev.*); Bolivia, Chiquitos (*d'Orb.*); Paraguay (*Azara*); Venezuela, Caraccas (*Levraud*).
Mus. Brit., Paris., &c.

b. *Hemithraupis.*

2. Nemosia guira.

Sylvia brasiliensis viridis, Briss. Orn. iii. 533.
Motacilla guira, Linn. i. p. 335.
Tang. olive à gorge noire de Cayenne, Buff. Pl. Enl. 720. fig. 1.
Tanagra nigrigula, Bodd. Table d. Pl. Enl.
Tanagra nigricollis, Gm. S. N. p. 894.
Hylophilus guira, Max. Beitr. iii. p. 736.
Nemosia nigricollis, Vieill. N. D. d'H. N. xxii. p. 491; Enc. Méth. p. 788; Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 28; d'Orb. Voy. p. 261?; Hartl. Ind. Az. p. 7; Gray's Gen. p. 366.
Nemosia guira, Gray's Gen. App. p. 17; Bp. Consp. p. 236.
Hemithraupis guira, Cab. Mus. Hein. p. 21; Bp. Consp. p. 312.
Pico de punzon amarillo barba negra, Azar. Pax. no. 102.
Guira Warbler, Lath. G. H. vii. p. 193.

Flavescenti-olivacea; superciliis longis et vitta gutturem nigrum undique cingente flavis: pectore et dorso postico cinnamomeis: ventre cinerascenti-flavido, crisso saturatiore. ♀ *flavicanti-olivacea, uropygio clariore: subtus valde dilutior.*

Long. tota 5·0, alæ 2·6, caudæ 2·0.

Hab. Cayenne; Brazil, south-eastern provinces (*P. Max.*); Bolivia (*d'Orb.* ?).
Mus. Brit., Paris., &c.

There are slight variations in colouring between the Brazilian and

Cayenne examples of this species, but not sufficient to lead me to consider them distinct.

3. Nemosia guirina, sp. nov.

Nemosia guira, Sclater, P. Z. S. 1855, p. 155.

Flavescenti-olivacea, superciliis longis cum plaga cervicali utrinque conjunctis flavis : gutture et capitis lateribus nigris : dorso postico cinnamomeo, pectore item cinnamomeo sed saturatiore et magis castaneo : abdomine cinerascenti-flavido, crisso flavicante.

Long. tota 5·0, alæ 2·9, caudæ 2·0.

Hab. New Grenada, Bogota ; East Peru.

Three specimens of what would at first sight appear to be *N. guira*, in my possession, two of which are from New Grenada and the third from Peru, offer such a marked difference in the length of the wing on comparison with specimens from the eastern coast, that I cannot avoid separating them specifically. They are also distinguishable, as the yellow colour is more developed on the sides of the neck, but does not form a band between the breast and black throat, as in *N. guira*. And in the *N. guirina* the breast has more of a deep chestnut tinge, which extends quite up to the black throat.

Perhaps d'Orbigny's Bolivian *N. guira* may be rather referable to this species than to the previous bird.

4. Nemosia flavicollis.

Nemosia flavicollis, Vieill. N. D. d'H. N. xxii. 491 ; Enc. Méth. p. 788 ; Gal. Ois. p. 99. pl. 75 ; Gray, Gen. p. 366 ; Bp. Consp. p. 236.

Tanagra speculifera, Temm. Pl. Col. 36. fig. 1. ♂. 2. ♀.

Sylvia melanoxantha, Licht. Verz. d. Doubl. p. 34.

Hylophilus melanoxanthus, Max. Beitr. iii. 736.

Hemithraupis flavicollis, Bp. Consp. p. 312.

Hemithraupis melanoxantha, Cab. M. H. p. 21.

Nigra, dorso postico flavo : speculo alari et corpore subtus albis : gutture aureo : crisso flavo, dorso concolore. ♀ *supra brunnescenti-olivacea : subtus flavida, medialiter clarior : alarum marginibus flavicantibus.*

Long. tota 5·1, alæ 2·7, caudæ 2·1.

Hab. Brazil (*P. Max.*).

Mus. Brit., &c.

5. Nemosia insignis, sp. nov.

Nigra, brunnescente tincta : speculo alari et corpore subtus albis : interscapulio et dorso inferiore cum gutture et crisso flavis. ♀ *brunnescenti-olivacea, alarum et caudæ marginibus flavescentibus : subtus flavida, lateribus obscurioribus.*

Long. tota 5·5, alæ 2·9, caudæ 2·1.

Hab. South Brazil.

Obs. *Similis* N. flavicolli, *sed crassitie majore, dorso flavo altius ascendente et gutture pallidius flavo, dorso fere concolore, distinguenda.*

I possess three specimens of this *Nemosia*, male, female and young male, out of a collection formed, I believe, in the southern part of Brazil. They are certainly larger in all their dimensions than the *N. flavicollis*, besides showing the other differences above noted, and I think can hardly be passed over as merely a local variety of that species.

6. Nemosia auricollis, sp. nov.

Nemosia flavicollis ex Cayenna, auct.

Saturate nigricanti-brunnea; speculo alari parvo albo: dorso postico, gutture et crisso aureo-flavis, abdomine albido.

Long. tota 4·6, alæ 2·7, caudæ 1·9.

Hab. Cayenne; East Peru, river Ucayali (*Hawxwell*).

Mus. Brit., &c.

Obs. N. flavicolli *simillima, sed colore brunneo, et dorso postico aurescentiore flavo, necnon speculo alari magis celato, distinguenda.*

7. Nemosia peruana.

Hemithraupis peruana, Bp. R. Z. 1851, p. 173; Note s. l. Tang. p. 24.

Nemosia peruana, Sclater, Tan. Cat. Sp. p. 7.

Nigra, brunnescente tincta; speculo alari albo: dorso postico toto, gutture, crisso et maculis in tectricibus alarum aureo-flavis: abdomine albo: pectore paululum nigro variegato. ♀ *olivascenti-brunnea, uropygio et alarum caudæque marginibus flavicantioribus; subtus flavida, ventre dilutiore, crisso saturatiore.*

Long. tota 5·0, alæ 2·6, caudæ 2·0.

Hab. East Peru.

Mus. P. L. S.

Obs. *Species maculis alaribus aureis inter affines dignoscenda.*

8. Nemosia albigularis.

Nemosia albigularis, Sclater, P. Z. S. 1855, p. 109. pl. xcix. et p. 155.

Nigra: dorso postico et crisso cum macula collari utrinque et plumis narium quibusdam aureo-flavis: speculo alari albo: subtus alba, pectoris et laterum plumis nigro variegatis.

Long. tota 4·2, alæ 2·5, caudæ 1·8.

Hab. New Grenada, Bogota.

Mus. Brit., Joh. Gould, &c.

9. Nemosia ruficapilla.

Nemosia ruficapilla, Vieill. N. D. d'H. N. xxii. p. 493; Enc. Méth. p. 788; Gray, Gen. p. 366; Bp. Consp. p. 236.

Saltator ruficapilla, Vieill. Gal. Ois. Suppl. pl. 3.

Hypophilus ruficeps, Max. Beitr. iii. p. 725; Gray, Gen. p. 200.

Hemithraupis ruficeps, Cab. Mus. Hein. p. 21; Bp. Consp. p. 311.

Olivaceo-viridis; capite et gutture undique castaneis: pectore

et dorso postico cinnamomeis: macula cervicali utrinque aurea: abdomine cineraceo, medialiter flavo-virescente, crisso flavicante.

Long. tota 5·0, alæ 2·6, caudæ 2·1.

Hab. Brazil, Rio; Bahia (*P. Max.*).

Mus. Brit., &c.

c. *Thlypopsis.*

10. Nemosia sordida.

Nemosia sordida, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 28; d'Orb. Voy. p. 261. pl. 18. fig. 2; Gray, Gen. p. 366; Bp. Consp. p. 237.

Nemosia fulvescens, Strickl. Ann. N. H. (1844), p. 420; Gray, Gen. p. 366; Bp. Consp. p. 236.

Thlypopsis fulvescens, Cab. Mus. Hein. p. 138.

Nemosia blanda, Licht. in Mus. Berol.

Brunnescenti-cinerea; pileo cinnamomescenti-castaneo: capitis lateribus et gula flavis: abdomine dilute brunnescenti-ochraceo, medialiter albescentiore.

Long. tota 5·0, alæ 3·7, caudæ 3·1.

Hab. Bolivia, Yuracares (*d'Orb.*).

Mus. Brit., Paris., Berolin.

I have compared a specimen of this bird, which is in my own possession, with d'Orbigny's type in the Paris Museum and the example of *N. fulvescens* which is in Mr. Strickland's collection. It seems to agree with both of these nearly enough to induce me to regard the several appellations given by these writers as probably synonymous.

11. Nemosia ruficeps.

Tachyphonus ruficeps, Lafr. R. Z. 1848, p. 173.

Thlypopsis fulviceps, Cab. Mus. Hein. p. 138.

Cinereus, capite toto cum gutture undique castaneis, gula dilutiore: abdomine medio albescente.

Long. tota 5·0, alæ 2·5, caudæ 2·0.

Hab. Caraccas in Venezuela (*Lafr.*).

Mus. Parisiensi, Heineano.

Genus XV. Cypsnagra.

Cypsnagra, Less. Man. d'Orn. p. 460 (1831).

Leucopygia, Sw. Class. Birds, ii. p. 285 (1837).

Rostrum tenue, arcuatum, acutum, dente finali obsoleto; gonyde vix ascendente: alæ modicæ, remigibus secunda et tertia longissimis: cauda modica rotundata: pedes robusti, unguibus acutis.

1. Cypsnagra ruficollis.

Tanagra ruficollis, Licht. Verz. d. Doubl. p. 30.

Tanagra hirundinacea, Less. Tr. d'Orn. p. 460.

Leucopygia ruficollis, Sw. An. in Men. p. 312; Cab. Mus. Hein. p. 137.

Tachyphonus ruficollis, d'Orb. Voy. p. 277.
Cypsnagra ruficollis, Gray, Gen. p. 167; Bp. Consp. p. 232.
Tanagra fumigata, Temm. in Mus. Lugd.

Supra niger, uropygio, speculo alari cum primariarum mediarum marginibus et tectricibus alarum majoribus (vittam formantibus) albis: subtus albus vix ochracescens, gutture ferrugineo.

Long. tota, 6·2, alæ 3·2, caudæ 2·5.

Hab. S. Brazil, Bahia (*Sw.*); Rio; S. Paolo (Licht.); Bolivia, Chiquitos (*d'Orb.*).

Genus XVI. Tachyphonus.

Tachyphonus, Vieill. Analyse, p. 33 (1816).
Pyrrota, Vieill. ibid. p. 45.
Comarophagus, Boie, Isis, 1826, p. 974.

Rostrum subconicum, compressum; apice incurva, acuta et dentata; commissura plus minusve sinuata et loba mediali interdum instructa: alæ modicæ, paulum rotundatæ, remigibus tertia, quarta et quinta longissimis; secunda breviore quam quinta: cauda elongata, rotundata: sexus dissimiles: ptilosis marium nigra, fœminarum brunnea.

1. Tachyphonus melaleucus.

Oriolus melaleucus, Sparm. Mus. Carls. pl. 31 (1787).
Tanagra noir d'Amérique, Buff. Pl. Enl. 179. fig. 2 (♂).
Tanagra roux de Cayenne, ib. pl. 711 (♀).
Tanagra nigerrima, Gm. S. N. p. 899; Max. Beitr. iii. p. 534.
Tanagra rufa, Bodd. Table d. Pl. Enl. (♀).
Oriolus leucopterus, Gm. S. N. p. 392.
Tachyphonus leucopterus, Vieill. N. D. d'H. N. xxxii. p. 358; Enc. Méth. p. 803; Gal. Ois. pl. 82, p. 113; d'Orb. Voy. p. 277; Gray, Gen. p. 365.
Pyrrota leucoptera, Bp. Consp. p. 238.
Tachyphonus nigerrimus, Sw. Quart. Journ. Sc. 1826, p. 62; Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 29; Schomb. Guian. iii. p. 669.
Tordo de bosque negro cobijas blancas, Azara, Pax. no. 76.
Tangara noir, Desm. Tan. pl. 45 (♂) et 46 (♀).
White-winged Oriole, Lath. G. H. iii. p. 125, pl. 42.
Tachyphonus beauperthuyi, Bp. Compt. Rend. xxxii. (1851), p. 82 ?.

Sericeo-ater; tectricibus alarum summis et tectricibus inferioribus albis. ♀ *rufescenti-brunnea; subtus paulo dilutior.*

Long. tota 7·0, alæ 3·4, caudæ 3·0.

Hab. Cayenne; Guiana (*Schomb.*); Venezuela; Trinidad; Tobago (*Kirk.*); Bogota (*Lewy* in Mus. Paris); Pintobamba in Peru et Goyaz in Brazil (*Cast.* et *Dev.*); Brazil; Pernambuco (*Sw.*); Bahia (*P. Max.*); Rio Grande do Sul (*Plant.*); Paraguay (*Azara*); Corrientes (*d'Orb.*).

Mus. Brit., Paris., &c.

This seems one of the most common and widely distributed species of birds in Cisandean South America. There is some variation in the length and thickness of the bill, and amount of white on the wings. Prince Bonaparte has named a Venezuelan bird exhibiting some differences in these respects, *Tachyphonus beauperthuii*, but I have not recognized that species as distinct, because I have observed such differences in specimens brought from the same locality.

2. TACHYPHONUS VALERII.

Pyrrota valeryi, J. et E. Verr. R. Z. 1855, p. 351.

Unicolor ater : campteriis item nigris.
Long. tota 2·1, alæ 4·1, caudæ 3·9.
Hab. Central America.
Mus. Paris.
I have not seen this species.

3. TACHYPHONUS LUCTUOSUS.

Tachyphonus luctuosus, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 29.
Pyranga luctuosa, d'Orb. Voy. p. 263, pl. 20. fig. 1 ♂. 2 ♀.
Tachyphonus tenuirostris, Gray, Gen. p. 365 ; Bp. Consp. p. 240.
Lanio tenuirostris, Gray, Gen. App. p. 16.

Ater : tectricibus alarum minoribus mediisque et tectricibus subalaribus albis. ♀ *supra virescens, uropygio flavescentiore, pileo cinerascentiore : subtus flavescens, gula pallide grisea.*
Long. tota 5·0, alæ 2·5, caudæ 2·1.
Hab. Bolivia (*d'Orb.*) ; Eastern Peru ; prov. Quixos in Ecuador ; Bogota ; S. Martha ; Trinidad ; Tobago (*Kirk.*).
Mus. Brit., &c.

4. TACHYPHONUS CORONATUS.

Tordo de bosque coronado y negro, Azara, Pax. no. 77.
Agelaius coronatus, Vieill. N. D. d'H. N. xxxiv. p. 535, et Enc. Méth. p. 711 (1818).
Tanagra coryphæus, Licht. Verz. p. 31 (1824).
Tachyphonus coryphæus, Gray, Gen. p. 365 ; Hartl. Ind. Az. p. 5.
Pyrrota coryphæus, Bp. Consp. p. 238.
Tachyphonus vigorsi, Sw. Quart. Journ. Sc. 1826, p. 63 ; Jard. Ill. Orn. pl. 36. fig. 1.
Tachyphonus coronatus, Sclater, Tan. Cat. Sp. p. 7.

Ater : vertice medio ruberrimo : tectricibus alarum summis et tectricibus inferioribus albis. ♀ *rufescenti-brunnea ; capite magis fusco : subtus paulo dilutior.*
Long. tota 7·0, alæ 3·2, caudæ 3·0.
Hab. Paraguay (*Azara*) ; South Brazil (*Sw.*).
Mus. Brit., Berol.

5. TACHYPHONUS SURINAMUS.

Merula surinamensis, Briss. Orn. Suppl. vi. p. 46.

Turdus surinamus, Linn. S. N. i. p. 297.
Tachyphonus surinamensis, Lafr. R. Z. 1846, p. 202; Bp. Compt. Rend. xxxii. p. 81.
Tanagra cristata, Gm. S. N. p. 898 (*partim*).
Tachyphonus cristatus, Vieill. N. D. d'H. N. xxxii. p. 356, et Enc. Méth. p. 802 (*partim*).
Tanagra martialis, Temm. Analyse, p. LXV.
Tanagra desmaresti, Sw. Quart. Journ. Sc. 1826, p. 67.
Tachyphonus ochropygos, Cab. Schomb. Reis. iii. p. 668.
Lanio cristata, Bp. Consp. 241 (*partim*).
Tangara huppé de la Guyane, Buff. Pl. Enl. 301. fig. 2.
Le Houpette, adulte, Desm. Tan. pl. 47.
Surinam Thrush, Lath. G. H. v. p. 150.

Sericeo-ater: tectricibus alarum minoribus et tectricibus subalaribus albis: fronte nigra: pileo medio cristato aurescenti-fulvo: dorso postico dilutiore fulvo: hypochondriis imis castaneis. ♀ *supra olivacea; capite cinereo: pileo medio olivaceo: ciliis et regione oculari flavis: subtus pallide fulva, crisso flavescentiore.*

Long. tota 6·0, alæ 3·5, caudæ 3·2.
Hab. Cayenne; Brit. Guiana (*Schomb.*); Guia on the Rio Negro (*Wallace*).
Mus. Brit., Paris., &c.

6. TACHYPHONUS CRISTATUS.

Tangara hupe de Cayenne, Buff. Pl. Enl. 7. fig. 2.
Tangara Cayennensis nigra cristata, Briss. Orn. Supp. p. 65.
Tanagra cristata, Gm. S. N. p. 898; Max. Beitr. iii. 474.
Tachyphonus cristatus, Vieill. Nouv. Dict. xxxii. p. 356, et Enc. Méth. p. 802 (*partim*); Sw. Quart. Journ. Sc. 1826, p. 66; Schomb. Guian. iii. 668; Gray's Gen. p. 365.
Lanio cristatus, Vieill. N. D. d'H. N. 1846, p. 203; Enc. Méth. p. 740; Lafr. R. Z. 1846, p. 203. sp. 2 et 5; Gray, Gen. p. 364; Bp. Consp. p. 240 (*partim*).

Tanagra brunnea, Spix, Av. Bras. ii. p. 37. pl. 49. fig. 2 (♀).
Tanagra gubernatrix, Temm. Tab. Méth. p. 30.
Lanio vieillotii, Lafr. R. Z. 1846, p. 204.
Houpette, jeune âge, Desm. Tan. pl. 48.
Crested Tanager, Lath. G. H. vi. p. 11.

Ater: pileo toto cristato ruberrimo: gula et dorso postico pallide fulvis: tectricibus alarum minoribus et tectricibus inferioribus albis. ♀ *cinnamomescenti-brunnea, subtus dilutior.*

Long. tota 6·5, alæ 3·1, caudæ 3·0.
Hab. Cayenne; Brit. Guiana (*Schomb.*); Brazil; New Grenada, Bogota.
Mus. Brit., Paris., &c.

7. TACHYPHONUS RUFIVENTER.

Tanagra rufiventer, Spix, Av. Bras. ii. p. 37. pl. 50. fig. 1.

Tachyphonus rufiventer, Strickl. Cont. Orn. 1850, p. 49. pl. 50.
Tachyphonus serrirostris, Strickl. MS.

Ater : pileo medio et uropygio flavescenti-brunneis : gulari stria et abdomine toto pallide brunneis, hoc medialiter in castaneum transeunte : tectricibus alarum superioribus et inferioribus albis.

Long. tota 6·5, alæ 3·2, caudæ 2·75.

Hab. Eastern provinces of Peru, Sarayaçu (*Cast.* et *Dev.*); Chamicurros (*Hawxwell*).

8. Tachyphonus delattrii.

Tachyphonus delattrii, Lafr. R. Z. 1847, p. 72; Gray's Gen. App. p. 17; Bp. Consp. p. 237.

Fusco-niger : crista verticali nitide fulvo-aurantia.

Long. tota 5·8, alæ 2·8, caudæ 2·5.

Hab. North-western coast of New Grenada, S. Bonaventura (*Delattre*), Gorgona (*Capt. Kellett*).

Mus. Brit. et Acad. Philadelph.

9. Tachyphonus phœniceus.

Tachyphonus phœniceus, Sw. An. in Men. p. 311; Gray's Gen. p. 365; Bp. Consp. p. 237.
Tachyphonus saucius, Strickl. Ann. Nat. Hist. xiii. 419.
Tanagra leucocampter. Licht. in Mus. Berol.

Chalybeo-niger : tectricibus alarum superioribus albis, rubro marginatis, inferioribus omnino albis. ♀ *supra nigrescenti-brunnea, subtus clarior, cinerascens.*

Long. tota 5·5, alæ 2·9, caudæ 2·6.

Hab. Interior of Brazil, Borba (*Natterer*).

Mus. Berolinensi et Vindobiensi.

10. Tachyphonus xanthopygius.

Tachyphonus xanthopygius, Sclater, P. Z. S. 1854, p. 158. pl. 69 (♀), et 1855, p. 83. pl. 90 (♂).
Lanio auritus, DuBus, Bull. Ac. Brux. xxii. p. 153 (1855).

Niger : tergo flavo : fascicula post-superciliari coccinea : carpo summo dilute flavo : tectricibus subalaribus albis. ♀ *nigro-cinerea, subtus dilutior, tergo flavo : carpo summo et tectricibus subalaribus albis.*

Long. tota 6·1, alæ 3·5, caudæ 2·5.

Hab. New Grenada, Bogota.

Mus. Brit.

Genus XVII. Trichothraupis.

Trichothraupis, Cab. Mus. Hein. p. 23 (1851).

Rostrum Tachyphoni *sed haud sinuatum, basi dilatatâ, dente finali minus distincto; rictu setoso : alæ modicæ, rotundatæ,*

remigibus tertia et quarta longissimis, secunda autem quintam superante : cauda modica, rotundata.

1. TRICHOTHRAUPIS QUADRICOLOR.

Tachyphonus quadricolor, Vieill. N. D. d'H. N. xxxii. p. 359; Enc. Méth. p. 803; Gray, Gen. p. 365; Bp. Consp. p. 237.

Lindo pardo copete amarillo, Azara, no. 101 (*unde*).

Muscicapa melanops, Vieill. N. D. d'H. N. xxi. p. 452, et Enc. Méth. p. 827.

Tanagra auricapilla, Spix, Av. Bras. ii. pl. 52. fig. 1 (♂), 2 (♀), p. 39; Max. Beitr. iii. p. 538.

Muscicapa galeata, Licht. Doubl. p. 56.

Tachyphonus suchii, Sw. Quart. Journ. Sc. 1826, p. 66.

Trichothraupis quadricolor, Cab. M. H. p. 23.

Supra brunnescenti-olivacea, pileo cristato medialiter flavo : fronte, oculorum ambitu et alis caudaque nigris : vitta alari interna rectricum basin transeunte et tectricibus subalaribus albis : subtus pallide rufescenti-fulva. ♀ *mari similis, sed crista flava et facie nigra carens.*

Long. tota 6·2; alæ 3·2, caudæ 2·9.

Hab. Brazil, Bahia (*Max.*); Rio (*Spix*); San Paolo (*Licht.*); Paraguay (*Azar.*).

Mus. Brit., Paris., Berol., &c.

Genus XVIII. EUCOMETIS.

Comarophagus, Bp. Compt. Rend. xxxii. p. 81 (nec Boié).

Rostrum Tachyphoni *sed commissura vix sinuata : alæ elongatæ, remigibus tertia, quarta et quinta longissimis : cauda elongata, rotundata : ptilosis olivacea : sexus similes.*

1. EUCOMETIS PENICILLATA.

Tanagra penicillata, Spix, Av. Bras. ii. p. 36. pl. 49. fig. 1.

Tachyphonus penicillatus, Gray, Gen. p. 365; Bp. Consp. p. 237.

Flavo-brunnescenti-olivacea, uropygio clariore : capite toto cinerascente, crista elongata, alba, cinerascente marginata : subtus saturate aurantio-flava ; gutture albo, cinereo lavato : rostro pallide corneo : pedibus brunneis.

Long. tota 7·0, alæ 3·5, caudæ 3·1.

Hab. Brazil (?) (*Spix*); Cayenne; Surinam (*Mus. Senckenb.*).

Mus. Senckenb. et P. L. S.

This seems to be the species of this curious form which has the crest most developed, and from its locality the most likely to be what Spix intended by his *Tanagra penicillata*.

I have seen several examples of it, which I have no doubt from their preparation were Cayenne skins.

2. EUCOMETIS ALBICOLLIS.

Pyranga albicollis, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837,

p. 33; d'Orb. Voy. p. 265. pl. 26. fig. 2; Gray, Gen. p. 264; Bp. Consp. p. 241.

Trichothraupis albicollis, Cab. Mus. Hein. p. 23 (note).

Olivacea, uropygio flavescente: capite et collo sordide griseis: gutture albo: abdomine flavo: mandibula pallida: maxilla cornea.

Hab. Bolivia, Chiquitos (*d'Orb.*).

Mus. Paris.

3. Eucometis cristata.

Pipilopsis cristata, DuBus, Bull. Ac. Brux. xxxii. p. 154 (1855).

Trichothraupis penicillata, Sclater, P. Z. S. 1855, p. 156.

Flavo-brunnescenti-olivacea, uropygio clariore: capite cristato toto cum gutture cineraceis, sed gula dilutiore: abdomine aurantio-flavo: rostro nigricanti-corneo, pedibus pallide brunneis.

Long. tota 7·0, alæ 3·5, caudæ 3·0.

Hab. New Grenada, S. Martha (*Verreaux*); Cartagena et Caraccas (*Mus. Paris.*); Nicaragua (Delattre).

Mus. Paris.

This bird seems to differ from the one I have called *penicillata* in its shorter crest, which is not white at the base, darker cinereous throat, rather more yellowish belly and blacker bill. In my list of Bogota birds I called it *penicillata*, not having then noticed its apparent distinctness.

Genus XIX. Lanio.

Lanio, Vieill. Analyse, p. 40 (1816).

Pogonothraupis, Cab. in Schomb. Guian. iii. p. 669 (1848).

Rostrum rectum, compressum; mandibula superiore dentata, fortiter uncinata et loba mediali instructa: alæ elongatæ, remigibus tertia et quarta longissimis: cauda elongata, rotundata: ptilosis marium aurantiaca et nigra, fœminarum brunnea.

1. Lanio atricapillus.

Tang. jaune à tête noire, Buff. Pl. Enl. 809. fig. 2.

Tanagra atricapilla, Gm. S. N. p. 898.

Lanius aurantius, Lath. Ind. Orn. 1. p. 79 ?

Lanio atricapillus, Vieill. N. D. d'H. N. xxii. p. 305; Vieill. Enc. Méth. p. 741; Gal. Ois. pl. 138. p. 223; Gray, Gen. p. 364; Bp. Consp. Av. p. 240.

Pogonothraupis atricapilla, Cab. in Schomb. Reis. iii. p. 669.

Ferruginolento-flavus, pectore in castaneum transeunte: capite toto et cervice undique cum alis caudaque nigris: tectricibus alarum minoribus et tectricibus subalaribus albis. ♀ *fusco-brunnea unicolor; subtus paulo dilutior.*

Long. tota 6·8, alæ 2·7, caudæ 2·1.

Hab. Cayenne; British Guiana (*Schomb.*); New Grenada, Bogota.

Mus. Brit., Paris.

2. Lanio versicolor.

Tachyphonus versicolor, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 28.

Pyranga versicolor, d'Orb. Voy. p. 262. pl. 19. fig. 1.

Lanio versicolor, Lafr. R. Z. 1846, p. 203; Gray, Gen. p. 364; Bp. Consp. p. 240.

Flavus, dorso brunnescentiore: capite toto et gula cum alis caudaque nigris: tectricibus alarum superioribus omnino albis. ♀ *flavo-brunnea unicolor, cauda rufescente: ventre flavescente.*

Hab. Bolivia, Yuracares (*d'Orb.*).

Mus. Paris., Lafresnayano.

Obs. *Affinis* Lanioni atricapillo *sed statura minore, dorso imo et colli lateribus flavescentibus, tectricibus alarum omnino albis, et corpore subtus flavescentiore distinguendus.*

3. Lanio aurantius.

Lanio aurantius, Lafr. R. Z. 1846, p. 204; Gray, Gen. App. p. 16; Bp. Consp. p. 240.

Flavissimus: capite toto cum gula et alis caudaque nigris: tectricibus alarum minoribus albis: plaga magna pectorali ferruginea. ♀ *supra brunnea, uropygio flavicante: capite et collo postico ochracescentibus: gula fusca: abdomine flavo; crisso brunnescentiore: tectricibus subalaribus griseis.*

Long. tota 8·0, alæ 3·9, caudæ 3·5.

Hab. Honduras (*Dyson*); S. Mexico, Orizaba (*Sallé*).

Mus. Brit., Lafresnayano.

Genus XX. Phœnicothraupis.

Phœnicothraupis, Cab. Mus. Hein. p. 24 (1851).

Rostrum forte, elongatum, rectum, subconicum, compressum, commissura non sinuata; dente finali distincto: alæ longæ, remigibus tertia, quarta et quinta longissimis, sexta secundam superante: cauda longa, rotundata: ptilosis marium rubra, fœminarum brunnea.

1. Phœnicothraupis rubica.

Habia roxiza, Azara, no. 85.

Saltator rubicus, Vieill. N. D. d'H. N. xiv. p. 107; Enc. Méth. p. 792; Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 36; Gray, Gen. p. 363; Hartl. Ind. Az. p. 6.

Tanagra flammiceps, Temm. Pl. Col. 177; Max. Beitr. iii. 597.

Tanagra porphyrio, Licht. Verz. d. Doubl. p. 31.

Pyranga rubica, d'Orb. Voy. p. 265.

Phœnicothraupis rubica, Cab. Mus. Hein. p. 24: Sclater, Ann. N. H. xiv. p. 24.

Fusco-rubescens fere unicolor: cauda clariore: pileo cristato medialiter coccineo: capitis lateribus obscurioribus: rostro nigrescenti-plumbeo: pedibus pallidis. (♀) *pallide fusco-brunnea unicolor; subtus dilutior.*

Long. tota 7·2, alæ 3·9, caudæ 3·7.

Hab. South-east Brazil (*P. Max.*); Paraguay (*Azara*); Bolivia, Guarayos and Yuracares (*d'Orb.*).
Mus. Brit., &c.

2. Phœnicothraupis rubra.

Tachyphonus ruber, Vieill. N. D. d'H. N. xxxii. p. 359; Enc. Méth. p. 804.
Phœn. rubica ex ins. Trinit., Sclater, Ann. N. H. xiv., p. 24.

Fusco-rubescens; subtus clarior; abdomine et cauda roseo indutis: crista mediali coccinea: rostro fusco-plumbeo: pedibus pallide brunneis.

Long. tota 6·8, alæ 3·7, caudæ 3·0.
Hab. Trinidad.
Mus. P. L. S.

This bird is rather smaller than the South Brazilian species, and may be distinguished from it by its brighter and more rosy colouring below, shorter tail and paler feet. I have only seen specimens from the island of Trinidad.

3. Phœnicothraupis rubicoides.

Saltator rubicoides, Lafr. R. Z. 1844, p. 41.
Phœnicothraupis rubicoides, Cab. M. H. p. 24; Sclater, Ann. N. H. xiv., p. 25.
Pyranga ignicapilla, Licht. in Mus. Berol. (♂).
Pyranga quajacina, Licht. in Mus. Berol. (♀).

Supra fusco-rubescens, cauda dorso concolore: subtus pectore toto multo clariore, ruberrimo: crista mediali verticis coccinea: rostro nigro-plumbeo: pedibus pallide brunneis. ♀ *pallide fusco-brunnea, subtus dilutior, gutture pallidiore.*

Long. tota 7·5, alæ 4·0, caudæ 3·75.
Hab. S. Mexico, Papantla (*Mus. Berol.*); Cordova (*Sallé*); Guatimala (*Mus. H.E.S.*); S. Martha (*Verr.*).
Mus. Brit., Berol., Lafresnayano, H.E.S.

This bird may be recognized by its tail being of the same colour as the back, not brighter, as in the Brazilian species, and the scarlet breast. My examples were collected by Signor Constancia in the vicinity of Guatimala. Specimens received by MM. Verreaux from S. Martha, New Grenada, to which I have seen the MS. name "*P. erythrolaimus*, Bp." attached, appear hardly different from the Mexican bird.

4. Phœnicothraupis gutturalis.

Phœnicothraupis gutturalis, Sclater, Ann. N. H. xiv. (1854), p. 25.: P. Z. S. 1855, p. 156.

Niger: vertice cristato cum gutture medio coccineis: rostro pedibusque nigris.

Long. tota 7·25, alæ 3·8, caudæ 3·2.
Hab. New Grenada, Bogota.
Mus. Brit., Paris.

Since describing this species, I have seen several other specimens of it in the Paris Museum, transmitted from Bogota by M. Fontanier in 1853.

Genus XXI. Lamprotes.

Lamprotes, Sw. Class. Birds, ii. 283 (1837).
Sericossypha, Less. Echo d. M. S. 1844, p. 382.
Rostrum Orthogonydis *sed paulo fortius: alæ elongatæ, remige prima longa et vix breviore quam sequentibus: cauda breviuscula, rotundata: tarsi breves et sicut pedes robustissimi; ungues acutissimi: ptilosis aureo-nitens, marium rubro variegata, fœminarum unicolor.*

a. Lamprotes.

1. Lamprotes loricatus.

Tanagra loricata, Licht. Verz. d. Doubl. p. 31 (1823), (♀); Bp. Consp. p. 237.
Saltator niger, Vieill. Enc. Méth. p. 794 (jun.?).
Tanagra rubricollis, Spix, Av. Bras. ii. p. 43.
Tanagra rubrigularis, Spix, *ib.* p. 43.
Lamprotes rubrigularis, Sw. Class. ii. 283.
Lamprotes ruficollis, Gray, Gen. p. 362.
Tachyphonus loricatus, Gray, l. c.
Tanagra bonariensis, Max. Beitr. iii. 530.
Lamprotes loricatus, Sclater, Tan. Cat. Sp. p. 8.
Fulgenti-ater, gutture et jugulo medialiter rubris. ♀ *unicolor atra, gutture concolore.*
Long. tota 8·5, alæ 4·6, caudæ 3·0.
Hab. South-east Brazil, Bahia (*Max.*).
Mus. Brit., Paris., &c.

b. Sericossypha.

2. Lamprotes albicristatus.

Lamprotes albocristatus, Lafr. R. Z. 1843, p. 132; Lafr. Mag. de Zool. 1844, pl. 50; Gray, Gen. p. 362.
Sericossypha sumptuosa, Less. Echo d. M. S. 1844, p. 382; Less. Descr. d. Mamm. et Ois. p. 354.
Velutino-ater: alis caudaque æneo fulgentibus: pileo niveo: gutture et jugulo sanguinolente purpureis.
Long. tota 9·3, alæ 5·5, caudæ 4·0.
Hab. New Grenada, Bogota (*Lewy*); S. Martha (*Fontanier*).
Mus. Brit., Paris.
Some examples of this splendid bird have the throat much more red, almost scarlet. I have not yet seen the female, which would probably have the throat black.

Genus XXII. Orthogonys.

Orthogonys, Strickl. Ann. Nat. Hist. xiii. (1844), p. 421.

Cyanicterus, Bp. Consp. p. 240 (1850).

Rostrum elongatum, compressiusculum, culmine obtuse carinato et regulariter curvato; gonyde rectissima nec ascendente: alæ modicæ, remigibus secunda, tertia et quarta fere æqualibus, prima breviore quam quinta: cauda rotundata: tarsi breves.

1. Orthogonys viridis.

Tanagra viridis, Spix, Av. Bras. ii. pl. 48, fig. 2.

Orthogonys viridis, Strickl. Ann. N. H. xiii. p. 421; Bp. Consp. p. 531.

Lamprotes viridis, Gray, Gen. p. 362.

Tanagra vegeta, Licht. in Mus. Berol.

(♂ et ♀ ?) *Supra olivaceo-viridis, subtus flavus, lateraliter olivascentior: rostro nigro, pedibus pallide brunneis.*

Long. tota 8·0, alæ 3·7, caudæ 3·5.

Hab. South Brazil, Rio (*Spix*).

Mus. Brit., Paris., &c.

I have seen many examples of this bird, all similar, from Brazilian collections, and therefore conclude the sexes are alike, although the colouring is what one would suppose to be that of a female bird.

2. Orthogonys cyanicterus.

Pyranga cyanictera, Vieill. N. D. d'H. N. xxviii. p. 290 (♂ jun.); Vieill. Enc. Méth. p. 798; Vieill. Gal. Ois. pl. 81. p. 112; Gray, Gen. p. 364.

Pyranga icteropus, Vieill. N. D. d'H. N. xxviii. p. 291; Vieill. Enc. Méth. p. 799; Puch. Arch. Mus. Par. vii. p. 356.

Tachyphonus chloricterus, Vieill. N. D. d'H. N. xxxii. p. 360 (♀); et Enc. Méth. p. 804 ?? Puch. Arch. Mus. Par. vii. p. 379.

Tachyphone à épaulettes bleues, Less. Tr. d'Orn. p. 463 (♀); Puch. Arch. Mus. Par. vii. p. 378. pl. xxii.

Cyanicterus venustus, Bp. Consp. p. 240.

Orthogonys cyanicterus, Sclater, Tan. Cat. Sp. p. 8.

Supra læte cæruleus: infra gutture toto ad medium pectus cæruleo, abdomine flavo: rostro nigro, pedibus flavis. (♀) *supra viridis cæruleo tincta: corpore subtus cum loris et oculorum ambitu flavis: rostro pallido: pedibus flavis.*

Long. tota 7·75, alæ 3·5.

Hab. Cayenne (Poiteau, 1822, *Mus. Par.*).

Mus. Brit., Paris., Lugdunensi, Lafresnayano.

There are pairs of this singular Tanager (marked ♂ and ♀) in the Paris, British, and Leyden Musuems, but I have rarely met with it elsewhere. I consider it certainly congeneric with the Brazilian *O. viridis*. The only question is, whether that may not be the female of a corresponding brightly-coloured species. I may observe, that if the birds had not been marked as pairs in the collections above-cited, I should probably have considered the female as specifically distinct.

Genus XXIII. Pyranga.

Pyranga, Vieill. Analyse, p. 32 (1816).
Phœnisoma, Sw. Class. Birds, ii. p. 284 (1837).

Rostrum subrectum, subconicum, cylindricum, culmine modice incurvo, apice dentata, maxilla loba mediali plerumque instructa: alæ elongatæ, remigibus quatuor primis fere æqualibus, sed secunda et tertia paulo longioribus: cauda modica, subquadrata: ptilosis marium coccinea, fœminarum flava aut flavo-virens.

1. Pyranga rubra.

Tanagra rubra, Linn. S. N. i. p. 314; Wils. Am. Orn. i. pl. 11. fig. 3, 4; Aud. Orn. Biogr. iv. p. 388. et Am. Orn. pl. 354. fig. 3 ♂, 4 ♀.
Pyranga rubra, Sw. North. Zool. ii. p. 273; Aud. Syn. p. 136; Jard. Wils. Am. Orn. i. p. 192; Aud. 8vo. ed. iii. p. 226. pl. 209; Gray, Gen. p. 364; Bp. Consp. p. 241; Sclater, P. Z. S. 1855, p. 156.
Pyranga erythromelas, Vieill. N. D. d'H. N. xxviii. p. 293. et Enc. Méth. p. 800.
Phœnisoma rubra, Sw. Class. ii. p. 284.
Tangara du Mexique, Buff. Pl. Enl. 127. fig. 1 (♂).
Tangara du Canada, Buff. Pl. Enl. 156. fig. 1 (♂); Desm. Tan. pl. 34.
Red Tanager, Lath. G. H. vi. p. 5.

Coccinea, alis caudaque nigris. ♀ olivacea, subtus flavescens, alis caudaque fuscis.

Long. tota 6·7, alæ 3·8, caudæ 2·8.
Hab. North America from Texas to Lake Huron, summer migrant (*Aud.*, *Wils.*, &c.); Texas (*Sitgreaves*); Mexico (*Bullock*); Antilles, Cuba (*d'Orb.*) (*Poey*); Jamaica (*Gosse*); New Grenada, Bogota.
Mus. Brit., Paris., &c.

2. Pyranga æstiva.

Muscicapa rubra, Linn. S. N. i. p. 326?
Tanagra æstiva, Gm. S. N. 889; Wils. Am. Orn. pl. 6. fig. 3; Aud. Orn. Biogr. i. p. 232. et Am. Orn. pl. 44. ♂ et ♀.
Loxia virginica, Gm. S. N. i. p. 849 (?).
Tanagra variegata, Lath. Ind. Orn. i. p. 421 (♂ juv.).
Tanagra mississipiensis, Gm. S. N. i. p. 889.
Pyranga æstiva, Vieill. N. D. d'H. N. xxviii. p. 291. et Enc. Méth. p. 799; Aud. Syn. p. 136; Jard. Wils. Orn. i. p. 95; Aud. 8vo. ed. iii. p. 222. pl. 268; Bp. P. Z. S. 1837, p. 117; Gray, Gen. p. 364; Bp. Consp. p. 241; Sclater, P. Z. S. 1855, p. 156.
Phœnisoma æstiva, Sw. Class. ii. p. 284.
Tangara de Mississippi, Buff. Pl. Enl. 741; Desm. Tan. pl. 32 et 33.
Summer Tanager, Lath. G. H. vi. p. 8.

Rosaceo-coccinea, dorso toto paulo obscuriore; rostro pallide

corneo, tomiis et apice pallescentibus. ♀ *olivacea, subtus flavescentior.*

Long. tota 6·5, alæ 3·8, caudæ 2·8.

Hab. North America, from Texas to Massachussetts, and in the interior to Canada (*Aud.*, &c.); Texas (*Sitgreaves*); Mexico, Cordova (*Sallé*); Guatimala (*Constancia*), (*Bp.*); Antilles, Cuba (*de la Sagra*), (*Poey*); Jamaica (*Gosse*); Chiriqui (*Bridges*); New Grenada, Bogota.

Mus. Brit., Paris., &c.

3. Pyranga saira.

Habia punzó, Azara, Pax. no. 88 (*unde*),

Saltator ruber, Vieill. Enc. Méth. p. 793 (♂).

Habia amarilla, Azara, Pax. no. 87 (*unde*),

Saltator flavus, Vieill. Enc. Méth. p. 791 (♀).

Tanagra mississipiensis, Licht. Verz. d. Doubl. p. 30; P. Max. Beitr. iii. p. 521.

Tanagra saira, Spix, Av. Bras. ii. pl. 48. fig. 1.

Pyranga mississipiensis, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 31.

Pyranga azaræ, d'Orb. Voy. p. 264; Bp. Consp. p. 241; Gray, Gen. p. 364.

Phœnisoma azaræ, Tsch. F. P. p. 206; Schomb. Reise, iii. p. 668; Cab. Mus. Hein. p. 25.

Rubro-coccinea, dorso toto et cauda obscurioribus: rostro cyanescenti-plumbeo, tomiis pallidioribus: pedibus nigris. ♀ *flavescenti-olivacea: superciliis et corpore subtus flavis.*

Long. tota 8·0, alæ 3·9, caudæ 2·9.

Hab. British Guiana (*Schomb.*); Brazil; Rio; Bahia and Minas (*Max.*); S. Paolo (*Licht.*); Paraguay (*Azar.*); Bolivia (*d'Orb.*); Buenos Ayres (*d'Orb.*); East Peru (*Tsch.*).

Mus. Berol., Brit., &c.

This bird is clearly distinct from the North American *P. æstiva* upon an accurate comparison. It is of quite a different red, being much brighter; the bill is larger and of a dark plumbeous, not horn colour, and the feet are nearly black.

As I find that Spix's *T. saira*, of which I have seen the type at Munich, is the female of this bird, I have thought it right to use that name for it, as first given, instead of the usually adopted *azaræ*.

4. Pyranga hepatica.

Pyranga hepatica, Sw. Phil. Mag. 1827, p. 438.

Phœnisoma hepaticum, Cab. Mus. Hein. p. 25.

Pyranga dentata, Licht. in Mus. Berol.

Pyranga azaræ, Sitgreaves' Rep. Exp. p. 82?

Supra cinerascenti-rubra; capite summo et corpore subtus coccineis, lateribus cinerascentibus: rostro nigro-plumbeo, pedibus nigro-brunneis. ♀ *olivacea: pileo flavescentiore: subtus flava, lateraliter olivascens.*

Long. tota 8·0, alæ 4·1, caudæ 3·0.

Hab. Mexico, Real del Monte (*Bullock*); Orizaba (*Botteri*).

This Mexican species is quite different from the *saira* and *æstiva*, being larger in size and greyish-red above. I have never observed it except in collections from Mexico. I think the *P. azaræ*, noticed in Sitgreaves' 'Report of the Zuni and Colorado Rivers Expedition,' is very likely to be this bird, as the *saira* (*azaræ*) does not range nearly so far north.

5. Pyranga ludoviciana.

Tanagra ludoviciana, Wils. Am. Orn. pl. 20. fig. 1; Aud. Orn. Biogr. iv. p. 385. et v. p. 90; Am. Orn. pl. 354. fig. 1. 2 (♂), et 400. fig. 4 (♀).

Pyranga ludoviciana, Bp. P. Z. S. 1837, p. 117; Aud. Syn. p. 137. et Am. Orn. 8vo. ed. iii. pl. 210. p. 231; Gray, Gen. p. 364; Bp. Consp. p. 241.

Tanagra columbiana, Jard. Wils. i. p. 317.

Pyranga erythropis, Vieill. N. D. d'H. N. xxviii. p. 291. et Enc. Méth. 799.

Flava, interscapulio, alis et cauda nigris: alis flavo et flavicanti-albo bivittatis: capite et gutture undique coccineo indutis. ♀ olivacea, subtus flava, alarum vittis et secundariorum margine externa apicali albis.

Long. tota 6·7, alæ 3·9, caudæ 2·9.

Hab. North America, Platte river and Columbia river (*Aud.*); Mexico, Orizaba (*Botteri*); Guatimala (*Constancia*) (*Bp.*); San Blas (*Kellett*).

Mus. Brit., Derbiano.

6. Pyranga erythrocephala.

Spermagra erythrocephala, Sw. Phil. Mag. 1827, p. 437.

Pyranga cucullata, Du Bus, Bull. Ac. Brux. xiv. pt. 2. p. 105 (1847); R. Z. 1848, p. 245; Bp. Consp. p. 241; Gray, Gen. App. p. 16.

Pyranga erythrocephala, Bp. R. Z. 1851, p. 178. et Note s. l. Tang. p. 29.

Olivaceo-viridis, subtus flavescens: capite toto et gula coccineis: maxilla medialiter non dentata.

Long. tota 6·0, alæ 3·0, caudæ 2·7.

Hab. Mexico, Temiscaltipec (*Bullock*).

Mus. Derbiano.

7. Pyranga rubriceps.

Pyranga rubriceps, Gray, Gen. p. 364. pl. 89; Bp. R. Z. 1851, p. 178. et Note s. l. Tang. p. 29; Sclater, P. Z. S. 1855, p. 156.

Pyranga erythrocephala, Gray, Gen. App. p. 16 (err.); Bp. Consp. p. 241.

Pyranga pyrrhocephala, Massena, MS.

Supra olivacea; alis caudaque nigris, cauda et secundariis

olivaceo limbatis : tectricibus superioribus flavis : capite toto cum cervice undique et pectore coccineis : abdomine flavo.

Long. tota 6·7, alæ 3·7, caudæ 3·0.

Hab. New Grenada, Bogota.

Mus. Brit., Paris.

8. PYRANGA ERYTHROMELANA.

Tanagra erythromelas, Licht. Preis-Verz. d. Saüg. u. Vög. no. 69 (1831).

Pyranga leucoptera, Trudeau, Journ. Phil. viii. 160. 1837; Bp. Consp. p. 241.

Pyranga bivittata, Lafr. R. Z. 1842, p. 70; Gray, Gen. p. 364.

Coccinea : fronte et lateribus capitis cum mento summo alis caudaque nigris : interscapulio partim nigro : alis albo bivittatis. ♀ *flavo-olivascens, subtus flava, alis et cauda nigris : illis albo bivittatis.*

Long. tota 5·7, alæ 2·9, caudæ 2·2.

Hab. South Mexico, Lagunas (*Deppe,* in Mus. Berol.); Orizaba (*Botteri,* in Mus. Brit.); Xalapa (*Cab.*); Cordova (*Sallé*); Guatimala (*Constancia,* in Mus. H. E. S.).

Mus. Brit. Berolinensi.

9. PYRANGA ARDENS.

Phœnisoma ardens, Tsch. Wiegm. Arch. 1844, p. 207.

Phœnisoma bivittatum, Tsch. F. P. p. 207; Cab. Mus. Hein. p. 24.

Pyranga erythromelas, Sclater, P. Z. S. 1855, p. 156.

Coccineus : loris, alis et cauda nigris : alis albo bivittatis. ♀ *flavo-olivascens, subtus flava : alis (albo bivittatis) et cauda nigris.*

Long. tota 5·7, alæ 3·0, caudæ 2·4.

Hab. New Grenada, Bogota; Venezuela, Cariana near Cariaca (*Dyson*); north-east wood-region of Peru (*Tsch.*).

Mus. Brit., Paris., Derbiano, &c.

This South American bird has not the black front and chin of the Mexican *P. erythromelana,* with which it is generally united, and has less appearances of black between the wings. If these differences are constant, as they appear to be in all the specimens which I have access to at present, the two species may be rightly regarded as distinct.

Lafresnaye gives no locality for his *P. bivittata,* but his description is rather more applicable to the Mexican bird, and Tschudi's '*ardens*' seems the only term left for the South American form.

10. PYRANGA BIDENTATA.

Pyranga bidentata, Sw. Phil. Mag. 1827, p. 428; Gray, Gen. p. 364; Bp. Consp. p. 241.

Pyranga sanguinolenta, Lafr. R. Z. 1839, p. 97; Gray, Gen. p. 364; Bp. Consp. p. 241.

Phœnisoma bidentatum, Cab. Mus. Hein. p. 24.

Dilute coccinea : interscapulio pallide flavescenti-brunneo, nigro variegato : secundariorum et tectricum alarium apicibus albo maculatis, his maculis sanguineo tinctis.
Long. tota 7·5, alæ 3·75, caudæ 3·25.
Hab. Mexico, Temiscaltepee (*Bullock*); Xalapa (*Mus. Berol.*).
Mus. Berol., Eytoni.

Genus XXIV. Ramphocelus.

Ramphocelus, Desm. Tang. et Man. p. 5 (1805).
Ramphopis, Vieill. Analyse, p. 32 (1816).
Jacapa, Bp. R. Z. 1851, p. 178.

Rostrum subbreve, mandibulæ inferioris basi dilatata et quasi quadriformi : alæ breves, remigibus tertia, quarta et quinta longissimis : cauda rotundata : ptilosis marium velutino-coccinea aut purpurea, fœminarum brunnea, aut olivaceo-flava.

a. *Ramphocelus.*

1. Ramphocelus brasilius.

Tanagra brasilia, Linn. S. N. i. p. 314; Max. Beitr. iii. 515; Du Bois, Orn. Gal. pl. 124.
Ramphocelus coccineus, Vieill. Enc. Méth. p. 796. et Gal. Ois. pl. 79.
Ramphopis coccinea, Sw. Orn. Dr. pl. 18 (♂). 9 (♀).
Ramphopis brasilia, Gray, Gen. p. 363.
Ramphocelus brasilius, Bp. Consp. p. 242.
Tangara du Mexique appellée Cardinal, Buff. Pl. Enl. 127. fig. 1. ♂ (*fig. pess.*).
Ramphocele scarlatte, Desm. Tan. pl. 28 (♂). 29 (♀).
Brazilian Tanager, Lath. G. H. vi. p. 3.

Velutino-coccineus; alis, caudaque et tibiis nigris; rostro nigro-plumbeo, mandibulæ inferioris basi alba. ♀ *fusco-brunnea; uropygio et abdomine erubescenti-brunneis.*
Long. tota 7·5, alæ 3·2, caudæ 3·2.
Hab. South-east Brazil; Rio; Bahia, common (*P. Max.*).
Mus. Brit., Paris., &c.

2. Ramphocelus dorsalis.

Ramphocelus dorsalis, Bp. MS.; Sclater, P. Z. S. 1854, p. 97.

Coccineus : dorso inter alas obscuriore : alis caudaque nigris : tibiis brunneis : rostro nigro-plumbeo, mandibulæ inferioris basi alba. ♀ *fusco-brunnea : uropygio et abdomine erubescenti-brunneis.*
Long. tota 7·5, alæ 3·2, caudæ 3·2.
Hab. South-east Brazil, Rio and Pernambuco (*J. Verreaux*).
The characters that separate this species from the last are certainly slight, but I think it is very possible that they may be really distinct.

3. Ramphocelus nigrigularis.

Tanagra nigrogularis, Spix, Av. Bras. ii. pl. 47. p. 35.
Tanagra ignescens, Less. Cent. Zool. pl. 24.
Ramphopis nigrigularis, Sw. Orn. Dr. pl. 17; Gray, Gen. p. 363.
Ramphocelus nigrigularis, Bp. P. Z. S. 1837, p. 121; Bp. Consp. p. 242.

Coccineus: regione oculari cum gula summa, interscapulio, alis caudaque, et ventre medio cum crissi dimidio inferiore sericeo-aterrimis: rostro nigro-plumbeo, mandibulæ inferioris basi alba. ♀ mari similis sed valde obscurior et colore nigro brunnescente.

Long. tota 6·7, alæ 3·2, caudæ 3·0.
Hab. Upper Amazon (*Spix*); Barra do Rio Negro (*Wallace*); Sarayaçu on the Ucayali (*Hawxwell*).
Mus. Brit., Paris., &c.

b. *Jacapa.*

4. Ramphocelus jacapa.

Tanagra jacapa, Linn. S. N. i. p. 313.
Le bec d'argent, Buff. H. N. iv. p. 259.
Tang. pourpré de Cayenne, Buff. Pl. Enl. 128. fig. 1 et 2.
Tanagra albirostris, Bodd. Tabl. d. Pl. Enl.
Ramphocelus purpureus, Vieill. Enc. Méth. p. 796.
Ramphopis atrococcineus, Sw. Orn. Dr. pl. 20; Schomb. Reise, iii. 668.
Ramphocelus jacapa, Less. R. Z. 1840, p. 132; Bp. Consp. p. 241.
Ramphopis jacapa, Gray, Gen. p. 363. sp. 1.
Ramphocele bec d'argent, Desm. Tan. pl. 30 (♂). 31 (♀).
Red-breasted Tanager, Lath. G. H. vi. p. 2; Edwards, Glean. pl. 267.

Sericeo-ater, capite toto et corpore subtus sanguinolente purpurascentibus: dorso eodem colore tincto: ventre crissoque obscurioribus: alis caudaque nigerrimis brunneo tinctis: rostro et pedibus nigris: mandibulæ inferioris basi argentescenti-plumbea. ♀ fusco-brunnea, alis caudaque obscurioribus: uropygio et corpore subtus erubescentibus: rostro toto brunnescenti-corneo.

Long. tota 6·5, alæ 3·1, caudæ 2·9.
Hab. British Guiana (*Schomb.*); Lower Amazon (*Wallace*); Cayenne.
Mus. Brit., &c.

5. Ramphocelus unicolor, sp. nov.

Sanguinolente purpurascens fere unicolor: alis caudaque nigris brunneo tinctis: rostro nigro, mandibulæ inferioris basi plumbea: pedibus nigerrimis.

Long. tota 6·0, alæ 3·1, caudæ 2·9.
Hab. New Grenada, Bogota.
Mus. Brit. & P. L. S.

I have two Bogota skins of this bird. It comes very close to *R. jacapa*, of which it is doubtless the New Grenadian representative. But it is of the same dark sanguineous purple above as below, while *R. jacapa* has the back almost black, just glossed with that colour. Its bill is of the same size as in the *jacapa*, but the base of the lower mandible is not so bright.

6. Ramphocelus magnirostris.

Ramphocelus magnirostris, Lafr. R. Z. 1853, p. 243.

Similis R. jacapæ, *sed crassitie paulo majore, rostro majore, longiore, et colore pectoris clariore differt.*
Hab. Trinidad.
Mus. Brit.

I have seen many examples of this bird from the island of Trinidad. It certainly seems to have the beak always larger than the Cayenne bird, but this feature varies a little, some individuals being particularly remarkable for the size of the beak. The breast is also rather brighter than in *R. jacapa*.

7. Ramphocelus venezuelensis.

Ramphocelus venezuelensis, Lafr. R. Z. 1853, p. 243.

Valde affinis R. jacapæ, *sed pileo, collo, dorso uropygioque totis nigro-granatinis, et subtus rubedine paulo intensiore: media parte abdominis nigra: mandibula inferiore breviore, retro minus producta: nigredine alarum et caudæ intensiore.*
Hab. Venezuela (*Lafr.*).
Mus. Lafresnayano.

I have not yet seen any bird answering to this description of M. de Lafresnaye.

8. Ramphocelus dimidiatus.

Ramphocelus dimidiatus, Lafr. Mag. de Zool. 1837, pl. 81; Bp. Consp. p. 242; Sclater, P. Z. S. 1855, p. 156.
Ramphopis melanogaster, Sw. Am. in Men. p. 359.
Ramphopis dimidiatus, Gray, Gen. p. 363.

Corpore supra ad dorsum medium et gutture cerviceque antica obscure coccineis, pennis subtus nigricantibus: dorso imo et abdomine coccineis, dorso clariore; ventre medio tibiisque nigris: alis caudaque nigricantibus: rostro nigricanti-plumbeo, sed basi argentescenti-alba. ♀ *obscurior, capite toto et gutture nigricanti-fuscis, interscapulio erubescente: tergo et abdomine brunnescenti-coccineis: alis caudaque fuscis.*

Long. tota 6·5, alæ 3·2, caudæ 3·0.
Hab. Carthagena (*Mus. Paris*); New Grenada, S. Martha (*Fontanier*); Bogota; Chiriqui (*Bridges*); Nicaragua (*Delattre*).
Mus. Brit.

9. Ramphocelus luciani.

Ramphocelus luciani, Lafr. R. Z. 1838, p. 54; Mag. de Zool. 1839, pl. 2; Bp. Consp. p. 242.

Ramphopis luciani, Gray, Gen. p. 363.

Similis R. dimidiato, *sed dorso superiore atro: capite purpurascentiore nigro.*

Hab. Carthagena (*Lafr.*).

Mus. Lafresnayano.

I am not well acquainted with this bird, having seen only one example, and that several years ago, in the collection of Baron de Lafresnaye.

10. Ramphocelus uropygialis.

Ramphocelus affinis, Less. R. Z. 1840, p. 1 et 133?; Bp. Consp. p. 242.

Ramphopis affinis, Gray, Gen. p. 363. sp. 4.

Ramphocelus uropygialis, Bp. R. Z. 1851, p. 178; Note s. l. Tang. p. 29.

Velutino-niger, dorso medio coccineo tincto: cervice et pectore antico obscure coccineis, pennis subtus nigris: uropygio, abdomine laterali et crisso vivide coccineis, ventre medio et tibiis nigerrimis: alis caudaque fusco-nigris; rostro nigro, basi argentescenti-plumbea: pedibus nigris.

Long. tota 6·8, alæ 3·3, caudæ 3·1.

Hab. Guatimala.

I have in my care at present the type of *R. uropygialis*. It is the property of Mr. Edward Wilson, and will eventually, I believe, go to the Museum of the Academy of Natural Sciences at Philadelphia. I have never seen a second specimen.

11. Ramphocelus atrisericeus.

Ramphocelus atrisericeus, Lafr. et d'Orb. Mag. de Zool. 1837, p. 34; d'Orb. Voy. p. 280. pl. 26. fig. 1; Tsch. F. P. p. 206; Bp. Consp. p. 242.

Ramphopis atrisericeus, Gray, Gen. p. 363.

Ramphocelus aterrimus, Lafr. R. Z. 1853, p. 244 (avis junr.).

Sericeo-aterrimus: capite supra ad nucham et lateribus obscure purpureis: mento, gula et pectore antico coccineis. Junr. *nigerrimus unicolor.*

Long. tota 6·5, alæ 3·1, caudæ 3·0.

Hab. Bolivia (*d'Orb.*); East Peru (*Tsch.*).

Mus. Brit., Paris.

I have seen several specimens, clearly showing by their intermediate plumage that Lafresnaye's *R. aterrimus* is nothing more than the present bird in its immature state.

12. Ramphocelus passerinii.

Ramphocelus passerinii, Bp. L'Antologia, 1831, no. 130; Less. R. Z. 1840, p. 133 (excl. syn.); Bp. Consp. p. 242.

Ramphopis passerinii, Bp. Notes Orn. p. 52.

Ramphopis flammigerus, Baird, Stansbury's Exp. to Gt. Salt Lake, App. p. 36?

Velutino-niger: dorso postico toto rubro-coccineo. ♀ *flavo-brunneo-olivascens; dorso postico brunnescenti-flavo: capite toto et gula fuscis: alis intus et cauda nigricantibus.*

Long. tota 6·3, alæ 3·1, caudæ 2·7.

Hab. Colombia river, Oregon (*Baird*); Mexico, Guatimala, Nicaragua (*Delattre*); Chiriqui (*Bridges*).

Mus. Paris.

This species may be at once distinguished from *R. flammigerus*, with which it has been generally confounded, by its smaller size.

13. Ramphocelus flammigerus.

Ramphopis flammigerus, Jard. and Selb. Ill. Orn. pl. 131; Sclater, P. Z. S. 1855, p. 156.

Ramphocelus varians, Lafr. R. Z. 1847, p. 216 (*partim*).

Velutino-niger: dorso postico toto ruberrimo.

Hab. New Grenada, Caly (*Delattre*); Bogota.

14. Ramphocelus chrysonotus.

Ramphocelus varians, Lafr. R. Z. 1847, p. 216 (*partim*).

Ramphocelus chrysonotus, Lafr. R. Z. 1853, p. 246; Sclater, P. Z. S. 1855, p. 156.

Ramphocelus aurinotus, Sclater, Tan. Cat. Sp. p. 9 (err.).

Velutino-niger: dorso postico toto aurantiaco-flavo.

Hab. New Grenada, Juntas (*Delattre*).

Mus. Acad. Philadelph.

This orange-rumped bird is scarcer than the other two species, *R. flammigerus* and *icteronotus*, which it so closely resembles; and I have some doubts as to its real distinctness from the former.

15. Ramphocelus icteronotus.

Ramphocelus icteronotus, Bp. R. Z. 1838, p. 8; P. Z. S. 1837, p. 121; Sclater, P. Z. S. 1855, p. 156.

Ramphopis icteronotus, Gray, Gen. p. 363; Dubus, Esq. Orn. pl. 15. ♂ & ♀.

Ramphocelus varians, Lafr. R. Z. 1847, p. 216 (*partim*).

Velutino-niger: dorso postico toto flavissimo. ♀ *pileo, cervice, interscapulio, campteriis et alarum tectricibus minoribus flavo-olivaceis: alis caudaque obscure fuscis, illarum tectricibus mediis et secundariis flavo-olivascente marginatis: rostri ambitu sordide fuscescenti-flavo: corpore subtus flavo.*

Long. tota 6·8, alæ 3·6, caudæ 3·0.

Hab. New Grenada, western coast, S. Bonaventura (*Delattre*), Choco Bay (*Capt. Kellett*); Guyaquil (*Dubus*); Ecuador, western slope of the Andes, near Quito (*Jameson*).

Mus. Brit., Paris., &c.

16. Ramphocelus sanguinolentus.

Tanagra (*Tachyphonus*) *sanguinolentus*, Less. Cent. Zool. p. 107. pl. 39.

Tachyphonus sanguinolentus, Gray, Gen. p. 365.

Ramphocelus sanguinolentus, Bp. Consp. p. 242.

Velutino-ater : pileo postico, nucha cum cervice laterali et pectore conjunctis necnon tectricibus subalaribus et uropygio crissoque coccineis : rostro albo : pedibus nigris. ♀ mari similis, sed coloribus obscuribus.

Long. tota 7·5, alæ 3·7, caudæ 3·3.

Hab. South Mexico, Valle Real (*Deppe* in Mus. Berol.); Cordova (*Sallé*); Coban (*Delattre*, in Mus. Derb.); Honduras, Camalacan river, near Truxillo (*Dyson*).

Mus. Brit., Derbiano.

3. Some remarks on Crustacea of the genus Lithodes, with a brief description of a Species apparently hitherto unrecorded. By Adam White.

(Annulosa, Pl. XLII.)

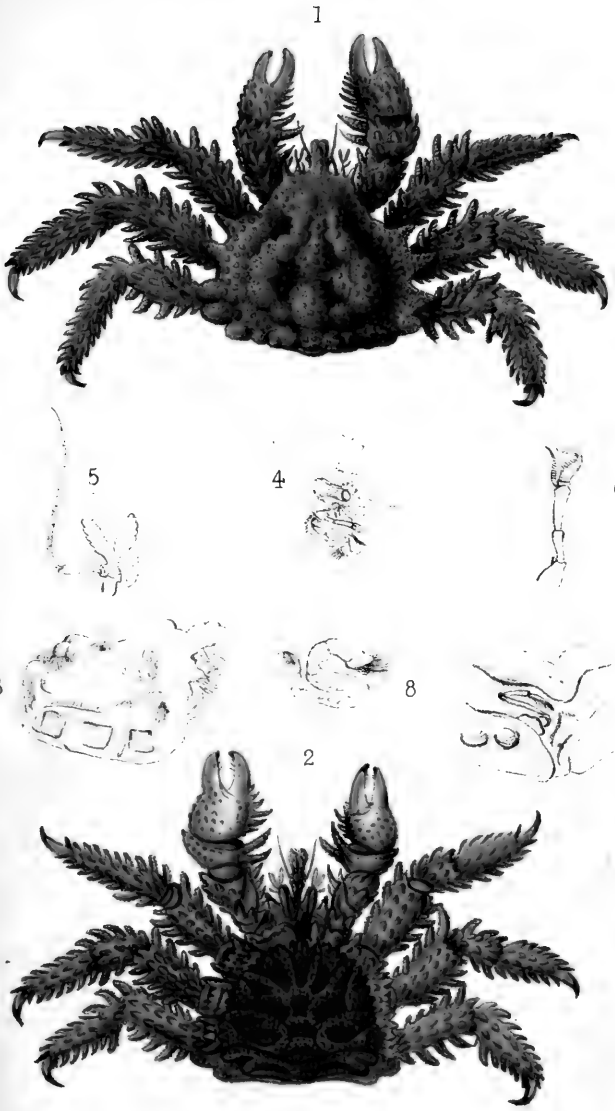
Having laid before the Society a description of the interesting *Lithodes* (*Echidnocerus*) *cibarius*, of which a very excellent figure is published in the Proceedings for 1848, drawn by the late W. Wing, F.L.S., I conceive that a brief account of another very curious *Lithodes*, of which a notice was given at a meeting of the Linnean Society, may not be without interest to some of the members.

The group *Lithodes*, founded by Latreille upon our well-known, though not very common, spine-covered, empty-bodied *Lithodes Maia*, begins now to become better known. Of the excellent figure of this type of the genus, published by Dr. Leach in his 'Malacostraca Britannica,' it is sufficient to say that it was drawn and engraved by the late James Sowerby, F.L.S., and coloured from his pattern.

A very young specimen, procured by R. M'Andrew, Esq., F.R.S., during his late Norwegian cruise, shows that in the young state the asperities are rather sharper, and the carapace is decidedly longer in comparison with its breadth, than in the adult state; the arrested development of the pieces forming the tail is characteristic in the adult as it is in the young specimen, 1 inch long, dredged by Mr. Barrett, and presented by Mr. M'Andrew to the Museum.

Seba (vol. iii. pl. 22. f. 1) has figured a specimen with longer and more divergent terminal horns to the rostrum. As a bad specimen exists of this variety in the Paris Museum, Prof. Milne-Edwards fancies, and with good reason too, that it may prove a distinct species; he has provisionally named it *Lithode douteuse* (Crust. ii. 186); at all events, it is a variety which research may find in this country, for different specimens differ in their degrees of divergence in the horns of the rostrum.

Haan, in his 'Fauna Japonica,' 217. t. 47, has figured the male



Ford L. West, Imp. C.W.W. lith.

LITHODES (PETALOCERUS) BELLIANUS.
White

of *Lithodes Camschatica*, a species first described as *Maia Camschatica* by Tilesius in the 'St. Petersburg Memoirs,' v. p. 336. pl. 5. & 6, the female (1812). This species is named by the Chinese *Sima-gani*—that is, the Insular Crab.

Tilesius tells us that it is found on the shore of Kamschatka, among the rocks, where it conceals itself and keeps sedentary, living upon cuttle fish (*Sepia octopodia*), and snaring Starfishes and Mollusca. He records that this *Lithodes* fixes itself so firmly and resolutely in a hole of a rock, that you could not draw it out without breaking its shell. He compares the tenacity with which the Lithodes is held in the hollow of the rock to the fixedness of the *Echinus mammillaris*.

The same learned naturalist has figured another large species from Japan (218. t. 48) as the *Lithodes hystrix*; it is one which Siebold, in his 'Spicilegia,' p. 15, had only ventured to regard as the common *L. Maia* (*Lithodes arctica*, Lam., Sieb.). The *L. hystrix*, Haan, is a beautifully distinct species very thickly covered with sharp spines, named by the Japanese, *Jeara-gani*, the prickly crab, or *Aka-onigani*, the Devil's red-crab.

This list completed the number of the group found in the northern hemisphere, up to the publication of *L.* (*Echidnocerus*) *cibarius*, before alluded to. The species to be described in this paper was found by Mr. Lobb cast ashore after a violent storm on the coast of California; and as it has some peculiarities of structure in its legs, antennæ, carapace and abdomen, distinguishing it from any other, it may be named *Lithodes* (*Petalocerus*), from the beautiful petal-like lobes of the antennæ. Before describing it, it may be well to review the species of *Lithodes* found in the southern hemisphere.

Messrs. Hombron and Jacquinot, on D'Urville's 'Voyage au Pole Sud,' discovered a fine species which they named *Lithodes antarctica*, pl. 7–8. f. 9, jun. Dana, too, has described and figured this in the 'Crustacea of the United States Exploring Expedition,' i. 427. pl. 26. f. 15. ♀. He found it at Nassau Bay in Fuegia, where he tells us it grows to a very large size; the exuviæ of one, obtained by Mr. Dana, were 8 inches long, and the longest legs were 15 inches in length. He describes the species as abundant in water 6 or 7 feet deep, "where it is observed to creep along the bottom with sluggish motion; they have no legs or appendages fitted for swimming. Colour, dark cherry-red, the carapace with a slight purplish tinge. The long spines that cover the carapace and legs are longest proportionally in small individuals; the right hand is much the stoutest, the second basal joint of outer antennæ with a single longish spine on the outer side" (*loc. cit.* i. p. 428).

We hope that Mr. Despard and his noble band, who are now, or will shortly be, in these seas, will find this and the other, and perhaps new, Fuegian species. Specimens of the young are sometimes found in the stomachs of fishes, as in the case of the half-digested *Lithodes Maia* sent to Dr. Leach by the late Dr. Patrick Neill, and now in the British Museum. It would be well to keep some specimens like this.

Gay in his 'Chili' mentions it (iii. 182) as a native of Chili.

The *Lithodes granulosa*, Hombron and Jacquinot, 'Voy. au Pole Sud,' pl. 8. f. 15, has the beak scarcely projecting at all beyond the extra-orbital angle, the carapace and upper parts of its legs are thickly invested, as in some of the *Canceridæ*, with close strawberry-surfaced granules, closely pressed together. It is a small species, evidently very distinct from *Lithodes* and more allied to *Lomis*—it may be called *Paralomis granulosa*. We have it in the British Museum. The figure in the 'Voyage au Pole Sud,' is extremely bad, not at all giving correctly the surface of the carapace and legs, which are *closely* matted with the warts.

Messrs. Edwards and Lucas have published the description of a fine species, said to come from the Southern Pacific, in the Archives du Museum, ii. 465. pl. 24–27, and given ample details of it. It is named, from its short legs, *Lithodes brevipes*; its beak is short. In the British Museum we have a specimen.

The *Lithodes verrucosa*, Dana (pl. 26. f. 16. vol. i. pl. 428), was found by that able and active naturalist in Fuegia. The carapace is verrucose throughout.

The *Lomis hirta* of M. Edwards, founded on the *Porcellana hirta* of Lamarck (Anim. s. vert. v. 229), is an interesting generic form, to which Lichtenstein, in one of his catalogues, had applied the name *Thylacurus*. De Haan, who quotes this, has figured a second species in his 'Fauna Japonica' (219. t. 48. f. 2. & t. Q), under the name *Lomis dentata*:—"tota tomentosa, setis brevibus densis; thoracis margine medio 8-spinoso, pedibus secundis, tertiis et quartis margine antico 15-spinosis, spinis cristam subcontinuam formantibus."

Lomis hirta is abundant on the coast of Tasmania.

Lithodes (Petalocerus) Bellianus. (Pl. XLII.)

The first feature of the curious crab here figured is the strawberry-like surface of its carapace, and of the blunt spines with which its legs are covered; the next feature is the subequilateral triangular figure of that carapace; this part is produced above the eyes into a notched projection, with two slight prominences down the middle; this covers up the front part of the head, and conceals a wart-covered spine above the base of the pedicels of the eye, which pedicels are spiny above. The carapace has 3 spines on each side, and 2 tubercles; the first spine is directed forwards, and has one or two indistinct spinelets at its base, the second and third are separated from the first by a considerable sinus, and are near each other; they are directed laterally, but slightly inclined forwards like the other two, and indeed like the whole of the carapace and the spines on the legs; they are covered with the close warting so characteristic of this species; the two tubercles on the lateral border, but at its end are united at the base; the anterior is the larger; the hind part of carapace is straight, bending round towards these tubercles and thickened on the edges, one of its monticuli being connected with the hindmost lateral tubercle; the stomach, genital, and cardiac regions

are covered by a projecting portion occupying a considerable part of the back of the carapace and raised above it; this projecting part is environed by a somewhat lyre-shaped wall, pinched in front on the sides and somewhat notched behind with two deep fossæ placed transversely and connected by a short canal, the base of which is smooth with only a few groups of warts.

The abdomen is very regular and complete for the group, and when additional specimens will admit of its being dissected, its structure promises to be curious; the various parts of it are hardly perceptible in the individual examined; a tolerably regular series of strange, close-placed appendages on its edges, seem, on cursory observation, very curious: there are about 12 deepish fossæ over it, the 2 deepest in the basal portion close to back part of carapace, and almost at right angles to the rest of abdomen, 3 on each side diverging into smaller fossulæ towards the edges, and four down the centre. The figures, drawn by Mr. Westwood from the specimen, before it came into Mr. Bell's possession, show as much as can be shown without injuring the rare example.

I exhibited a drawing of this crab at a meeting of the Linnean Society some two years ago, and not having the specimen by me, concluded, as Mr. Westwood's drawing showed it, that there were no visible traces of the imperfectly developed leg-appendages, so prominent in some species of *Lithodes*. A subsequent examination of the specimen kindly sent me by Prof. Bell has shown me I was mistaken; and on removing the carapace, which Mr. Westwood did, they are to be seen concealed as represented in the figure. There is, however, no outward opening.

This fine species is named *Lithodes* (*Petalocerus*) *Bellianus* in compliment to the ablest of our British carcinologists, the learned and scientific President of the Linnean Society, Professor Thomas Bell; in whose fine collection it is preserved. It is to him I am indebted for the loan of the specimen.

The plate represents—

1. *Lithodes* (*Petalocerus*) *Bellianus*, of the natural size, viewed from above.
2. The same from beneath, showing the pitted abdomen.
3. Rough sketch of carapace in profile.
4. Profile view of rostrum, with eyes, antennæ, &c.
5. Outer antennæ with petaloid processes.
6. Inner antennæ.
7. Hind pair of legs, concealed under the carapace.
8. Jaw feet.

May 27, 1856.

Dr. Gray, F.R.S., in the Chair.

Mr. Gould brought under the notice of the Meeting a portion of the Birds collected by Mr. John MacGillivray, the naturalist at-

tached to H.M. Surveying ship Rattlesnake, and lately sent home by Capt. Denham, the Commander of the Expedition. They were obtained on the Fijis, San Cristoval, Isle of Pines, and other islands.

Perhaps the most remarkable of these birds is a species of *Centropus*, which exceeds in size every other member of the genus Mr. Gould has yet seen. The single specimen sent home is not fully adult, as is evidenced by some freshly moulted feathers of the tail and wings differing in colour from the older ones. On account of its large and robust form, Mr. Gould proposes to call this species

CENTROPUS MILO.

Head, neck, mantle and breast tawny-white, remainder of the plumage mottled brown and green; some of the feathers being brown indistinctly banded with green, while others are entirely green, the mottled hue being that of immaturity, and the green the adult livery: bill black.

Total length, 26½ inches; bill, 2½ inches long by 1½ deep at the base; wing, 10¾; tail, 14½; tarsi, 3.

Hab. Guadalcanar Island.

Remark.—The specimen is a male. Unlike the other members of the genus, this species has bare orbits, with the colouring of which Mr. Gould is not acquainted.

For a fine species of Fruit-eating Pigeon from the Isle of Pines, Mr. Gould proposed the name of

IANTHŒNAS HYPŒNOCHROA.

Head, neck, breast, and under surface vinaceous brown, with glossy purple reflexions on the back of the neck, and a slight gloss of the same hue on the sides of the neck and breast; chin, sides of the face and throat white; all the upper surface, wings and tail dark slate grey, the margins of the wing-coverts and the feathers of the back and upper tail-coverts glossed with bronzy green; bill scarlet at the base, yellow at the tip; orbits naked and scarlet; feet reddish flesh colour.

Total length, 16 inches; bill, 1⅛; wing, 9¼; tail, 7; tarsi, 1.

Hab. Isle of Pines.

Remark.—This is a fine species, about the size of the common Pigeon of Europe. It pertains to the subgenus *Ianthœnas*, the members of which are very nearly allied to the birds constituting the genus *Carpophaga*.

Another pigeon from the same locality was named

TURACŒNA CRASSIROSTRIS.

Head, all the upper surface, wings and tail dark slaty black, the feathers of the back margined with a deeper black; a broad band of grey across the lateral tail feathers near the base, and the outer feather on each side tipped with darker grey; throat greyish white; under surface sooty, washed with grey on the sides of the neck, the breast and centre of the abdomen.

Total length, 14½ inches; bill, 1⅛; wing, 7¾; tail, 7½; tarsi, 1.
Hab. Guadalcanar Island.

Remark.—This is a smaller bird than the Australian *Macropygia phasianella*, has a much thicker bill, and a shorter tail, which organ is moreover of a graduated form.

A fine Lory from San Cristoval was named

LORIUS CHLOROCERCUS.

Head, nape, and a patch on each side the neck black; plumage of the whole of the body fine scarlet, with a broad crescentic mark of rich yellow across the breast; tip of the shoulder silvery blue; wing-coverts yellowish green; outer webs of the primaries and secondaries dark grass-green; inner webs dull black, with a broad oblong mark of scarlet along their basal portions; basal half of the tail scarlet, the remainder grass-green; under wing-coverts and thighs fine blue; bill orange; feet dark brown.

Total length, 10 inches; bill, ⅞; wing, 6⅝; tail, 4¼; tarsi, ¾.
Hab. San Cristoval.

Remark.—This is one of the most beautiful species of the genus, and differs from all its congeners in having the apical half of the tail green.

A new *Hirundo* from Moala, one of the Feejee Islands, was characterized as

HIRUNDO SUBFUSCA.

Forehead, chin and throat rufous; crown of the head, all the upper surface, wing- and tail-coverts steel black; wings and tail dark brown; under surface of the body and under wing-coverts dark fuscous; under tail-coverts steel black, margined with light brown.

Total length, 5 inches; bill, ½; wing, 4¼; tail, 2; tarsi, ½.
Remark.—This is a very remarkable Swallow, resembling in the colouring of its back, throat and forehead the common Swallow of Europe; it is also very similar in size, while it has a much larger bill and a very diminutive and but slightly forked tail, the outer feathers not being produced as in the European bird.

The five birds above described are now deposited in the collection at the British Museum.

Mr. Gould also described a new and very beautiful Pigeon from the Solomon Islands as

IOTRERON EUGENIÆ.

Crown of the head, cheeks, upper part of the throat and ear-coverts white; centre of the throat and chest of the richest crimson; upper surface and wings green washed with orange; along the shoulder a mark of light grey, and a large spot of grey near the tip of each of the tertiaries; primaries dark slate grey tipped with orange-brown; secondaries slate grey bordered with orange-brown, and with a very narrow edge of yellow along the apical portion of

the external web; under surface of the body greyish green; under surface of the wings grey; vent washed with yellow.

Total length, about 8 inches; bill, $\frac{3}{4}$; wing, $4\frac{1}{2}$; tarsi, $\frac{5}{8}$.

Hab. The Solomon Islands.

Remark.—The only specimen I have ever seen, and which is unfortunately imperfect, being destitute of tail, was sent to me by Mr. Webster, who had visited the above islands. This beautiful little Pigeon, certainly the most brilliantly coloured of the entire group, has been named in honour of Her Imperial Majesty the Empress of the French.

2. List of Mammals and Birds collected by Mr. Bridges in the vicinity of the Town of David in the Province of Chiriqui in the State of Panama. By Philip Lutley Sclater, M.A.

The town of David lies in a beautiful plain on the left bank of the river of the same name, about twenty-five miles above its exit into the Pacific at Boca Chica. On the west of the town rises the extinct volcano of Chiriqui, a peak 9000 feet in altitude, and on the north the Sierra de Chorcha, a flat table-mountain, which here forms the watershed between the two oceans.

Mr. Bridges arrived at David in the month of January in the present year, and stayed there until the middle of the following March. He was principally engaged in collecting the magnificent Orchids of that country, of which he succeeded in obtaining a considerable series. During his leisure moments, however, he procured about fifty species of Mammalia and birds, of which a list is subjoined. These were principally collected near the town on the banks of the river, or between that and the '*Boqueti*,'—an elevated savannah of about 4000 feet above the sea-level, lying on the western slope of the volcano of Chiriqui.

This locality is very interesting to naturalists, being a stage in the passage between North American and South American zoology, which has not, as far as I am aware, been hitherto much explored. M. Warszewiz, the well-known Polish collector, was resident in David some time in 1849, but did not turn his attention much to birds except *Trochilidæ*, of which he discovered the six very interesting new species which were described by Mr. Gould before this Society in 1850.

Mr. Bridges has very greatly added to the value of my list by supplying me with notes upon the exact spot in which he found each species and upon what he recollected of their habits.

The nearest Bird-fauna to the present of which any detailed accounts have been published are those of Nicaragua, as given by Prince Bonaparte in his catalogue of the Birds brought from that country by Delattre in the *Comptes Rendus* of the Academy of Paris for 1854, and of the interior of New Granada, as shown by my List

of Birds received in collections from Bogota read before this Society last year. To both of these papers I have frequently referred in the following list in order to show the geographic range of the species, and to avoid the repetition of synonymy already given.

Mammalia.

1. Saimaris sciurea (Linn.)?
Forests near David. A skeleton only of an animal probably of this species.

2. Sciurus ———— ?
A black species, difficult to distinguish. Mr. Bridges states that it is common in the immediate vicinity of the town of David, and between that and the port of Boca Chica.

3. Sciurus æstuans, Linn.
This seems to agree with Bogota specimens so marked in the British Museum. It is from the Boqueti at the base of the volcano of Chiriqui.

4. Cyclothurus didactylus (Linn.).
From the vicinity of David. Also seen near Panama. A strictly nocturnal animal.

5. Cholæpus didactylus.
From the forests near David. I believe neither this Sloth nor the Little Anteater has been hitherto observed so far north.

Aves.

1. Pharomacrus mocinno, De la Llave!—*Trogon resplendens*, Gould, Mon. Trog. pl. 21.
From the dense forest on the Boqueti; only three specimens seen.

2. Trogon aurantiiventris, Gould, sp. nov. See *antea*, p. 107.
Inhabits the same locality as the preceding, and is more common. Also found farther down towards David.

3. Momotus lessoni, Lesson, Icon. Orn. pl. 62.
Agrees with Guatimala specimens. From the vicinity of David in the thickets. Stops during the day in the shady underwood, and seeks its food towards evening in the open spaces on the banks of the river.

4. Ceryle americana (Gm.)—P. Z. S. 1855, p. 136.
On the banks of the river David. Its habits are the same as those of our Kingfisher. Mr. Bridges also observed a large species more common than this, probably *C. torquata*.

5. Galbula melanogenia, Sclater, Cont. Orn. 1852, p. 61 et 93, pl. 90.

On the banks of the river David, rather uncommon, only three or four times observed.

6. Campylopterus cuvieri.—*Trochilus cuvieri*, Delattre et Bourc. R. Z. 1846, p. 310.

7. Heliomaster longirostris (Vieill.).—Gould, Mon. Troch. pt. 5, pl. 9.

8. Lampornis veraguensis, Gould.

These three Humming-birds are found in the outskirts of the town of David, feeding among the flowers of a large arborescent species of *Erythrina*.

9. Amazilius riefferi (Bourc.), R. Z. 1843, p. 103.

Found feeding on a malvaceous plant near the Boqueti, at an elevation of 4000 feet.

10. Saucerottia niveiventris (Gould), P. Z. S. 1850, p. 164.

11. Saucerottia atala (Less.).—Bp. Consp. p. 77.

12. Hylocharis (?) cæruleigularis (Gould), P. Z. S. 1850, p. 163.

All these three short-billed species are found in the very town of David feeding on the *Tamarindus indicus* and orange-trees. They are very pugnacious and constantly fighting together. Besides the seven Humming-birds here given, Mr. Bridges observed three others of which he did not obtain specimens. One of these (probably *Heliomaster constantii*) was feeding on a beautiful blue species of *Salvia* on the Boqueti.

13. Cæreba cyanea (Linn.).

Already noticed as far north as Nicaragua (Bp. Notes s. l. Ois. Coll. Delattre, p. 50), and lately brought by M. Sallé from the vicinity of Cordova in Mexico.

14. Picolaptes ——?

Vicinity of the town of David on the large forest-trees, with the habits of our Creepers.

15. Thryothorus rufalbus, Lafr. R. Z. 1845, p. 337; P. Z. S. 1855, p. 143.

In the dense jungle near David.

16. Rhodinocichla rosea (Less.), P. Z. S. 1855, p. 141.

Mr. Bridges only procured one specimen of this singular bird—a male. It was hopping about in the thicket close to the ground in the flat land between the rivers David and Chiriqui, uttering a very peculiar note, by which his attention was called to it.

17. Mniotilta varia (Linn.).

A North American species, ranging as far south as Bogota (P. Z. S. 1855, p. 143). Mr. Bridges says it has the habits of our Creeper,

running up the trunks of the trees and searching for insects in the bark. He found it in the town of David.

18. Rhimamphus æstivus (L.), juv.
Mr. Bridges found this bird not uncommon in the town of David in the fruit-trees and *Erythrinæ*.

19. Tyrannus melancholicus, Vieill. P. Z. S. 1855, p. 150.
Margins of the plains near David, very common.

20. Milvulus tyrannus (Linn.).—"*Tijerita.*"
Ranges from the Southern United States as far south as Bogota (P. Z. S. 1855, p. 150). Very common in the plains near David.

21. Todirostrum cinereum (Linn.).
See my remarks on the range of this species, P. Z. S. 1855, p. 148. Mr. Bridges found it amongst the trees in the vicinity of David.

22. Tyrannulus elatus (Spix),—P. Z. S. 1855, p. 150.
On the trees in the vicinity of David.

23. Tityra mexicana (Less.).—*Psaris mexicana*, Less. R. Z. 1839, p. 41, et *P. tityroides*, Less. R. Z. 1842, p. 41.
I consider this bird probably distinct from *Tityra semifasciata* of Bolivia and East Peru, to which it is generally united. It has all the rectrices banded across with black; while the other, speaking from the specimens I have seen of it, has the inner web of the outer pair of tail-feathers white. Delattre procured this bird in Nicaragua (Bp. Notes Orn. p. 88); M. Sallé has lately brought specimens from Cordova in Mexico; Mr. Bridges' examples are from the forests on the Boqueti.

24. Chiroxiphia melanocephala (Vieill.). See P. Z. S. 1855, p. 151.
In the bushes on the margins of the rivers near David.

25. Thamnophilus doliatus?

26. Thamnophilus bridgesi, sp. nov.
T. fumoso-brunneus: capite nigro, plumarum rachidibus albis: alarum tectricibus nigris maculis apicalibus rotundis albis: remigibus et rectricibus fumoso-nigricantibus, harum trium utrinque extimarum apicibus nigro marginatis; illarum marginibus externis brunnescentibus: gula et pectore toto ad summum ventrem nigricantibus, longitudinaliter albo striatis: tectricibus subalaribus albis.
Long. tota 6·7, alæ 2·8, caudæ 2·5.
This is a typical *Thamnophilus* not very closely allied to any described species, but to be placed near *nigrocinereus, maculipennis*, &c. (*vide* Edinb. Phil. Journ. n. s. 1855, i. p. 226 *et seq.*). Mr. Bridges found these two Bushshrikes in the thick bush on the margins of the river David. The first species was very common, but of the present only one individual was seen.

27. Thamnophilus melanurus, Gould?
A female specimen, probably referable to the New Grenadian species.

28. Sturnella ludoviciana (Linn.)?
"*Paxaro Savanero.*" Amongst the grass on the plain near David. Very tame, and when disturbed does not fly far, but runs much.

29. Yphantes baltimorensis (Linn.).—Bp. Consp. p. 432.
Already noticed as far south as Real del Monte in Mexico by Bullock (Sw. Phil. Mag. 1827, p. 436), and Guatimala by Prince Bonaparte (P. Z. S. 1837, p. 116).

30. Saltator magnoides, Lafr.

31. Ramphocelus dimidiatus, Lafr. Mag. de Zool. Ois. pl. 81 (1837).

32. Ramphocelus passerinii, Bp.
Both these *Ramphoceli* are tolerably common, and generally met with together in the bushy underwood on the margins of the rivers. They feed on the fruit of a small species of *Ficus*. They are always seen near the water.

33. Pyranga æstiva (Linn.), P. Z. S. 1855, p. 156.
"*Sangue del Toro.*" Not uncommonly met with near the Boqueti on the tops of the trees.

34. Tanagra diaconus, Less.
"*Azulejo.*" The commonest bird in the country. Very abundant in the town of David.

35. Calliste gyroloides (Lafr.).
This is a wide-ranging species, extending hence to the head-waters of the Amazon in Bolivia, where specimens were obtained by d'Orbigny, that is, from 8′ north latitude to 18′ south latitude.
Mr. Bridges says it was not common at David. It is found on the high trees near the town, and feeds on the fruit of the small-fruited *Ficus*.

36. Calliste franciscæ (Lafr.).—*Aglaia fanny* (!!), Lafr. R. Z. 1847, p. 72; Des Murs, Icon. Orn. pl. 56, fig. 1.
This species appears distinct from *Calliste larvata* of Du Bus, to which it is usually united. The general colouring is pretty much the same, but the tints are still brighter in the present bird, and the head in particular is paler.
Mr. Bridges obtained a single specimen only of this beautiful Tanager, from the tops of the high trees on the banks of the river David.

37. Euspiza americana (Linn.).
Already noticed as far south as Nicaragua, and lately received by MM. Verreaux of Paris from S. Martha on the north coast of New Granada. Found in small flocks near David.

38. Embernagra conirostris (Bp.).—*Arremon*! *conirostris*, Bp. Consp. p. 488. — *Embernagra striaticeps*, Lafr. R. Z. 1853, p. 62; P. Z. S. 1855, p. 154.

I consider M. de Lafresnaye is quite right in placing this bird in the genus *Embernagra*. It is, at least, certainly no *Arremon*. It is found, like the last bird, in small flocks near David, feeding on the grass-seeds in the savannahs.

39. Melanerpes formicivorus (Sw.).

Agrees with Mexican specimens. Not rare in the forests of the 'Boqueti,' found on the evergreen *Quercus*.

40. Centurus subelegans, Bp. P. Z. S. 1837, p. 109; Consp. p. 121; P. Z. S. 1855, p. 162.

Seems to agree with Bogota and Venezuelan specimens.

41. Chloronerpes cecilii (Malherbe)?

Both these Woodpeckers are found on the trees in the outskirts of the town of David. The first is the more common, only one pair of the latter having been observed.

42. Geotrygon chiriquensis, sp. nov.

G. pure castanescenti-brunneus: dorso medio purpurascente: pileo cærulescenti-griseo: subtus dilutior, abdomine albescentiore: mento gulaque lactescenti-albis, rufescente tinctis: remigibus et rectricibus nigricanti-schistaceis: caudæ apice brunnescentiore: rostro nigro: pedibus rubris.

Long. tota 11·0, alæ 5·9, caudæ 3·5.

Both Prince Bonaparte and Mr. G. R. Gray, who have lately paid great attention to the *Columbæ*, consider this species as new to science, and it is upon their authority rather than my own that I have ventured to name it as undescribed.

43. Chlorœnas rufina (Temm.).—Bp. Consp. ii. p. 52.

From the dense forests of the Boqueti at the base of the volcano.

44. Odontophorus veraguensis, Gould, *antea*, p. 107.

From the Boqueti, where it is found in coveys running on the ground in the forests. The males have a peculiar call-cry.

45. Aramides cayennensis (Gm.) (Pl. Enl. 352).

In the bush on the banks of the river David.

46. Parra hypomelæna, G. R. Gray, juv.?

Found in the shallow waters running amongst the stones.

A young bird, white underneath, probably of *P. hypomelæna*, but it would be hazardous to decide positively without seeing adult specimens from the same locality.

3. Note on some Birds from the Island of Ascension. By Philip Lutley Sclater, M.A.

Dr. Acland, of Oxford, having lately placed in my hands, for naming, a small collection of birds from the Island of Ascension, I think it will be useful to record a list of them, although none of them are of great rarity, in order to make some contribution, however small, towards a more accurate knowledge of the geographic range of species.

Mr. Darwin (Zool. Beagle, p. 133) tells us that there are no aboriginal land-birds on this island. The only bird he mentions, which might claim that name, is a *Porphyrio* (*P. simplex*, Gould), which however, we are informed, was evidently a straggler not long arrived.

But recollecting the beautiful Thrush (*Nesocichla eremita*) lately described by Mr. Gould from the Island of Tristan d'Acunha, there is certainly no *primâ facie* reason why the Island of Ascension should not also possess peculiar land birds.

The specimens in Dr. Acland's collection are all Natatores, belonging to the following species.

1. Onychoprion fuliginosus (Gm.).

Latham (G. H. x. 102) has recorded the existence of this Tern upon the island in "*prodigious numbers*." It is found also on the American coasts from Texas to the Floridas.

2. Phaethon æthereus, Linn. (Pl. Enl. 998).

Visits Tobago, whence Sir William Jardine received the eggs of this species from his correspondent Mr. Kirk. See Cont. to Orn. 1852, p. 351, pl. 84, where the eggs of all three species of *Phaethon* are figured.

3. Phaethon flavirostris, Brandt (Pl. Enl. 369). *P. æthereus*, Audub. nec Linn.

Mr. G. R. Gray has rejected Brandt's excellent appellation for this species in favour of Brisson's *candidus*. But Brisson was no binomialist, and has no claim to bestow *specific* names in a *binominal system*. This *Phaethon* breeds on the Bermudas (Cont. Orn. *l. c.*), and visits the coast of Florida (Audubon).

Professor Brandt has written a good Monograph of the *Phaëthontinæ* in the Transactions of the St. Petersburgh Academy. These two species, and the *P. phœnicurus* from the Indian Ocean, appear to be the only three well-distinguished birds of the genus.

4. Tachypetes aquila (L.).

This name ought, I think, to be retained for the Atlantic bird. Mr. Gould has described and figured a smaller species from Australia; but he has also a larger bird from the coasts of that country, which appears different from the present.

5. Sula fusca, Vieill. Gal. Ois. pl. 277; Gould, B. Aust. vii. pl. 78.

6. Sula piscatrix (L.); Gould, B. Aust. vii. pl. 79.

Besides these two Gannets I am acquainted with five other apparently well-distinguished species, viz. *S. bassana* of Europe, *S. capensis* of S. Africa, *S. australis* and *S. cyanops* of the Australian seas, and *S. variegata* of the Pacific coast of S. America.

4. Note sur un Nouveau Genre des Oiseaux de Proie. Par Jules Verreaux.

Genre Urubitornis, Verreaux.

Bec beaucoup plus haut que large; très comprimé; légèrement sinueux sur le bord, qui est un peu rentré vers la base; à courbure très sensible et à pointe longue et acérée; angle du bec atteignant à peine le niveau de la partie antérieure de l'œil: cire large et lisse, à narines rondes et percées en avant; face en partie denudée et garnie çà et là de poils noirs: tarses assez longs, robustes, et fortement reticulés, excepté sur la partie postérieure où se trouvent des larges plaques au nombre de neuf; quatre à cinq scutelles sur les doigts, dont l'interne est le plus fort, le médian plus long que l'externe qui est le plus court de tous; le pouce également robuste et armé d'un ongle aumoins aussi fort que l'interne.

Ailes longues, amples, dépassant la queue de plus d'un pouce, à 3^{me} et 4^{me} rémiges les plus longues; toutes les primaires échancrées sur leurs barbes internes. Queue moyenne, carrée et légèrement échancrée au centre, composée de 12 rectrices, barrée transversalement comme dans les vrais *Urubitingæ*.

Dans son ensemble, le genre tient des derniers par la coloration et par la bande transversale de la queue, mais il s'en distingue sous d'autres rapports indiqués ci-dessus. Les tarses surtout ne permettront jamais de le confondre. Sa taille est aussi beaucoup plus forte. Il semble tenir le milieu entre le genre *Harpyhaliaëtus* et *Urubitinga*.

A ne considérer que le plumage du jeune de cet oiseau, on le prendrait pour celui du *Geronoaëtus aguia*, tout il y a de rapport, voire même dans la queue qui ne laisse voir aucune trace de bande transversale, mais qui a la même motelare comme dans les jeunes des *Urubitingas*.

Nous ne sommes donc pas étonnés que Tschudi ait fait de cet oiseau un *Circaëtus* en égard à ces tarses, et que d'autres auteurs en aient fait un *Urubitinga* en ne considérant que la couleur. Nous pensons donc que la place que nous lui assignons est plus naturelle en ce qu'elle lie les deux genres qui ont tant de similitude entre eux.

Sp. typ. et unica Urubitornis solitaria.

Circaëtus solitarius, Tsch. Av. Consp. no. 14; Faun. Per. p. 94, t. 11.—Gray's Gen. p. 13, sp. 6.—Lafr. R. Z. 1849, p. 101.

♂ adulte. Couleur générale, noir-plombé, excepté sur la tête, l'extrémité des rémiges et les rectrices, qui sont d'un noir plus décidé; une large bande blanche traverse la queue, qui est également ter-

minée d'un ruban étroit de même couleur ; on remarque sur les couvertures, tant supérieurs qu'inférieurs, des traces de bandes blanches au centre de quelques plumes, ainsi que quelques bordures vers leur extrémité. Les barbes des rémiges primaires et secondaires ont comme des raies mal accusées d'une teinte plus noire, et qui paraissent d'avantage en écartant les plumes : elles sont chinées et laissent voir çà et là, quelques teintes brun-roussâtre de la livrée précédente.

Longueur totale 70 cent.

♀ d'une année plus jeune. La coloration noire plus lavée de brun que de plombé, laissant voir çà et là quelques parties fauves, surtout sur le cou ; la bande médiane de la queue chinée de cendré, et la petite qui la termine plus étroite et d'un blanc moins pur que dans le précédent ; taille un peu moindre.

Tschudi dit que l'iris est d'un brun très foncé ; que la cire, la peau nue de la face et les tarses sont jaunes, le bec d'un brun-noirâtre, et les ongles d'un brun-grisâtre sombre.

Jeune ♀ dans sa 3^{me} année. Partie supérieure brune, plus ou moins parsemée de plumes plus foncées et bordées de roussâtre ; tête et cou d'un roussâtre plus ou moins fauve ; dessus et occiput à plumes brun-noirâtre très légèrement bordées de roussâtre ; des lignes longitudinales plus ou moins larges sur le cou et ses côtes ; une bande brune prenant du dessus de l'œil, passant en arrière et descendant sur les parties latérales du cou : gorge et joues d'un fauve clair avec des lignes étroites et brunes au centre des plumes, devenant plus larges sur le haut du cou ; poitrine brun-noirâtre, les plumes plus ou moins bordées de roussâtre et toutes de cette couleur à leur base, reste des parties inférieures d'un roussâtre plus ou moins vif avec des taches plus ou moins larges, sur les parties latérales surtout. Cuisses brunes avec des bordures rousses peu visibles à l'extrémité des plumes, mais comme rayées de fauve sur la partie cachée de chaque plume. Couvertures sous-caudales comme la poitrine avec des raies plus ou moins bien marquées de brun-noirâtre ; les supérieures de même, mais plus brunes. Queue brune avec une légère teinte grise et chinée comme dans le jeune *aguia*, d'une teinte blanchâtre en dessous avec les taches brunes plus multipliées ; ailes brunes, les plus grandes couvertures chinées de fauve. Rémiges brunes, les primaires noires sur la majeure partie de leur longeur, quelques unes de ces dernières les plus courtes terminées de blanchâtre ; couvertures inférieures roussâtres variées de brun-noirâtre ; dessous des rémiges fauve à partir de leur base jusqu'au trois quart de leur longueur, tachées çà et là de brun et chinées sur le reste. Même grandeur que les précédents.

Nous avons reçus cet oiseau de S^{te} Marthe, Nouvelle Grenade, en 1843. Notre voyageur marque qu'il fréquente les grand bois, où il chasse les moyens mammifères et les oiseaux, voire même les Hoccos. Son naturel est farouche et d'une méfiance extrême.

"Mr. Bridges que j'ai vu il y a peu de jours m'a affirmé avoir rencontré ce même oiseau (*Urubitornis solitarius*) en Bolivie dans la province de Moxos par les 20° Sud le long de la rivière Urumose. C'est donc une localité nouvelle à ajouter à l'habitat de cet oiseau."

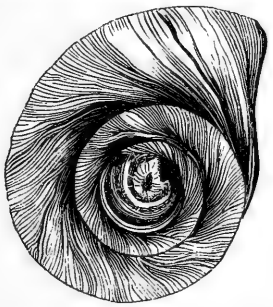
G.H.Ford.

HALIOTIS ALBICANS. Var.

5. On the Nucleus of the Operculum of Cyclostoma elegans. By John Edward Gray, Ph.D., F.R.S.

In my various physiological papers I have attempted to establish the fact that the opercula of shells are analogous to the second valve of a bivalve shell, and are in fact a counterpart of the other valve. I have shown that they are formed at the same time on the body of the Mollusca; that they have a peculiar mantle, similar to the mantle of the spiral shell, and that they are increased in size in the same manner.

On lately examining the operculum of *Cyclostoma elegans*, I was struck with the fact (which might have been foreseen when the first formation is considered) that they have a somewhat irregular nucleus or first-formed part, like the nucleus to be observed on the apex of the spire of most univalve shells, as shown in the accompanying figure, drawn and engraved by Miss Jessie Dunlop.



I may further observe, that the operculum of this shell is formed of two shelly plates, separated from each other by arched laminæ concentric with the outer edge of the last whorl, placed under the concentric grooves of growth on the outer and inner surface, leaving a series of pores on the circumference in the groove between the two plates.

6. On a Monstrosity of Haliotis (albicans?). By John Edward Gray, Ph.D., F.R.S., P.B.S., etc.

(Mollusca, Pl. XXXIV.)

Mr. Cuming kindly showed to me a series of four specimens of Ear-shells, which he procured in Paris, and of which he has some other examples.

The four specimens are all peculiar for having an elongated continued slit occupying the place where the series of perforations are usually situated,—this slit extending more than one-third of the length of the spiral ridges on the outer or left side of the whorls;

but it does not extend to the margin of the shell, and there is generally a more or less deep pit on the inner surface, in front of its extremity.

When I first saw the shell, I was inclined to regard it as a monstrosity; but when I considered the uniformity of the peculiarity in the specimens which I possess, and in those which Mr. Cuming had seen, I thought that it might be the type of a new form, for which *Schismotis excisa* would be a good name.

But a comparison of the shell with the specimens of *Haliotis albicans* in the British Museum from Van Diemen's Land, has induced me to believe that they are only varieties of that or some very nearly allied species, and that the peculiarity of their structure is produced by the locality they inhabit, the absence of the shelly matter on the branchial ridge being probably produced by the continued abrasions to which the shells have evidently been exposed, either by some chemical peculiarities in the water or the attack of parasitic animals.

All the specimens are in a very eroded condition, and two of them are very much pierced with a minute worm, and they all have the under valve of a *Hipponyx* attached on the left side near the circumference of the shell; one of these shells (which is generally the largest of the series) being placed in front of the slit between its termination and the front margin of the shell, covering the space which in the normal shell would be the place of one or two perforations.

If the exterior surface of a good specimen of *Haliotis albicans* is examined, it will be found that there exists a distinct narrow straight groove continued from one perforation to the other, and to the margins of the outer lip, which I have not seen so distinctly marked in any other species of the genus, indicating probably the suture between the overlapping of the two sides of the slit in the mantle of the animal, and this suture is marked but by a slight line on the inner surface of the shell. The same suture is to be observed in most other *Haliotidæ*, but they are generally not so distinct as in *H. albicans*, and much more sinuous.

I am inclined to believe that the slit in the specimens is to be considered as the imperfect filling-up of the shelly matter between the usual perforations, caused by the eroded and evidently diseased state of the specimens.

The interior of the shells is marked with a very rough tubercular muscular scar, which is not to be observed in perfect specimens of *Haliotis albicans*; but this will be found to be uniformly the case with most specimens of Ear-shells which have an eroded or worm-eaten outer surface, even in species which have a scarcely marked scar in their perfect or normal condition; so that this difference, like the slit, appears to depend on the state of the shells and the animal which formed it.

The interior of the shell presents a further peculiarity, but this is evidently caused by the same effects as the roughness of the muscular scar and slit on the branchial ridge, viz. there is a more or less deep broad groove on the inner surface between the slit and the sub-

central muscular scar, which is more or less marked with regular cross grooves, and they are evidently impressions of the outer surface of the two branches of the gills.

Only one of the specimens I have seen shows any indications of the outer surface of the shell, and in that it only forms a band about one-fourth of an inch wide on the edge of the outer lip; it is pale, greyish, and concentrically striated, like the surface of the normal specimen of *Haliotis albicans*.

This kind of monstrosity was to be expected, as the mantle of the animal is slit under the perforations on the shell; and we have in *Scissurella* and in several fossil genera the perforations replaced by a more or less continued slit over the mantle; but I have never before seen an Ear-shell with more than two holes united into a short slit by the absence of the shelly matter between them; but when we examine the *Haliotis albicans*, the existence of the more distant exterior groove renders it the species in which one should more readily expect such an abnormal formation to occur.

I have seen two specimens of two species of *Haliotis*, which exhibited just the converse deformity, that is, being without any appearance of the series of perforations, the place of the holes being occupied by a continued convex spiral rib, like the second rib in *Padollus*. Most probably in this individual the mantle of the animal was without any slit, and hence the malformation, the water being admitted to the gills by the slight notch in front of the ribs, as in some *Emarginulæ* or *Scuta*.

Dr. Crisp exhibited the brain and a sketch of the head of a monoculous Lamb. It weighed $4\frac{1}{2}$ lbs., and was born alive at the full period of gestation. There was one large eye in the centre of the forehead, and the nostrils were absent.

The orbit was formed by the os frontis above, by the malar bones on each side, and below by the superior maxillary bone, the lachrymal, nasal, turbinated bones and part of the os frontis being absent. The greater part of the interior of the cerebrum was absent, the cavity being occupied by serous fluid. The *thalami*, *corpora striata* and *corpus callosum* were deficient. No olfactory nerves existed. The right optic nerve only was present, and this entered the eye in the usual situation; the other pairs of nerves were in their normal positions, but those to the muscles of the eye could not be clearly traced.

The humours of the eye were apparently natural, but the cornea was rather opaque; the diameter of the organ was 14 lines; the weight of the humours 40 grs.; the crystalline lens large and well formed.

In Vrolik's 'Tabulæ ad illustrandum Embryogenesin Hominis et Mammalium,' a case is related and drawings given of a somewhat similar monstrosity in a lamb. In this instance, also, "the greater part of the cerebrum was wanting, and no olfactory nerves were present;

the two optic nerves appeared to unite without decussation; the eye was large, and two pupils existed; the nostrils were absent."

Dr. Crisp remarked, that although the Cyclops variety of monstrosity was not very rare, but few cases were on record of the dissection of the brain.

June 10, 1856.

Dr. Gray, F.R.S., in the Chair.

1. On two New Species of Humming Birds belonging to the genus Amazilius. By John Gould, F.R.S., V.P.Z.S., etc.

Amazilius cerviniventris, Gould.

Head, all the upper surface and wing- and upper tail-coverts bronzy-green; wings purplish-brown; tail dark chestnut-red, each feather narrowly bordered and tipped with a bronzy lustre, which is of greatest extent and most conspicuous on the two centre tail-feathers; throat and chest luminous green; under surface of the shoulder and flanks dull green; abdomen and under tail-coverts fawn-colour; thighs white; upper mandible yellow at the base, merging into brown and tipped with black; under mandible pale yellow, except at the tip, which is black.

Total length, 4 inches; bill, $\frac{15}{16}$; wing, $2\frac{1}{4}$; tail, $1\frac{5}{8}$.

Hab. Cordova, in Mexico. Collected by M. Sallé.

Remark.—This species is about the size of *A. Riefferi*; but its bill is less robust; the wings, as in that species, are uniform purplish-brown; the chestnut colouring of the tail-feathers and the under tail-coverts is of a somewhat lighter hue.

Amazilius castaneiventris, Gould.

Crown of the head, upper part of the back and shoulders reddish-bronze; rump and upper tail-coverts greyish, with a bronzy lustre; wings purplish-brown, with the exception of the basal portion of the primaries and secondaries, which are rufous; tail dark chestnut, tipped with a bronzy lustre, of greatest extent and most conspicuous on the centre feathers; throat, fore part of the neck, breast, and upper part of the abdomen shining golden-green; under surface of the shoulders, lower part of the abdomen and under tail-coverts fine chestnut-red; thighs white; upper mandible brownish-black; under mandible fleshy-yellow, except at the tip, which is brownish-black.

Total length, $3\frac{1}{2}$ inches; bill, $\frac{7}{8}$; wing, $2\frac{1}{16}$; tail, $1\frac{1}{4}$.

Hab. Santa Fé de Bogota. From the Collection of Mr. Mark.

Remark.—This species differs from *A. cerviniventris* in the much greater depth of the chestnut colouring of the abdomen, under tail-

coverts and tail; in size it is considerably less than that species, being even smaller than *A. Arsinoë*, to which it offers an alliance in the colouring of its wings, but from which it differs in the colouring of its abdomen; the white feathers of the thighs are much developed and very conspicuous.

2. On some Defects in the Growth of the Antlers, and some results of Castration, in the Cervidæ.

By John S. Gaskoin, F.L.S. etc.

The imperfect growth of one antler, or horn, in any species of the Deer tribe, the other being fully developed according with the age of the animal, I find has been, from time immemorial, popularly attributed to some disease or ailment of the testicle, or kidney, or even of a limb, of the side on which the defective antler may exist; so that to doubt its truth now would, to the uninquiring, seem to be mocking experience. Some time ago, a member of this Society exhibited at one of the scientific meetings the head of a Fallow Deer (*Cervus Dama*), which had been killed in Richmond Park, for the table, and selected, of course, from its mature age and fine condition; one antler of which was of ample growth for an eight years old animal, while the other consisted simply of the brow tine or antler and a short beam, each about eight or ten inches in length; and the park-keeper had ascribed this deficient development to disease of the kidney of the same side. No light was thrown on the subject at the time, and members, to whom the opportunity might occur, were invited to inquire into the correctness or otherwise of the attributed cause in other instances. It was the first occasion on which I had heard the question mooted. The deduction given, as to cause and effect, was obviously at variance with sound physiology. That the growth of a horn on one side should be impeded, and not that on the other also, when disease of a kidney, a testis, &c. is the cause of arrested production, must be from some accidental circumstance, and cannot be incidental to any such derangement; for organic disease of the viscera named, or of any other viscus, always deteriorates more or less, according to its severity and duration, the general constitutional health, and not that of a particular part only of the animal economy; —and moreover, the disease of no organ in a more remarkable manner influences by depressing the powers of the system, nor tends more surely to a fatal termination, than organic disease of the kidney;— whereas, in the case adduced as having arisen from such a disease, the animal was, on the contrary, in excellent health and admirable case. A paradox so apparent induced me to desire to investigate the subject, with the view of setting aside a popular error, if such, and substituting a rational deduction from facts; and having communicated my wish to Colonel Francis H. Seymour, deputy-ranger of Windsor Great Park, in which a larger stock of deer is kept than perhaps in any other in the kingdom, he most readily bid me furnish him with a written list of what I might require to prosecute my intention. It enumerated,—the head, with the antlers attached, of any buck that

might be shot, having one horn only, of defective development; the kidneys, and the testes with their appendages, of the same animal; denoting the side from which each organ had been taken. This he very kindly immediately forwarded to John Cole, the head-keeper, with orders to carry out my wish on any opportunity occurring; and during the autumn of 1853 I received three cases, each containing all I had solicited, and the several parts duly labeled, as I had requested *. The antlers attached to the skulls of two are now on the table, and the other pair of antlers, which were detached. All these bucks were over eight years of age. I carefully examined the several organs belonging to each individual, having the advantage of the assistance of my friend Dr. Crisp in the first and the third examples; and I claim credit from the Society, on the part of both Dr. Crisp and myself, for knowledge of the difference of healthy from diseased structure. We found that every organ examined of each of the three animals was perfectly healthy, normal, and in every respect fully developed, as were all the animals from which they had been taken in most unexceptional health and in high condition; in testimony of which they had been killed for the table.

I will now give the measurements of the antlers, and the weights of the testes and kidneys, of all the three animals, designating the side from which each had been taken respectively.

Measurements of the Antlers.

	Developed Antler.	in.	*Defective Antler.*	in.
No. 1.	Beam, to the anterior point of the palm ..	22½	A simple bifurcation. Beam	10½
	Brow tine, or antler ..	8	Brow tine, or antler ..	7
	Bis tine, or antler	4⅝		
	Vide fig. 1.			
No. 2.	Beam, to the anterior point of the palm ..	21½	Bifurcate.	
	Brow tine, or antler ..	6½	Beam	10½
	Bis tine, or antler	5½	Brow antler	10
No. 3.	Beam, to the anterior point of the palm ..	22	Bifurcate.	
	Brow tine, or antler ..	6½	Beam	6
	Bis tine, or antler	3⅝	Brow antler	8
	Vide fig. 2.			

Weights of the Testes.

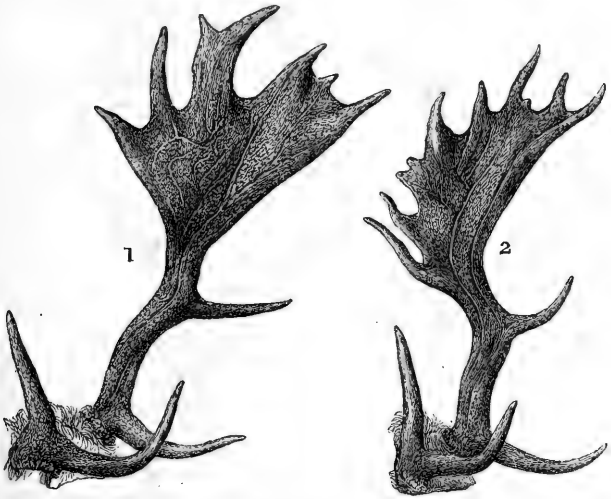
Side of the *developed Antler.*	Side of the *defective Antler.*
No. 1. 2 ounces 210 grains.	2 ounces 160 grains.
No. 2. 2 ounces 140 grains.	2 ounces 155 grains.
No. 3. 2 ounces 128 grains.	2 ounces 138 grains.

* I must here offer to Cole my thanks for the intelligent care with which he fulfilled the directions, and for the interest he took, and is still taking, in assisting me in these inquiries.

The spermatozoa of each exhibited, when magnified 250 diameters, perfect similarity and full and healthy development.

Weights of the Kidneys.

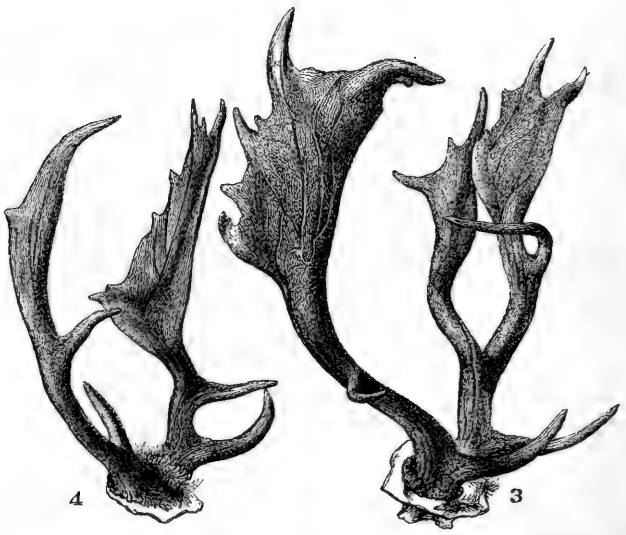
Side of the *developed Antler.*	Side of the *defective Antler.*
No. 1. 4 ounces.	4 ounces 65 grains.
No. 2. 4 ounces 30 grains.	4 ounces 10 grains.
No. 3. 4 ounces 63 grains.	4 ounces 32 grains.



Such a similarity of results, from the investigation of *two* bucks only, might have occurred as a mere coincidence; but a *third*, when all had been selected for another purpose, having no reference whatever to this inquiry, and having been taken consecutively, will establish, I think, the fact, *that defective growth of one antler only, in the same buck, is not caused by an unhealthy state of kidney, of testicle, nor of any other organ, nor ailment of the animal.* That a defective horn and a diseased organ may be coexistent, and even on the same side, there can be no question; but that would be a mere casualty, a "non sequitur." Arriving at this obvious conclusion, I declined imposing further on the kindness I had received, and the trouble I had given, by requiring other examples of the sort for investigation.

I have, however, placed on the table three other pairs of antlers attached to their respective skulls, in which the disparity of each antler with its fellow (*vide* figs. 3 & 4) is scarcely less remarkable than those I have just described; and the bucks which produced them were in every respect in equally perfect health and excellent condition, and were, in consequence, chosen for the Royal larder.

I could place before the Society parallel instances without end, but I have considered it unnecessary to offer more.



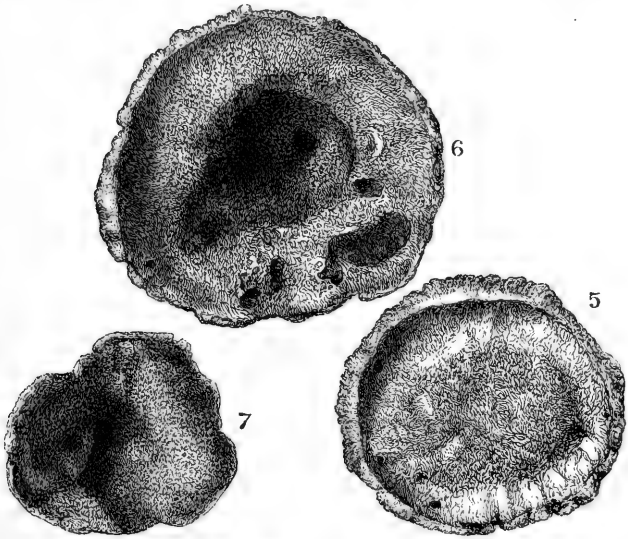
There can be no doubt that the growth of *both* antlers may be simultaneously impeded, by a state of general ill-health of an animal, from whatever cause it may have arisen, a diseased organ, or other ailment; it remains to be accounted for, how *one horn only* should so frequently be affected in animals possessing perfect constitutional health. No one, I imagine, can have observed the herds of deer in parks, without noticing always several among each, having one more or less incomplete antler, and sometimes both; and if these were caused by any disease, the circumstance would indicate an unwholesome condition of the stocks of all parks in the kingdom. From the conversations and correspondence I have had with most experienced park-keepers, and others well versed in knowledge of deer, and from my own observations, I have no doubt that the occurrence is almost invariably from external injury to the horn itself during the time of its formation, or to the hairy vascular integument, or "velvet," by which it is invested during that period. An instance illustrative of this opinion I witnessed in our Gardens some two years ago. An Axis Deer (*Cervus Axis*), whose antlers were about half produced, was required to be caught, and in making resistance, it sprang up, and being in a small pen, struck one horn against the roof, by which it was fractured, about three inches from its extremity, without rupturing or injuring the velvet covering; and the brow-

antler, at the same time, had a considerable portion of the integument forced off, so that it bled profusely, and I stopped the hæmorrhage by tying the part with twine. The fractured part swelled, and although not displaced from its natural position, it did not reunite, and in ten days separated; and in about the same period the portion beyond the ligature became dead and also fell off, or more probably they were rubbed off instinctively by the animal;—from neither of these points did any increase of growth afterwards occur. Thus the fracture of the horn in the one instance, and the destruction of the "velvet" in the other, equally incapacitated Nature to repair the injury, or to continue the growth. I may observe that the horns of the *Cervidæ* during their formation are to a certain degree flexible, and may be broken as short and as easily as a raw carrot. Accidents similar in result to those I have now described, from the pugnacious disposition of bucks towards each other, are frequently occurring; and although, during the time of the production of the horns, they will not use them either for attack or defence, they are not the more peacefully disposed on that account; but their attacks and defence are then carried on by their teeth, or by the employment of their sharp, wedge-shaped hoofs; striking sometimes with one, or by rearing the body, greater force is given and both are brought into action; —and the head being the part usually aimed at, the soft horns are liable to be fractured, or the investing vascular integument to be torn; in the former case it never again unites, and the extreme part falls; and in the latter it may be such as to destroy the capability of further production, and that especially if the injury be at the points of the growing antler. Of the power and precision with which the *Cervidæ* are able to strike with their hoofs, Gilbert White relates a remarkable example in a hind, which, to protect its fawn from an approaching lurcher, "rushed out of the brake, and taking a vast spring with all her feet close together, pitched on the neck of the dog and broke it short in two." That the popular error I have endeavoured to refute should have arisen cannot be surprising, when we reflect how common was the custom, in the "olden time," to emasculate bucks to become "hevers," or "heaviers," that the board of the epicure might teem with "good fat venison" all the year through; and the modes too, or rather degrees of completeness, and the age of the animals when the operation may be performed, being followed by different, and by almost uniform results in each instance, were so likely to impress on the minds of those witnessing them a notion of some marvellous relation of the horns with the testes.

I will conclude this paper by cursorily stating the effects of perfect and imperfect castration at different ages of the animals. Sir Philip de Grey Egerton, Bart., informed me by letter that, "In order to test the accuracy of a vulgar notion, that a relation subsisted between the testicle and the horn, and that an injury to one of the former caused a corresponding deficiency in one of the latter, I had two buck fawns deprived, one of the right, the other of the left testicle. The result was that they nevertheless put up horns, and, as far as I could

judge, without any discrepancy between the right and the left horns." Fawns, when cut prior to the formation of any horn, that is within a week or so after birth, both testes being *wholly* removed, with a portion of the cord (vas deferens) also, will never bear horns, however long they may live; but if the bodies of the testes only be taken away, the "knob" (epididymis) being left attached to the cord, the animal will have horns, and renew them annually; the shedding being always rather later in the season, and the velvet covering remaining for a somewhat longer period on their surface than with the entire buck; and further, they will be more slender in the beam, and more porous in their internal structure. These semi-castrated, if I may so style them, animals will go into rut, but not to the degree which produces emaciation; nor does the great thickening of the neck occur, which is so characteristic in the perfect animal during that peculiar season; nor are they capable of procreation. When the adult buck is castrated, the horns are shed shortly afterwards, and renewed; but the persistent periosteum, or "velvet," never separates from their surface, and the horns do not again fall, but remain attached during any period the animal may survive. These permanent antlers are often more developed than those produced by entire bucks of equivalent age, which I think may be well accounted for from the fattened state, and the longer influence from the continued adherence of the vascular integument by which the horns are formed. I may here observe, that circulation continues in the bone or horn after the periosteum has separated, and that, diminishing by degrees, first from the points, the vessels become obliterated, and vitality therefore ceasing, it is cast off. Redi, in his 'Experimenta Naturalia,' on the castration of deer, says, "Si cervus juvenis castretur, nondum emissis cornubus, cornua nunquam emittit; si castretur jam emissis cornubus, cornua nunquam mutat; sed quæ dum castretur habet, castratus semper retinet. Et hac in re verior est Aristotelis, Plinii, et Solini, quam Oppiani sententia, libro secundo, de venatione versu." (1675, 12mo. p. 162.) Redi is right enough in his first proposition, but, with his ancient authorities, sadly out in the two latter. Nature seems to employ different modes to cause the shedding of the antlers in the entire and in the gelded buck (I am alluding principally to the Fallow and to the Red Deer); the former being by secretion, the latter by absorption mainly. In the perfect animal the base of the horn is separated from its circular adhesion by a secretion from the conjoined surface of the cranium of a thin brownish fluid, which will even exude below the burr; and which is, in fact, the humid incipient process set up to form the succeeding antler; and the former bony union being thus detached, the horn falls. In the *castrati* the horn is divided from its attachment by absorption of the base of the antler, sometimes only horizontally (*vide* fig. 5), at others forming a concavity, or even a deep and irregular excavation (fig. 6); and occasionally the burr will be partially and sometimes entirely absorbed before the antler is shed (fig. 7). The rapidity of this process is the more remarkable after castration of adult bucks, it being in proportion as the operation is

performed nearer the natural time of detachment of the semi-dead bone; thus, if it be about the end of March or so, the horns are cast in a fortnight; but if done shortly after the "velvet" has separated from the newly perfected antlers, in the month of September or thereabouts, they are shed in a month afterwards. Specimens of these absorptions, and also examples of the bases of the horns shed by the entire animal, are here for the examination of the Society*.



I have purposely avoided citing authors, and have sought to relate facts only; my sole object in pursuing the inquiry I have detailed, being to endeavour thereby to expose the fallacy of some of the traditional vulgar errors respecting deer, and especially that of laterality, whether the influence be inferred to be exercised from the one side or the other, which have been handed down from, and are only worthy of, the remote ages whence they emanated.

P.S.—Within a few days, and since my having written the foregoing, a paper has been published in the 'Proceedings of the Linnean Society,' "On the influence of the Sexual Organs in modifying External Character," by my friend Mr. Yarrell, from whom I am extremely sorry to be obliged to differ as to some of the conclusions he has

* Figures 5, 6 and 7 are from specimens, Nos.
"3558. Shed antler of a Fallow Deer, from which half of each testicle had been removed soon after birth,
3563. Shed antler of a castrated Fallow Deer,
3565. Shed antler of a castrated Fallow Deer,"
in the Museum of the College of Surgeons.

drawn from circumstances he has related, but which, nevertheless, I must not allow to pass unnoticed as they bear upon the immediate object of my paper. The author states, that "a red hind in the forest of the Duke of Gordon was observed to carry a single horn on one side of her head,—such a horn as the male red deer bears in his third year." She was shot. "And on internal examination by two competent persons, she was found to have a scirrhous ovary on the opposite side to that on which she bore the horn." Here we have a *lusus naturæ*, and an organic disease, coexisting in the same animal; and there can be no physiological reason why such might not be the case, and certainly there can be none that they should. The author proceeds:—"A red hind, in the park at Holkham, was observed to carry one horn of some length. . . . . To add to the interest in this case, this hind dropped a calf; we may *therefore* suppose, the cornua and ovaries being double, that one side was healthy and perfect, and the other side probably diseased."

I think, however, it would be more within the range of probability, and more natural, to suppose, as this hind had borne a calf (*malgré* the horn), that both her ovaries were sound, since the healthy exercise of the sexual functions, and also the fecundating powers of the ovaries were perfectly undisturbed. The deduction, that because a diseased ovary was *once* found to exist in a hind bearing a horn, that therefore all hinds bearing a horn must necessarily have a diseased ovary, cannot rest on the slightest validity; and all general conclusions, drawn from individual instances, must ever be the causes of error; and they are but too frequently errors in themselves. There are freaks of nature (*lusus naturæ*) which cannot physiologically be accounted for. "Felix qui potuit rerum cognoscere causas." Hinds may be furnished with a horn, and entire stags be destitute of antlers, &c.* Colonel M'Doual, late of the 2nd Life Guards, related to me, that while deer-stalking on his grounds, and being concealed from a herd that had gently approached him,—with hinds only, as he believed,—within range of his rifle, his keeper urged him to shoot one among them which was larger than the rest. He would not, however, do so, and when too late, he was assured that the animal had been long known to the keepers as a polled stag; of which he too was presently satisfied, by observing him advance towards some other stags, attack them, and drive them to some distance, and then return to herd again with the hinds. The author relates also a similar experiment, excepting the difference of age, to that given in a former part of this paper, of the removal of a testis from each of two bucks, *Cervus Dama* (four years old), the one from the left, the other from the right side; and observes: "Neither

* The human hands are sometimes bestrewed with warts; the human frame totally denuded of hair, pubescent and other; and the hair becomes more or less suddenly perfectly white; but no diminution of wonted health, moral, physical, or sexual, precedes, accompanies or follows these states; although often during future existence, not a vestige of the pilous covering recurs, nor is the colour of the hair restored. Two instances of such albinism have occurred in our gardens in Barbary Mice (*Mus Barbarus*, Linn.), where one may still be seen.

of these bucks cast either horn, nor was any lateral influence observable. They shed their horns as usual in the following spring, the new horns coming in due course; but in the autumn, when the horns had ceased to grow, and [had] become hard, all four horns were those of the third year, and not those of the fifth year: no lateral influence was observable, but it was *plainly shown that the diminished sexual power*, consequent upon the operation, had produced a corresponding diminution in the size of the horns in both cases."

That any "diminished sexual power" existed *per se*, as the cause of the deficient size of the horns in these instances, is, as in the case of the hind which dropped a calf having a diseased ovary, quite conjectural; but the horns not being fully developed, according with the age of the animals, after such an operation as the removal of a testicle, I conceive may be satisfactorily explained on more likely and on reasonable grounds, viz. the consequent deterioration of the general health which ordinarily would follow such a shock to the system, which in the adult animal is often severe, and the local disturbance very great. During ill-health and debility, secretion is impeded and absorption increased, the body becoming lean and the muscles losing their volume, and the secretion of horny (bony) substance, in common with that of all other solid secretions, would partake of the lessened action of the producing quality of the blood. It is from few facts that sexual power can be estimated; and I believe the loss of one testicle no more impairs that power than the loss of one eye impairs the vision of the other;—of course I speak of animals in perfect health. In the human race I know two examples, where marriage, after extirpation of one testis, was followed by a fine, and a resembling progeny to the male parent. It is much to be regretted that the further observation of these two bucks was prevented by the sale of the Society's stock at the farm at Kingston, as, on the recovery of their health and strength, I believe the horns afterwards produced would have borne testimony of the increase of their age.

3. Description of New Species of Shells collected by Mr. T. Bridges in the Bay of Panama and its Vicinity, in the Collection of Hugh Cuming, Esq. By Philip P. Carpenter.

Note.—Mr. Cuming, knowing that I am now engaged in working out the shells of the West Coast of North America for a Report at the forthcoming meeting of the British Association, has most kindly sent me all the shells lately collected by Mr. Bridges which he regards as new, with a request that I should describe them for him; at the same time enclosing the published species which he regarded as being the most allied forms. I trust to his well-known accuracy for the fact of their not being as yet described. Unfortunately many of the specimens had gone through the acid process, which has destroyed much of the microscopic markings which often furnish the best guide for the discrimination of species.

Warrington, June 9th, 1856.

1. Strigilla disjuncta, n. s. *S. testa satis magna, alba, tenui, planata; inæquilaterali, postice producta; marginibus dorsalibus subrectis, ad angulum* 120°, *aliis bene arcuatis; lineis incrementi vix monstrantibus; lineis undulatis exillimis, antice concentricis, umbones versus ascendentibus, sinu angustiore; dein ad marginem ventralem rapide descendentibus; dein subito, angulo acuto, circiter* 20° *postice rursus ascendentibus; lineis angularum in valva utraque haud convenientibus; margine postico sinuato, sculptura postea fortiore; margine antico quoque sinuato; lunula distincta, sinuata; ligamento subelongato; dent. card. valva altera uno parvo et uno magno bifido; altera uno parvo bifido; dent. lat. acutioribus, haud distantibus.*

Long. 1·35, lat. 1·54, alt. ·54 poll.

Hab. In Sinu Panamensi; legit *T. Bridges.* (Mus. Cuming. sp. duo.)

Allied to *S. sincera,* Hanl.; remarkable for its large size and very fine markings, and named from the lines of markings in the two valves not agreeing at the edges.

2. Tellina Deshayesii, n. s. *T. testa "*T. exili*" simili, sed multo magis inæquilaterali; ligamento solido; postice vix rostrata.*

Long. ·56, lat. ·9, alt. ·26 poll.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. un. in Mus. Cuming.

3. ? Scrobicularia virido-tincta, n. s. *? S. testa "*? S. productæ*" simili; sed latiore, ovali, tenuiore, magis planata, antice haud producta, alba; umbonibus viridi tinctis.*

Long. 1·42, lat. 2·05, alt. ·65 poll.

Hab. In Sinu Panamensi, una cum ? *S. producta*; legit *T. Bridges.* Sp. un. in Mus. Cuming.

Another of the species intermediate between *Tellina* and *Scrobicularia* proper, and apparently nearer to the former genus.

4. Semele planata, n. s. *S. testa subtriangulari, margine ventrali valde excurvato; cinereo-albida, circa lunulam minimam et aream ligamenti roseo eleganter penicillata, intus flavido tincta; rugis concentricis subdistantibus, irregularibus, parum elevatis; striulis creberrimis radiantibus, valde irregularibus, rugulosis sculpta; postice maxime sinuata; valva una magis quam altera planata; fossa ligamenti recta, angusta; sinu pallii modico, lato.*

Long. 1·4, lat. 1·56, alt. ·47 poll.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. un. in Mus. Cuming.

Differs from *S. punctata,* Sow., in the absence of punctures, in the triangular dorsal margins, unequal flattening of the valves, straight narrow hinge-pit, and the much smaller size of the pallial sinus.

5. Mactra (Mactrella) lacinata, n. s. *M. testa parva, tenuissima, cinerea, ventricosa; postice angulata, carina modica, fimbriata; læviori, concentrice vix undulata, rugulis epidermidis tenuis subdistantibus ornata; subæquilaterali, umbonibus prominentibus; dent. card. parvis, lat. acutis, haud distantibus; sinu pallii parvo, subangulato.*

Long. ·56, lat. ·69, alt. ·4 poll.

Hab. In Sinu Panamensi; legit *T. Bridges*. Mus. Cuming, sp. tria.

Has a general similarity to *M. angulata* and kindred species. Remarkable for the epidermal fringe on the keel and regular concentric wrinkles.

6. Cyclina producta, n. s. *C. testa tenui, ventricosiore, alba, ventraliter producta; concentrice tenuissime striata; marginibus subregulariter arcuatis; umbonibus eleganter incurvatis; lunula nulla, linea cordiformi vix monstrante; area ligamenti elongata; dent. card. valva altera postico bifido, anticis* ii., *contiguis; altera posticis* ii. *acutis, elongatis, antico acuto; sinu pallii subangulato, umbones versus fere dimidium ascendente.*

Long. 1·62, lat. 1·58, alt. 1·05 poll.

Hab. In Sinu Panamensi; legit *T. Bridges*. Sp. un. in Mus. Cuming.

In shape something like *Cyrena maritima*, C. B. Ad., but in habit resembling *Cyclina subquadrata*, Hanl. (=*Artemis saccata*, Gould).

7. Melampus Bridgesii, n. s. *M. testa parva, ovali, nigro-fusca, nitida; anfr.* viii., *sutura haud impressa, in spiram tenue spiraliter striulata; marginibus spiræ regulariter excurvatis; apertura pyriformi, labro acuto, nec calloso nec dentato; columella triplicata; plicis, antica spirali, obliqua; media acuta, transversa, subparietali; postica parietali, parva.*

Long. ·28, long. spir. ·08, lat. ·12 poll., div. utraque parte variante.

Hab. Ad ora Sinus Panamensis; legit *T. Bridges*. Sp. tria in Mus. Cuming.

Has the general appearance of *M. Adamsianus*, Pfr., from N. Ireland, but is much more slender, with a simple labrum.

8. Umbrella ovalis, n. s. *U. testa "U. Indicæ" simili; sed margine haud undulato, regulariter ovali; apice spirali, subprominente, minus inæquilaterali; epidermide tenui, haud nitente; adulta intus aurantia.*

Test. jun. long. 1·93, lat. 1·58 poll.

Hab. Ad ostia fluminis Chiriqui, in Sinu Panamensi; legit *T. Bridges*. Sp. duo in Mus. Cuming.

Concerning this remarkable shell, hitherto only found in the old world, and, in spite of the bulk of its animal, not observed by either Mr. Cuming, Prof. Adams, or Mr. Hinds, Mr. Cuming writes that

it was not only brought by Mr. Bridges, but also by a gentleman in Paris, who collected it exactly in the same place. Two specimens are in Mr. Cuming's collection, of which one, very much thickened, appears to have formed part of a much larger shell.

9. Pyrgula quadricostata, n. s. *P. testa ovali, alba, spira haud acuminata, marginibus excurvatis; carinis* iv. *acutis cincta, quarum* ii. *in spira extant, tertia vix supra suturam impressam apparet, quarta circa basin; aperturam versus, costulis incrementi decussata; apertura lata; labro tenui a plica quarta parietali interrupta.*

Long. ·28, long. spir. ·16, lat. ·15, div. 40°.

Hab. In ? flumina Sinus Panamensis; legit *T. Bridges.* Sp. un. in Mus. Cuming.

This pretty little shell is the Pacific analogue of the Swiss species for which the genus was constituted; differing, however, in form and number of keels. The specimen has been tenanted by a hermit crab, and has Bryozoa near the mouth.

10. Erato ? Maugeriæ, var. Panamensis. *E. testa* "E. Maugeriæ" *simillima, sed majore, vix graciliore, apice minore, spira plerumque extantiore.*

Long. ·28, long. spir. ·03, lat. ·18, div. 130°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. tria in Mus. Cuming.

The differences are so very trifling between the specimens examined from the Pacific and West Indies as not to justify (without further knowledge) a specific separation. They do not appear constant in either type. The first whorl in the Pacific shells is somewhat smaller, while the shell is larger.

11. ? Cithara sinuata, n. s. *C. testa trapezoidea, spira subelevata, marginibus excurvatis; albida, rufo-fusco varie tincta; anfr.* ix., *subrotundatis, sutura parum impressa, quarum* iii. *nucleosi, diaphani, læves, dein liris spiralibus et radiantibus fortiter cancellatis; normaliter lirulis radiantibus et striulis spiralibus tenue sculptis, in anfr. ult. subobsoletis; apertura lineata, canali anteriore haud profundo, curtissimo; labro acuto, ad dorsum calloso, sinu antico parvo, postico angusto, profundo, intus haud denticulato; labio parietali haud calloso.*

Long. ·43, long. spir. ·18, lat. ·17, div. 43°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. tria in Mus. Cuming.

Closely related to *Pleurotoma concinna,* C. B. Adams, Pan. Shells, No. 167, from the description of which it differs in the whorls not being angular, and the sculpture on the spire being coarser, instead of finer, than the rest.

12. Mangelia acuticostata, n. s. *M. testa parva, turrita, albida, rufo-fusco tincta; marginibus spiræ excurvatis; anfr.* vii. *subtumentibus, superne obtuse angulatis, sutura impressa;*

costis radiantibus acutis, angustis, circiter ix. *subobliquis; interstitiis latis, confertissime et minutissime spiraliter striulatis; apertura subelongata; labro acuto, simplici, sinu rotundato, aperto; ad dorsum varice acuto, extante; labro tenui.*

Long. ·32, long. spir. ·16, lat. ·12, div. 30°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. un. in Mus. Cuming.

Intermediate between *M. rigida,* Hinds, and *M. striosa,* C. B. Adams.

13. Mangelia ? rigida, var. fuscoligata. *M. testa* "M. rigidæ" *simili; sed graciliore, costis acutioribus, lineis spiralibus minus expressis, fascia rufo-fusca super suturam plus minusve conspicua.*

Long. ·27, long. spir. ·15, lat. ·08, div. 28°.

Variat t. plus minusve elevata, seu latiore.

Hab. In Sinu Panamensi; legit *T. Bridges.* Mus. Cuming.

As far as can be judged from a comparison of nine specimens brought by Mr. Bridges with two of *M. rigida,* Hinds, this is a very variable species, differing in colour, strength of sculpture, solidity, or spiral elevation. *M. neglecta,* C. B. Ad., four specimens of which were found to vary, may also prove a brown variety of the same species.

14. Defrancia intercalaris, n. s. *D. testa graciliore, pallide castanea, fascia circa peripheriam pallidiore, spira elevata, marginibus rectis; anfr.* x. *rotundatis, suturis parum impressis; costis radiantibus supra circiter* xi. *rotundatis, interstitiis latis; infra aliis intercalantibus; lirulis spiralibus, subdistantibus, in spira plerumque* iii., *ad basin crebrioribus; rugulis radiantibus minutissimis tota superficie sub lente confertissime ornata; apertura ovali, canali brevi; labro margine acuto, vix serrato, intus denticulato, ad dorsum varice prominente, lateraliter compresso; sinu postico rotundato, aperto, sutura vix attingente, callositate parietali parva.*

Long. ·64, long. spir. ·35, lat. ·24, div. 25°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. un. in Mus. Cuming.

With some of the characters of *Drillia,* and a loose resemblance to *Pleurotoma gracillima,* this shell seems to have most affinity with *Defrancia rava,* Hinds.

15. Defrancia serrata, n. s. *D. testa parva, turrita, marginibus spiræ excurvatis; albida, rufo-fusco fasciata; fascia aream sinus implente, dein circa basin continua; anfr.* viii. *convexis, costis rotundatis* xii., *circa basin obsoletis, et lirulis spiralibus costarum apices serrantibus,* iii. *in spiram monstrantibus, eleganter instructis; apertura subquadrata; labro ad marginem serrato, intus tuberculis* v., *ad dorsum varice valde prominente, ornato; sinu rotundato, lato; labio subrugoso.*

Long. ·3, long. spir. ·18, lat. ·12, div. 28°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. un. in Mus. Cuming.

Has the general aspect of *Mangelia rigida*, var. *fuscoligata*; and also resembles *D. rava*, Hinds.

16. Drillia punctatostriata, n. s. *D. testa intense purpureo-fusca, gracili, spira acuminata, marginibus excurvatis; anfr.* x. *satis rotundatis, suturis haud impressis; lirulis spiralibus acutis, distantibus, quarum* iii.–v. *in spira monstrantur, supra costis radiantibus inconspicuis circiter* xx. *obliquis, nodosis; juxta suturam carina haud extante; area sinus lineis incrementi costis convenientibus vix decussata; apertura elongata, intus haud denticulata, canali minimo; labro margine acuto, haud serrato, ad dorsum tumente; sinu antico minore, postico rotundato, profundo, faucibus coarctatis; labio haud calloso; tota superficie sub lente minutissime et confertim punctato-striata.*

Long. ·75, long. spir. ·4, lat. ·26, div. 27°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. un. in Mus. Cuming.

17. ? Pleurotoma gracillima, n. s. ? *P. testa gracillima, pallide castanea, spira acuta, elevata, marginibus rectis; anfr.* xii. *rotundatis, sutura impressa; costibus radiantibus subdeclivibus* xviii., *ad jugum acutis, interstitiis parvis; lirulis spiralibus acutis, quarum* iii. *sive* iv. *in spiram monstrantur, ad intersectiones nodulosis; carina infrasuturali haud extante; area sinus latiore, sublævi; tota superficie minutissime spiraliter striulata, in spira radiatim corrugulata; apertura ovali, canali subelongato; labro margine acuto, vix serrato, ad dorsum valde calloso; sinu antico parvo, postico rotundato, aperto, suturæ contiguo, haud attingente; callositate parietali vix monstrante.*

Long. ·83, long. spir. ·49, lat. ·24, div. 20°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. unicum in Mus. Cuming.

Has many of the characters of *Drillia* and *Defrancia*; but the canal appears long enough to give it a place among the true *Pleurotomæ.*

B M 18. Scalaria regularis, n. s. *S. testa parva, turrita, alba; anfr.* ix. *parum attingentibus; costis* x.–xii. *validioribus, extantibus, lineis subspiralibus apicem versus continuis; striulis spiralibus subobsoletis; umbilico nullo.*

Long. ·27, long. spir. ·19, lat. ·13, div. 32°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. tria in Mus. Cuming.

The ribs are stronger, more projecting, and the spiral sculpture fainter than in *S. Mindorensis.*

B M 19. Scalaria tiara, n. s. *S. testa obesa, lævi, albida; anfr.* vii. *parum attingentibus, rapide augentibus; costis* xii. *acutis,*

valde extantibus, infra suturam parum alatis, attingentibus, lineis rectis ad apicem continuis ; umbilico nullo.

Long. ·27, long. spir. ·16, lat. ·16, div. 48°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. un. in Mus. Cuming.

Distinguished from *S. obesa,* Sow., by the small size of the corresponding whorls, slightly winged shoulders, and want of umbilicus.

20. SCALARIA SUBNODOSA, n. s. *S. testa turrita, alba, gracili, lævi, anfr.* xii. *haud separatis ; costis* xiv.–xvi. *plerumque acutis, huc et illuc latis, subdeclivibus, superne vix alatis ; umbilico nullo.*

Long. 1·4, long. spir. 1·06, lat. ·5, div. 23°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. un. in Mus. Cuming.

21. SCALARIA CUMINGII, n. s. *S. testa* "S. mitræformi" *simili, sed paullum graciliore ; anfr.* x. *quarum* iii. *primi læves ; costis paucioribus,* viii.–ix., *minus coronatis, haud acutissimis, haud reflexis, striulis incrementi minutissime sculptis ; anfr. valde separatis.* B.M.T.

Long. ·35, long. spir. ·25, lat. ·14, div. 30°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. un. in Mus. Cuming.

The lines of growth on the varices show that the coronations were never so sharp and elevated as in *S. mitræformis.*

22. SCALARIA HINDSII, n. s. *S. testa* "S. Cumingii" *simili, sed magis elongata, majore, anfr.* x. *haud profunde separatis ; varicibus acutis* viii., *acutius coronatis, lineis regularibus, ad marginem alteram spiræ parallelis, ascendentibus.* B.M.T.

Long. 1·04, long. spir. ·79, lat. ·4, div. 25°.

Hab. In Sinu Panamensi; legit *T. Bridges.* Sp. un. in Mus. Cuming*.

23. NATICA EXCAVATA, n. s. *N. testa* "N. Broderipianæ" *simili ; sed callositate parietali maxime elongata ; regione spirali umbilicari valde excavata ; albida, rufo-castanea lineis irregularibus radiantibus penicillata ; striulis radiantibus crebrioribus.*

Long. 1·45, long. spir. ·3, lat. 1·5, div. 130°.

Hab. In Sinu Panamensi; legit *T. Bridges.* 2 sp. in Mus. Cuming.—S.W. Mexico, P. P. C.

This shell resembles *N. lineata* (Philippines) in colouring; but that shell is smooth, while the Panama shell has distinct, though not deep, radiating furrows, ending in a circum-umbilical line.

24. ? TRITON CREBRISTRIATUS, n. s. ? *T. testa* "T. picto"

* The above species are published with doubt, as *Scalariæ* are seldom seen in sufficient numbers to ascertain the limits of specific variation. Species described from one or two specimens must always be regarded simply as "provisionally registered."

plerumque simulante; sed striis crebris spiralibus cincta; albida, rufo-castaneo dense maculata; apertura vix varicosa, intus simplici.

Long. ·58, long. spir. ·34, lat. ·24, div. 30°.

Hab. In Sinu Panamensi; legit *T. Bridges*. Sp. un. in Mus. Cuming.

Is destitute of the expressed spiral ribs of *T. pictus* (s. g. *Epidromus*, H. & A. Ad. Gen. i. 103). The only specimen seen has no teeth in the aperture. It may be only on the verge of maturity, or it may belong to a Buccinoid genus.

25. PHOS BIPLICATUS, n. s. *Ph. testa subelevata, anfr.* viii. *parum rotundatis; costis radiantibus circiter* xi. *rotundatis, interstitiis concavis; liris spiralibus extantibus acutis, supra costas castaneo tinctis, quarum* iv. *in anfr. penult. videntur; apertura contracta; labro intus dense lirato, labio interdum rugoso; columella plica acuta, canalem definiente, altera obtusa, vix bifida, superante; canali acuto, recurvato, ad dorsum nodoso et infra carina acuta ornato; colore albido, purpureo-fusco tincto.*

Long. 1·05, long. spir. ·6, lat. ·64, div. 50°.

Hab. In Sinu Panamensi; legit *T. Bridges*. Sp. un. in Mus. Cuming.

26. LATYRUS TUMENS, n. s. *L. testa* "L. gracili" *simillima, sed costis maxime tumentibus, attingentibus, sulcis spiralibus crebris ornata; plicis columellaribus* iii. *quarta obsoleta.*

Long. 2·78, long. spir. 1·57, lat. 1·44, div. 50°.

Hab. In Sinu Panamensi; legit *T. Bridges*. Sp. un. in Mus. Cuming.

In *L. gracilis* the spiral lines are few and raised; in this species numerous and impressed.

4. DESCRIPTION OF NEW SPECIES AND VARIETIES OF CALYPTRÆIDÆ, TROCHIDÆ, AND PYRAMIDELLIDÆ, PRINCIPALLY IN THE COLLECTION OF HUGH CUMING, ESQ. BY PHILIP P. CARPENTER*.

1. CRUCIBULUM VIOLASCENS?, n. s. *Cr. t. solidiore, conica, albida, fusco maculata, intus violascente; vertice nucleoso conspicuo, adunco, anfr.* ii. *subtumentibus, apice planato; superficie rugis*

* Mr. Cuming, having most obligingly lent me (for comparison with Mazatlan species) his type-specimens of various genera that cannot well be identified merely by descriptions, has asked me at the same time to describe certain forms which appeared to have escaped the notice of previous writers. Of the group here named *Chrysallida*, the Vitrinelloid forms allied to *Cyclostrema*, and the West American species of *Calyptræidæ*, details will be found in the Catalogue of the British Museum Collection of Mazatlan Shells, now in the press.

Warrington, June 9th, 1856.

plurimis parum irregularibus instructa, haud magnis, rotundatis, marginem huc et illuc pectinante; interstitiis variantibus.

Long. ·94, lat. ·78, alt. ·48 poll.

Hab. Ceylon; legit *Capt. Templeman.* Sp. unic. in Mus. Cuming.

Comp. *Calyphœa maculata,* Quoy (non Brod.), Lam. An. s. Vert. ed. Desh. p. 628.

The cup is unfortunately broken in the solitary specimen; but the attachment continues for $\frac{2}{3}$rds of the height of the shell, with a very strong muscular scar at its side. It is distinguished by the close rounded ribs of the exterior and the rich violet of the inner surface.

2. Crucibulum spinosum, var. compresso-conicum. *Cr. spinosum abnormale, testa valde irregulari, conica, apicem aduncum versus lateraliter compressa, postea tumente; superficie haud spinosa, albo-fusca, fusca varie maculata.*

Long. ·9, lat. ·95, alt. ·75 poll.

Div. apicem versus, longitudinaliter 90°, transversim 40°; postea 100°; in adulta 15°.

Hab. California. In Mus. Cuming.

This most abnormal specimen by itself would never be taken for *Cr. spinosum*; nevertheless the intermediate forms in the British Museum Mazatlan Collection, between this and the flat and spiny states, are so gradual and numerous, that I feel compelled to affiliate it to that most variable species.

3. Crucibulum ?? imbricatum, var. Cumingii. *Cr. t. conica, tenui, albo-fusca, rubro-fusco varie maculata seu lineata; vertice .... ?, satis adunco; costis numerosis, sæpe intercalantibus, usque ad* xl., *haud valde expressis, haud acutis, interstitiis tenue corrugatis; margine acuto, sæpe a costis palmato; cyatho albo, per duos trientes affixo, ad marginem interiorem subplanato.*

Long. 1·95, lat. 1·7, alt. 1·05 poll.

Hab. In Sinu Callaoensi, ad Peruviam; idem, Valparaiso. Mus. Cuming.

The shell differs from the non-pitted forms of *Cr. imbricatum,* Sow. (described as *C. dentatum* by Mke), in being very much thinner, with the ribs much finer and more numerous. The cup also is not fixed quite so far.

4. Cr. ? Cumingii, var. Caribbeense. *Testa tenuissima, superficie ?haud corrugata, cyatho fusco tincto.*

Long. 1·1, lat. ·95, alt. ·5.

Hab. In insula "St. Thomas" dicta, in Mari Caribbeensi. Mus. Cuming.

A beautiful young specimen, in the Cumingian collection, differs from the Pacific form (1) in being thinner, which may be a peculiarity of growth; (2) in the want of corrugation of the surface, which may be the result of acid; (3) in a coloured stripe near the margin of the cup, which may be an individual idiosyncrasy.

5. Crucibulum pectinatum, n. s. *Cr. t. conica, aurantia, tenuiore; vertice nucleoso subadunco, pæne separato, anfr.* ii. *subtumentibus, sutura profunda, apice planato; dein superficie lævi, seu striis incrementi; dein rugis radiantibus extantibus, peracutis, ad periodos incrementi laminis concentricis irregularibus interruptis, interdum valde distantibus, interdum interstitiis parvis; margine a rugis cavatis stellato; cyatho (testa ? adolescenti) haud continuo, intus indentato, marginibus ad ang.* 50° *distantibus.*

Long. 1·14, lat. ·97, alt. ·6 poll.

Hab. Peru. Sp. un. in Mus. Cuming.

This specimen is distinguished at once by its golden-orange colour, rather thin growth, and by the characters of the ribs and cup. The ribs are generally distant, always sharp, resembling a young *Siphonaria gigas*; and as the margins of growth are often left like caves, a series of irregular pits are then formed as in *Cr. imbricatum*. On one part of the shell are diagonal furrows, as in *Cr. ?imbricatum*, var. *Broderipii*; but this may be an accidental peculiarity. The shape of the cup is as in the very young state of the other species, being a simple plate bent at an angle of 50° and there fastened at the two extremities to the inner surface of the shell. Other specimens are in the British Museum collection.

6. Crucibulum auriculatum, Chemn.

Patella auriculata, Chemn. Conch. Cab.

The Chemnitzian species is difficult to recognize. It is, however, most probably the West Indian form, answering to *Cr. umbrella*, Desh. (=*C. rudis*, Brod.). Perfect specimens are extremely rare in collections. On comparing a rather young shell in Mr. Cuming's collection (in which the finer markings have been removed in the beautifying process) with a series of *Cr. umbrella* from S.W. Mexico, I can scarcely find a single point of specific difference. The cup is attached only at the base, is white throughout, angulated in what would be the line of attachment, and indented along the inner margin. The outside has about thirty rather irregular ribs, which are neither sharp nor rounded. Colour whitish, speckled with brown. A large series from each side of the continent should be compared before the identity (or otherwise) of the species is decided. The comparative number and sharpness of the ribs are the principal points of difference. The colour varies greatly in the Pacific shells.

7. Crucibulum ? imbricatum, var. Broderipii.

=*Cr. imbricatum*, Brod. in Mus. Cuming: non *C. imbricata*, Brod. in Trans. Zool. Soc. pl. 27. f. 7.

Cr. ? imbricatum, t. albida, solida, subcompressa, conica; interstitiis costarum et laminarum incrementi interdum magnis, profundis, haud regularibus, interdum evanescentibus; superficiei parte rugis diagonalibus crebrioribus instructa.

This shell, which has borne the name of *Cr. imbricatum* in the Cumingian collection, may not improbably be only a variety of that species; but as it offers distinctive characters in its remarkable

diagonal furrows, a name has been given to it in remembrance of the author of the Monograph in the Proceedings and Transactions of the Zoological Society. The shell figured as *Calyptræa imbricata* in the Transactions exactly accords with the young state of the ordinary thick, ribbed, and often pitted species of the W. American coast, figured by Sowerby under the same name in his 'Genera,' f. 5. An attempt to remodel the synonymy of this shell will be found in the British Museum Mazatlan Catalogue.

8. Cyclostrema excavata, n. s. *C. t. margaritæformi, nitidiore, alba; anfr. nucleosis* ii., *lævibus; dein anfr. uno et dimidio striulis minimis radiantibus, excurvatis; dein anfr.* ii. *et dimidio normalibus; tota superficie minutissime spiraliter striatis; basi regione umbilicali maxime excavata; umbilico profunde spirali, anfractus ultimi dimidio solum monstrante; apertura subrotundata.*

Long. ·16, long. spir. ·08, lat. ·24 poll., div. 130°.

Hab. In Mari Sinensi. Sp. unic. in Mus. Cuming.

This shell appears glossy to the naked eye, and escapes from the fingers like a Zonites, but under the glass is beautifully sculptured. The first normal whorl appears as though engine-turned.

9. Cyclostrema octolirata, n. s. *C. t. parva, alba, anfr.* v., *quorum duo et dimidium nucleosi sunt; liris octo validis spiralibus cincta, quarum duo in spiram et una vix intus umbilicum maxime apertum sitæ sunt; sutura profunda; apertura circulari, anfr. penult. vix attingente.*

Long. ·4, lat. ·6, div. 155°.

Hab. In Mari Rubro. Sp. un. in Mus. Archer.

The umbilicus is so wide as clearly to show the junction of the apical whorls at the top. The species appears too strong, and the adult portion too large in proportion to unite with *Vitrinella*, with which it agrees in many characters.

10. ? Cyclostrema pentegoniostoma, n. s. ? *C. t. subdiscoidea, parva, solidiore, alba; anfr.* v., *quorum ultimi duo normales sunt; carinis quinque cincta, una in spira, una valde prominente ad peripheriam, tuberculis obscuris undata, una in basi, duabus infra umbilicum maximum; tota superficie minutissime et creberrime transversim striata; apertura circulari, parum attingente, a carinis angulata.*

Long. ·04, lat. ·065—·09, div. 165°.

Hab. In Mari Rubro. In Mus. Brit. repertura.

Known at once from the tricarinate *Vitrinellæ* by its strong growth, the undulating periphery of the principal keel, and the very minute radiating striæ.

11. ? Vitrinella spiruloides, n. s. *V. t. hyalina, diaphana, minima, tenuissima; spira planata, anfr. vix attingentibus, haud rapide augentibus; liris acutis subdistantibus radiantibus, circiter* xx. *cincta; interstitiis tenuissime spiraliter striatis; peritremate continuo, circulari.*

Long. (circiter) ·075, lat. ·025—·02, div. 180°.

Hab. Australia. In Mus. Brit. repertura.

This shell may be a *Cyclostrema*, but its texture agrees better with *Vitrinella*; it seems to be young, and differs from all other recorded species in the principal sculpture being transverse instead of spiral. Under the microscope, its beautiful sharp ribs remind the observer of the chambers of *Spirula*.

12. Odostomia (Chrysallida*) crebristriata, n. s. *Chr. t. ovato-oblonga, solida, alba; vertice nucleoso parvo, declivi, in truncatione spiræ haud magna immerso; anfr. normalibus* vi. *planatis, suturis parum impressis; clathrulis transversis circiter* xx. *rectis, haud declivibus, sibi subparallelis, obtusis, circa basin rotundatam ad rimulam umbilicalem continuis, labrum adultum versus crebrioribus, tenuioribus; interstitiis latis, planatis, creberrime spiraliter striatis; apertura contracta, ad basin late effusa; plica columellari conspicua, transversa, obtusa.*

Long. ·132, long. spir. ·087, lat. ·053 poll., div. 23°.

Hab. Sual, insula Luzon, Philippinarum. Legit *H. Cuming*; sp. un. in Museo suo.

This shell is probably not quite, though very nearly mature; as the parietal lip is scarcely formed, and the labrum is not so thin as usual in the adult. The aspect is quite distinct from that of the Mazatlan species.

13. Chemnitzia Cumingii, n. s. *Ch. t. valde elongata, turrita, alba, subdiaphana, interdum fusco lineata, seu maculata; vertice nucleoso helicoideo, parum prominente, anfr.* iii. *verticaliter sitis, apice conspicuo, marginibus spiræ rectis haud superante; anfr.* xviii. *normalibus, subrotundatis, suturis distinctis; lirulis transversis circiter* xxviii. *acutis, subrectis, subdeclivibus, circa peripheriam truncatis; interstitiis concavis, latioribus, a sulculis spiralibus* vi. *decussatis, in basin crebrioribus; apertura ovata, labro tenuissimo, columella vix intorta.*

Long. ·55, long. spir. ·47, lat. ·1 poll., div. 13°.

Hab. In Mari Sinensi. Sp. un. in Mus. Cuming.

Known at once from *C. grandis* by the spiral striæ in the concave interspaces.

14. Chemnitzia polyzonata, n. s. *Ch. t. haud parva, turrita, alba; vertice nucleoso tumente, helicoideo, anfr.* iii. *subverticaliter sitis, apice conspicuo; marginibus spiræ rectis, satis divergentibus superante; anfr.* x. *normalibus, satis tumentibus, suturis im-*

* Subgenus Chrysallida.

Testa utrinque constricta, pupiformis; peritrema continuum, ad basin undatum; labrum juxta aperturam tenue, intus solidius; plica columellaris declivis, celata; superficies plerumque cancellata. Operculum (specie typica) radiatim corrugatum, tenuissimum.

Sp. typ. *Chemnitzia communis*, C. B. Ad., Pan. Shells, no. 223, pp. 166, 312.

Particulars of this group will be found in the British Museum Mazatlan Catalogue, with descriptions of sixteen species from that place.

pressis; costis transversis subexpressis, latioribus, rotundatis, in anfr. penult. xx., *ad basin rotundatam continuis, postea evanidis; interstitiis minimis; lirulis planatis latis spiralibus, et costis et interstitiis superantibus, in anfr. penult.* ix.; *apertura vix ovata; labro acuto, ante peritrema tumente et postea contracto; columella valde intorta; regione umbilicali valde indentata.*

Long. ·37, long. spir. ·3, lat. ·1 poll., div. 18°.

Hab. Cagayan, in insula Mindanao, Philippinarum. Legit *H. Cuming*; sp. un. in Museo suo.

15. Chemnitzia bicarinata, n. s. *Ch. t. elongata, turrita, alba, huc et illuc varicosa; vertice ? . . . . ; anfr. normalibus* xii. + *? . . . . , planatis, suturis valde impressis; liris transversis acutis, rectis, circiter* xxv., *haud declivibus, lineis ad apicem vix continuis; carina valida, extante, rotundata circa peripheriam, ad suturas vix monstrante; carina altera in basin minore; tota superficie minutissime spiraliter striata; apertura a carinis angulata; columella intorta; regione umbilicali maxime indentato; varicibus intus dentatis.*

Long. ·42, long. spir. ·36, lat. ·07 poll., div. 13°.

Hab. Cagayan, in insula Mindanao, Philippinarum. Legit *H. Cuming*; sp. un. in Museo suo.

In its remarkable base, it resembles *Ch. turrita*, C. B. Ad. (Panama).

16. Chemnitzia rubrofusca, n. s. *Ch. t. rubro-fusca, elongata, turrita; vertice nucleoso discoidali, anfr.* iii., *apice conspicuo; parum prominente, marginibus spiræ vix rectis haud superante; anfr. normalibus* ix., *quarum* iv. *primi subrotundati minus divergentes, alteri planati; lirulis transversis rectis, acutis, crebris,* xxvi., *circa basin evanescentibus; lineis haud declivibus apicem versus declivibus; circa basin rotundatam, haud umbilicatam, et interstitiis lirularum concavis, sulcis minimis ornata, in anfr. penult. circiter* viii.; *columella vix intorta.*

Long. ·27, long. spir. ·204, lat. ·065 poll., div. 16°.

Hab. In Mari Sinensi. Sp. un. in Mus. Cuming.

17. Chemnitzia Bittiformis, n. s. *Ch. t. valde elongata, turrita, alba; vertice ? . . . . ; anfr. normalibus* xii., *subplanatis, suturis distinctis; lirulis transversis circiter* xxx. *vix expressis, latissimis, rotundatis, attingentibus, circa basin rotundatam evanescentibus; lirulis spiralibus minoribus, in spira* vii., *in basi crebrioribus, interstitia minima decussantibus, lirulisque transversis superantibus; apertura ovata; columella vix intorta; huc et illuc varicibus tumentibus.*

Long. ·43, long. spir. ·36, lat. ·08 poll., div. 11°.

Hab. Cagayan, in insula Mindanao, Philippinarum. Legit *H. Cuming*; sp. un. in Museo suo.

Although the nuclear whorls have perished, the point of junction bears testimony to its sinistral character, while the general aspect of the shell is Cerithoid.

5. Description of a New Species of Actinia from the Devonshire Coast. By E. W. H. Holdsworth.

When contracted, the body forms a rounded button about $\frac{3}{4}$ of an inch in diameter, but in full expansion it is generally elongated to the extent of $2\frac{1}{2}$ inches, and terminates in a somewhat cup-shaped disk about $1\frac{1}{4}$ inch wide, and having its extended edges frequently thrown into irregular festoons. The tentacula, about 150 in number, are arranged in four or five series, as in most of the group to which this species belongs; the first row contains twenty-five arms, about half the length of the diameter of the disk, and moderately stout; the others gradually diminish in size as they proceed outwards, their numbers at the same time increasing; but the irregular manner in which they are placed renders it difficult to enumerate the contents, or to determine the limits of any one of the series. The disk is of a uniform olive-brown without any superficial markings,—the appearance of radiating lines, sometimes visible, being only the upper edges of the internal septa showing through the transparent skin; the mouth opens transversely, and displays a regular crenation of its pink lining membrane. The tentacula are of a reddish purple, and entirely destitute of rings or other marking; they present a remarkable contrast to the body of the animal, which at its upper part is of a dark orange colour, gradually assuming a paler tint towards the base; numerous white sucking-pores are disposed over the upper surface, and afford points of attachment to surrounding substances, when required to conceal the body; they also give exit to the convoluted filaments, which are abundantly thrown out from them, and the mouth, when the animal is irritated. Its natural haunts appear to be narrow crevices of rocks, into which it can retire when alarmed, and I was prevented obtaining many specimens by their having chosen such inaccessible hollows for their residence. Four or five examples were, however, procured at extreme low-water mark, from the very productive rocks outside Dartmouth harbour, and, excepting in size, presented no points of difference. I propose for this species the name of *vinosa*.

June 24, 1856.

Dr. Gray, F.R.S., in the Chair.

1. On three Genera of Vespertilionidæ, Furipterus, Natalus and Hyonycteris, with the Descriptions of two New Species. By Robert F. Tomes.

(Mammalia, Pl. XLII., XLIII.).

The genus *Furia* was established by M. F. Cuvier from the examination of a single example taken at Mona in South America, by M. Leschenault.

G.H.Ford.

FURIPTERUS CÆRULESCENS. Tarnes

W.West Imp

G.H.Ford.

NATALUS STRAMINEUS. Gray.

W.West Imp.

Linnæus having previously made use of the name in another branch of zoology, it has been proposed by Prince Charles Lucien Bonaparte to substitute that of *Furipterus*. The latter name will be here adopted, and as the opportunity of examining a second species has occurred, it will afford the means of confirming the generic characters given by the original describer, and also supply some additional peculiarities.

Genus Furipterus, Bonap.

The top of the head is very much elevated, leaving a deep hollow between that and the end of the nose. The muzzle is very short, rather small, and abruptly truncated at the end. This gives the end of the nose something the appearance of that part in the genus *Sus*, and the similarity is increased by the superior margin being produced in an upward direction, as in that genus. The end of the snout may properly be called a disc, widest at its base, and having a slight emargination in the middle of its upper boundary. In this disc the nostrils are placed, small, directed straight forward, and nearly round. Between them is a narrow vertical groove, continuous from the emargination of the upper border of the disc.

All the face is densely covered with soft long hair, only the flat end of the nose and the extreme margins of the lips being naked. Near to the edges of the lips, and about the corners of the mouth, the fur assumes the aspect of a beard. Around the upper margin of the nose-disc is a fringe of fine short silky hairs.

The ears are rather large and broad, directed forward, and deeply concave within. Their inner margins project inwards and forwards over the forehead in the shape of a rounded lobe. Their extremities are rather acute and directed outwards.

The tragus is shaped somewhat like the head of an arrow, supported on a narrow foot-stalk. It is short and rather broad, with a descending barb or point on each side, the outer one being the longer and more acute. From these it tapers rapidly to a narrow, but rounded tip, directed a little outwards.

The most remarkable peculiarities in the organs of flight consist in the excessively small size of the thumb, and the shortness of the middle phalange of the longest finger. The thumb has the basal joint much longer than the terminal one. It is wholly engaged in the antibrachial membrane, the nail only being free. The phalange of the finger, above alluded to, has its length contained three and a half times in that of the terminal one, and six times in that of the basal one. The middle phalange of the third finger also is somewhat shorter than is usual in most *Vespertilionidæ*.

The wing-membranes extend to the distal end of the tibia. The legs are long and slender, and the heel cartilage very long. All the membranes are thickly marked with fine dotted lines, the interfemoral having not less than twenty-five. In this respect they bear considerable resemblance to those parts in *Rhinolophus* and *Nycteris*.

The cerebral part of the skull is excessively elevated, quite dome-shaped, and the facial portion very much depressed.

From the extraordinary elevation and expansion of the parietal bones, the frontal bone is reduced to unusually small dimensions. Its posterior portion rises nearly at right angles from the termination of the nasal bones, is narrowly triangular, and ends in a point near the top of the elevated part of the cranium. Its anterior portion is nearly horizontal in position, and is deeply cleft in the middle by the nasal bones, which extend backwards as far as to the ascending part. What may therefore be called the facial part of this bone is divided into two forks, extending one on each side, between the nasal and maxillary bones. Each of these forks is somewhat swollen, and this, with a great depression along the line of union of the nasal bones, gives a deep longitudinal groove to the facial part of the cranium, which however becomes nearly obsolete at the nasal opening.

A great peculiarity consists in the development of the intermaxillary bones. These are not cleft in front as in *Vespertilio* (leaving only space enough for the incisors to be placed close to the canines, and in a line nearly continuous with them), but are united, leaving only two small incisive foramina in the anterior part of the palate. Also they differ materially from the same bones in the genus *Vespertilio*, in having the upper free margins, forming the walls of the nasal opening, continued without any diminution of their depth to their most anterior point. The upper margins of these bones are usually very much sloped in the genus *Vespertilio*.

In consequence of the great degree of development of the intermaxillary bones, abundant space is allowed for the incisor teeth. Accordingly there is a considerable interval on each side between them and the canines, and they are arranged, not in a line with the rest of the dental series, but *vertically* and in a regular curve across the extremities of the above-mentioned bones. There is however an interval in front, between the central ones, though not so considerable as the space contiguous to the canines.

Their form is that of a short cone, the inner pair with their points directed somewhat inwards.

The canines are of a very remarkable form—a form, so far as I am aware, not hitherto observed in any other mammal. They present four points: a central cusp of the usual canine form, a lobe accessory to this, and situated about the middle of its posterior edge, one at the base of the same edge, and one of a very pointed form at its anterior base. The remaining teeth in the upper jaw do not differ materially from those of *Vespertilio* proper.

The lower incisors are uniformly arranged and bifid. The canines are small, with an anterior and posterior spur at their bases, the anterior one being the longer, and appearing like two additional incisors. There are three premolars on each side, conical, and increasing in size as they approach the true molars. These latter resemble those of *Vespertilio* restricted.

The formula of dentition may be thus expressed:—

$$\text{In.}\ \tfrac{2}{3}\ \tfrac{2}{3},\ \text{C.}\ \tfrac{1}{1}\ \tfrac{1}{1},\ \text{P.M.}\ \tfrac{2}{3}\ \tfrac{2}{3},\ \text{M.}\ \tfrac{3}{3}\ \tfrac{3}{3},\ \text{total}\ \tfrac{16}{20}.$$

On examining the under surface of the skull, we find that the bony

palate does not extend posteriorly beyond the last molar. In this respect it resembles the genus *Miniopteris*, whilst in *Vespertilio* the palate extends as far backwards as to the middle of the zygoma; in *Vesp.* (*Kerivoula*) *picta*, nearly as far back as to the condyloid fossa.

The lower jaw has, at the lowest part of the symphysis menti, a prominent tubercle, directed downwards, and projecting below the level of the lower margin of the jaw. It is probable that this may be equivalent to the *spinæ mentales*. From this, the margin of the jaw curves very evenly and moderately to the *posterior angle*. The ramus is very high, and the *coranoid process*, the *condyle*, and the *posterior process*, are arranged in nearly the same horizontal line, the *condyle* being a little elevated above the other two. The *posterior process* has a peculiar outward direction.

Such are the characters derived from the examination of seven examples. They do not include some peculiarities mentioned by M. F. Cuvier, viz. the presence of a series of warts on the upper lip, and under the chin, the prominence of the eye, and the cartilaginous condition of the terminal half of the tail. I have failed to detect any warts, nor do I perceive that the eye is more prominent than in other *Vespertilionidæ*. As, however, I am describing from dried specimens, too great reliance cannot be placed on the apparent absence of these characters.

With respect to the tail, in the seven examples examined, five have it wholly withdrawn from the membrane, and the remaining two only partially withdrawn, the terminal vertebræ being left in the situation proper for the basal ones. This may possibly have been the case with the example mentioned by M. F. Cuvier, as suggested by Dr. Gray.

It may not be amiss to remark that this genus resembles the genus *Kerivoula* of Dr. Gray (as illustrated by *Kerivoula picta*) in the form of the ear, but in no other respect have I found them similar. The crania, although greatly elevated in both, differ in other respects, and even in this they by no means closely agree.

The genus *Miniopteris* approaches most nearly to *Furipterus*, in the characters exhibited by the cranium. They somewhat resemble each other in the elevated form of the vertex, in the length of the bony palate, and in some measure in the form of the posterior portion of the lower jaw, and the development of the intermaxillary bones.

1. Furipterus horrens.

Furia horrens, F. Cuv. Mém. du Mus. xvi. p. 150. tab. 9; Fischer, Synop. Mam. Addenda, 352; Temm. Mon. ii. p. 264; Wagn. in Suppl. Schreb. Sauge. i. p. 549; Schinz. Synop. Mam. i. p. 207; Less. Nouv. Tab. Règ. Anim. p. 22.

The eyes prominent and large. The nostrils apical, and separated only by a margin surrounding them, forming a groove at their upper part. Lips entire, the upper one with four or five warts along its side. The lower lip has eight warts, conspicuous from being of a

white colour, amidst the surrounding black fur. Ears large, nearly as broad as long, simple in structure. The tragus is of a peculiar form, having three points arranged like a cross.

The fur is soft and thick, except at the muzzle, where it is longer and coarser than that of the other parts.

The colour is a fine uniform black.

Length of the head and body (English) 1″ 7‴; expanse 6″ 4½‴.

Hab. S. America, Mona.

2. Furipterus cærulescens, n. s. (Pl. XLII.)

Top of the head very much elevated, face depressed, excessively hairy, only the end of the nose and the extreme edges of the lips being naked. Ears as broad as high, roundish, with the tips angular and directed somewhat outwards. Tragus short, supported on a narrow foot-stalk, immediately above which is a descending process on each side. From these it tapers rapidly to a narrow, but rounded point, which is directed a little inwards. About the middle, between the tip and the inner descending process, is a slight angular projection.

The fur is everywhere long and silky. That of the upper parts is slaty-blue at its base, slightly tipped with dusky-brown, but not sufficiently so, as to appear bicoloured. On the head it is somewhat paler than on the back. The long fur of the face is darker and not quite so blue. The fur margining the lips is of a silky ash-colour. The chin is of a uniform grey-brown, the breast blue-grey, the fur tipped for a third of its length with whitish-grey. On the belly and pubal regions it is nearly uniform whitish-grey.

Of the specimens examined, two are males and the remainder females, and all are obviously adult. The sexes are similar.

The great similarity in the size of the examples renders it unnecessary for me to give the measurements of more than one. For the purpose of comparison I add the dimensions of the figure illustrating M. F. Cuvier's memoir.

	F. horrens.	*F. cærulescens.*
	″ ‴	″ ‴
Length of the head and body	1 6½	1 3
——— of the tail	1 1 (?)	?
——— of the head	0 0	0 6
——— of the ears.....	0 4½	0 3½
——— of the fore-arm.....	1 5	1 4
——— of the longest finger	2 7	2 2
——— of the fourth finger	1 7	1 9
——— of the tibia	0 7	0 6½
——— of the foot.....	0 4	0 3½
Expanse, following the bones, of the wings	9 3	8 9

Hab. St. Catharine, Brazil.

Genus Natalus, Gray.

The forms of this genus bear considerable resemblance to those of *Furipterus*. The crown is very much elevated, and a deep depres-

sion separates it from the nose. The latter is broad, but not bulging at its sides, as observable in some *Vespertilionidæ* (such as *Scotophilus*, Gray). The top of the nose, in front of the eyes, is rather prominent, and rounds down evenly on all sides to the edge of the upper lip, which if seen from below would describe a half-oval figure. The above-mentioned prominence is furnished with a central longitudinal ridge, terminating between the nostrils. These are apical, approximated, and of an ovoid form. They are placed so near the margin of the lip that they might almost be described as situated in it. They do not interfere with the curvature of the outline of that part, being simple perforations.

The lower lip is furnished with a broadish, naked reflexed edge, divided by a vertical groove in front. Below this is an irregular semicircular double row of warts, studded with bristly hairs, and a larger one beneath at the symphysis menti.

The ears are rather large, broadest at two-thirds of the distance from their bases. They are furnished with a descending free lobe at the base of the outer margin, which is unattached to the side of the face, somewhat like the *lobulus* of the human ear. Their extreme tips are directed outwards.

The tragus is of very peculiar form; it is supported on a distinct stalk, which springs horizontally from the inside of the auditory opening. From the extremity of this, the tragus rises vertically, and occupies the usual position in the ear. It is short, broad, and somewhat fleshy. The two margins curve to a rather acute tip, which is directed a little inwards. At the outer edge, towards the base, is a descending angular projection. About the middle of the ascending part, the tragus is twisted upon itself, in such a manner as to present only the *edge* of the upper part to the eye, whilst the basal portion presents its *flat* surface. From its tip spring a number of fine bristly hairs, straight and long.

The legs, feet, and os calcis are long, and the toes occupy about one-half of the length of the feet. The tail is very long, equal in length to the head and body; it consists of seven joints, the terminal one being small. The wing-membranes have a singular mode of attachment to the tibia. Viewing the animal from the under side they are seen to proceed from the base of the os calcis, in the form of a narrow rudiment of membrane, extending up the inside of the tibia for a fourth of its length. At this point they cross over the tibia, and pass outwards, forming the posterior margins of the wings. The thumb is rather small, but the wings do not present any other great peculiarities. All the membranes are thickly marked with dotted lines as in *Furipterus*, the interfemoral membrane having between twenty and thirty.

The upper incisors are four in number, in pairs, separated from the canines by an interval, and with a space in the middle between the pairs. They are small, of nearly uniform size, and obtusely conical. In the space between them is a prominent horse-shoe-shaped cartilage, a little in advance of them, being a prolongation of

the anterior boundary of the palate. Behind this is a transverse prominent palatal ridge, divided in the middle by a notch.

NATALUS STRAMINEUS, Gray. (Pl. XLIII.)

Natalus stramineus, Gray, Mag. Zool. & Bot. ii. p. 496; Cat. Mam. Brit. Mus. p. 28.

The face is very hairy, particularly along the median ridge, and on the upper lip, where it takes the form of a thick long moustache, extending the whole length of the lip. This rises on each side over the top of the nose, meeting in the middle, and forming a kind of transverse ridge of hair. Immediately in front of the eye is a naked space. The ears when held up to the light, present a singular dotted appearance, and resemble in this respect the *Vesp. papillosus* of Temminck. The extreme tip of the tail is exserted.

The fur is of medium length and substance. On the upper parts, of a uniform brownish-yellow; on the under, the same but paler. The membranes and naked parts are reddish-brown.

The whole of the above has been taken, by the kind permission of Dr. Gray, from the two examples mentioned in his Catalogue, and the following are their dimensions. The first column refers to the specimen in spirit from South America, and the second to the one from St. Blas, North America.

	No. 1.	No. 2.
	″ ‴	″ ‴
Length of the head and body	1 9	1 11, about.
——— of the tail	2 2	2 0, nearly.
——— of the head	0 9	0 $7\frac{1}{2}$
——— of the ears	0 5	0 4
——— of the tragus	0 2	0 $1\frac{3}{4}$
Breadth of the ear	0 6	0 $4\frac{3}{4}$
Length of the fore-arm	1 $5\frac{1}{2}$	1 $4\frac{1}{2}$
——— of the longest finger	3 0	2 9
——— of the fourth finger	2 2	1 11
——— of the thumb	0 2	0 $2\frac{1}{4}$
——— of the tibia	0 $9\frac{1}{2}$	0 8
——— of the foot	0 4	0 4
Expanse, following the bones, of the wings	10 6	10 0

Genus HYONYCTERIS, Licht. et Peters.

Incisors four above, in pairs, separated by a space in the middle, the apices bifid; below, six, contiguous, trifid. Canines, distinct, long, conical, surrounded by two rings or collars. Molars above and below, six on each side, the upper anterior ones separate, the three posterior ones close together and W-shaped. Tongue medium; snout elongated beyond the lips, with a discoid end (somewhat as in *Furipterus*). Nostrils below, *ensiform*. Lips tumid, the margins broadly reflected. Ears separate, broad, and furnished with tragus and antitragus. Wing-membranes broad, extending the whole length of the leg and foot, quite to the base of the nails. Interfemoral

membrane entire, completely enclosing the tail, the last joint only of which is exserted. Thumb free, nailed, and with a broad suctorial disk attached to it. Index finger very short, scarcely a fourth as long as the basal phalange of the longest finger; all the remaining fingers with three phalanges. The feet with five toes, furnished with a suctorial disc. All the toes composed of only two phalanges, and united by a web. Os calcis lobed and long.

1. HYONYCTERIS DISCIFERA, Licht. et Peters.

Hyonycteris discifera, Licht. et Peters, Neue merkw. Säugeth. 1855*.

The upper parts cinnamon-brown, beneath paler; wings dusky-brown.

	″	‴
Length of the head and body....	1	7
——— of the tail	1	3
——— of the head.....	0	7
——— of the ears	0	$5\frac{1}{2}$
——— of the tragus	0	2
——— of the fore-arm	1	$3\frac{1}{2}$
——— of the longest finger	2	6
——— of the fourth finger	1	$8\frac{1}{2}$
——— of the tibia.....	0	7
——— of the foot and claws....	0	3
Expanse of wings	8	3

Hab. Puerto Cabello, Central America.

2. HYONYCTERIS ALBIVENTER, n. s.

The specimen from which the present description has been taken has lost some of its parts by accident, and with them some of the peculiarities described by MM. Lichtenstein and Peters in the paper already alluded to. Thus, the tragus has been eaten away from each ear by insects, the nose-disc apparently so much rubbed as to have lost its original form, and the thumbs are entirely wanting. In other respects the specimen is in sufficient preservation to confirm the characters given by the above-mentioned authors, and also to furnish an additional peculiarity not given by them in their description of the genus. This will be hereafter indicated.

The crown of the head is very considerably elevated, the face very concave, and the muzzle rather elongated. The ears are scarcely as broad as high, the inner margin (towards the top of the ear) is very much rounded, and the extreme tip is conspicuously directed outwards. The outer margin is considerably hollowed out† for nearly

* Gelesen in der Druckerei der Akademie der Wissenschaften, am. 22 Juni 1854. Berlin 1855.

† It appears desirable to state that the expression "hollowed out" must be taken in its literal sense, as the form here attempted to be described is very different from what is usually called "an emarginate ear," in the genus *Vespertilio*. In this genus it is a distinct "notch" in the outer margin of the ear: in *Hyonycteris* it is simply a shallow piece *scooped* out of the margin,—at least such is the

the whole of its length, but with a rounded prominence at its base. The face is very hairy, and the upper lip has a distinct moustache of long hair.

On the whole of the upper parts the fur is of a reddish-brown colour, uniform in tint from its root to the tip. On the under parts it is pure white, tinged with rufous on the humeral region and on the chin.

This species appears to differ from the last in having the ear much more hollowed out externally, in being somewhat larger, and in having the under parts pure white.

	″	‴
Length of the head and body	2	0
——— of the tail, about	1	2
——— of the head	0	9
——— of the ears	0	$3\frac{3}{4}$*
——— of the fore-arm	1	$5\frac{1}{2}$
——— of the longest finger	2	$6\frac{1}{2}$
——— of the fourth finger	1	10
——— of the tibia	0	$8\frac{1}{2}$
——— of the foot and claws	0	3
Expanse of wings, following the phalange	10	6

Hab. River Napo, near Quito, where it was collected by Mr. Bates.

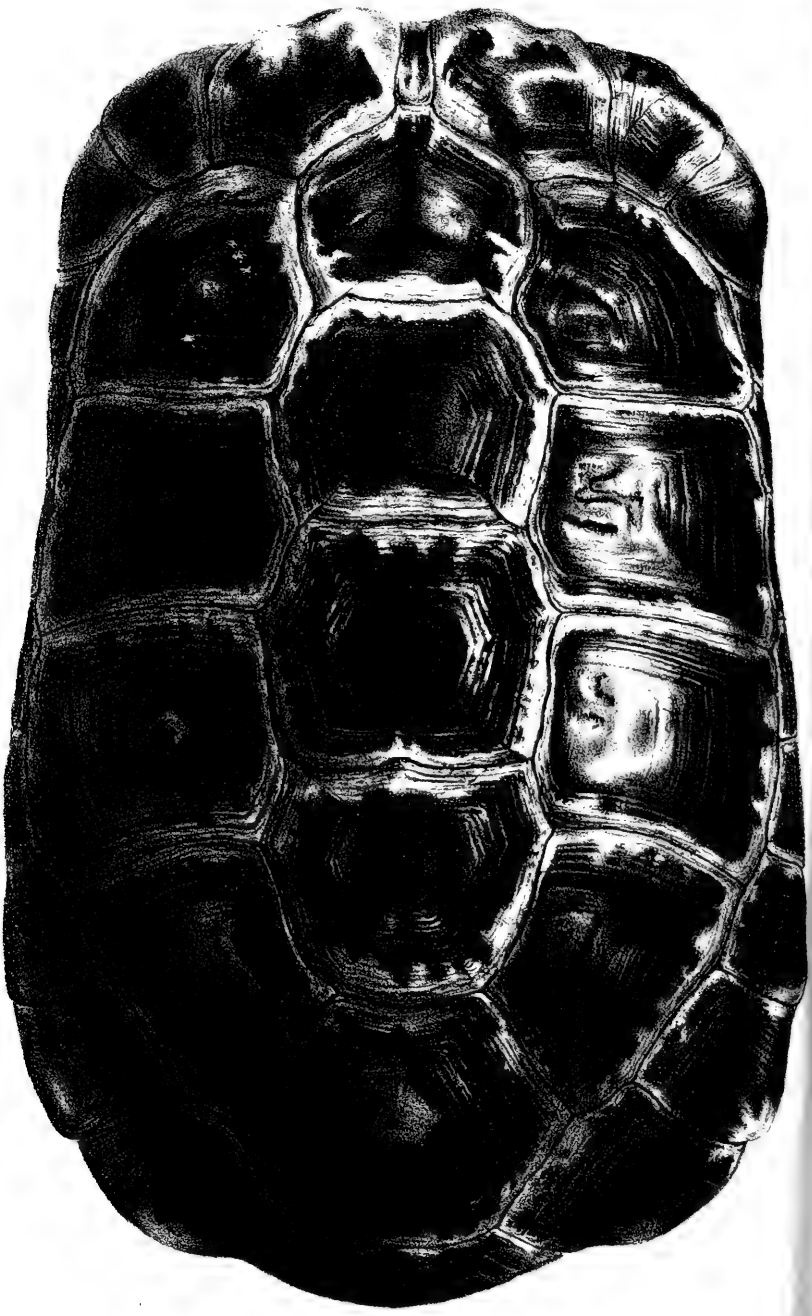
In addition to the generic characters given by the authors already quoted, the very peculiar form of the claws of the hinder feet may be mentioned. These are rather long, have a small degree of curvature, are very slender, and not compressed laterally as in other Bats. Their under surface is rather deeply hollowed out; in this respect they bear considerable resemblance to the claws of some Rasorial birds, such as the genus *Tetrao*, but they are relatively more slender. From their form they could scarcely be used as organs of suspension, and it is not improbable that the conspicuous discs attached to the thumbs and feet may answer the same purpose that claws are known to do in the ordinary Bats.

The elevated form of the cranium deserves special attention, as indicating an affinity in this particular with the genera *Furipterus* and *Natalus*.

The peculiarity of having the wing membranes extend to the claws is not restricted to this genus, as I have observed it in the *Vesp. suillus* of M. Temminck. This species has been considered by Dr. Gray to be sufficiently dissimilar from other examples of the genus *Vespertilio*, to merit generic distinction, under the name of *Murina*. Another species from Ceram (*Vesp. vulpinus*, Temm. Mus.

case in the specimen I possess, but in the figure already referred to, this is less conspicuous.

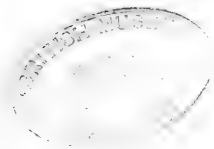
* In taking the measure of the ear, it is my custom to consider it as a simple projection, and to measure along the line of greatest convexity of the hinder surface. This imaginary line will proceed from that part of the base nearest the crown, to the tip of the ear. A line along its anterior or posterior margin would be rather an indication of form than of absolute length, and should therefore be given additionally if the form of the ear seems to require it.

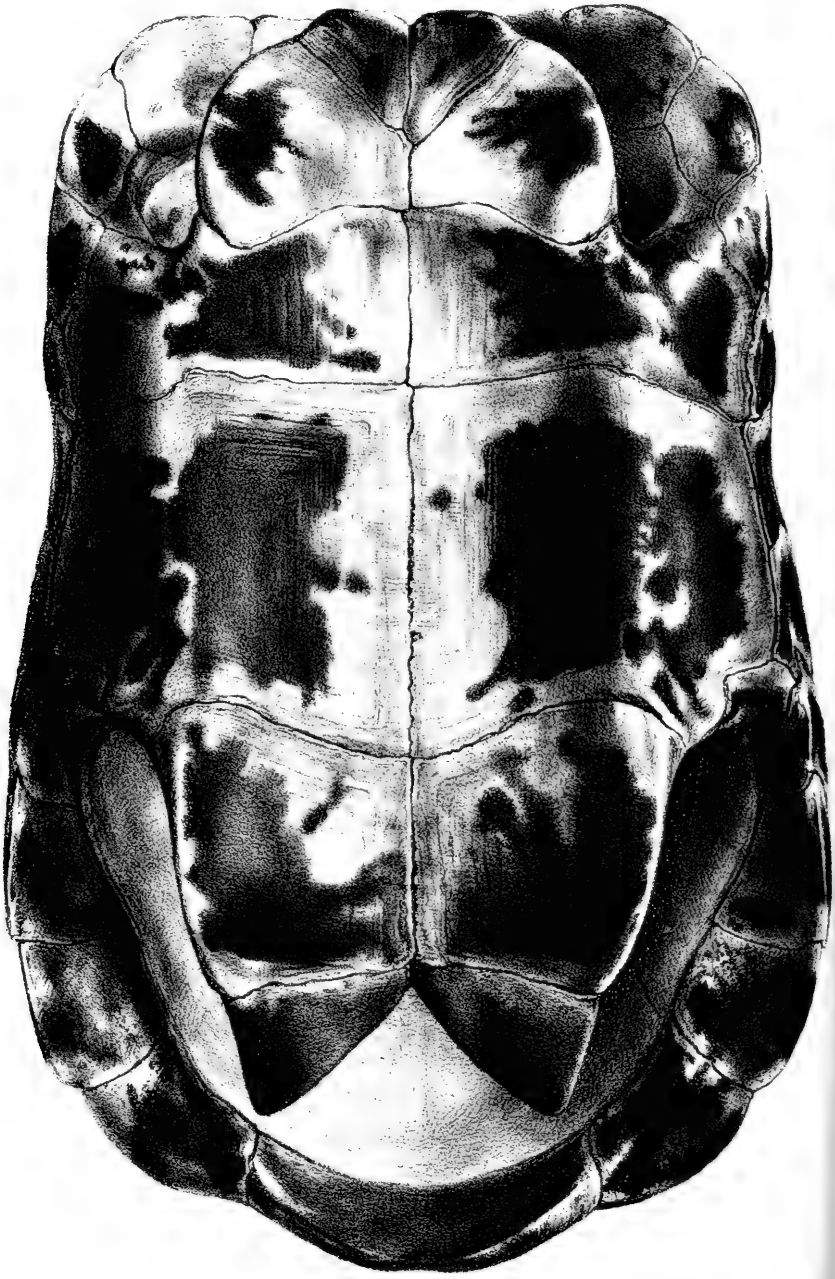


J.H.Ford.

TESTUDO ELONGATA. Gray.

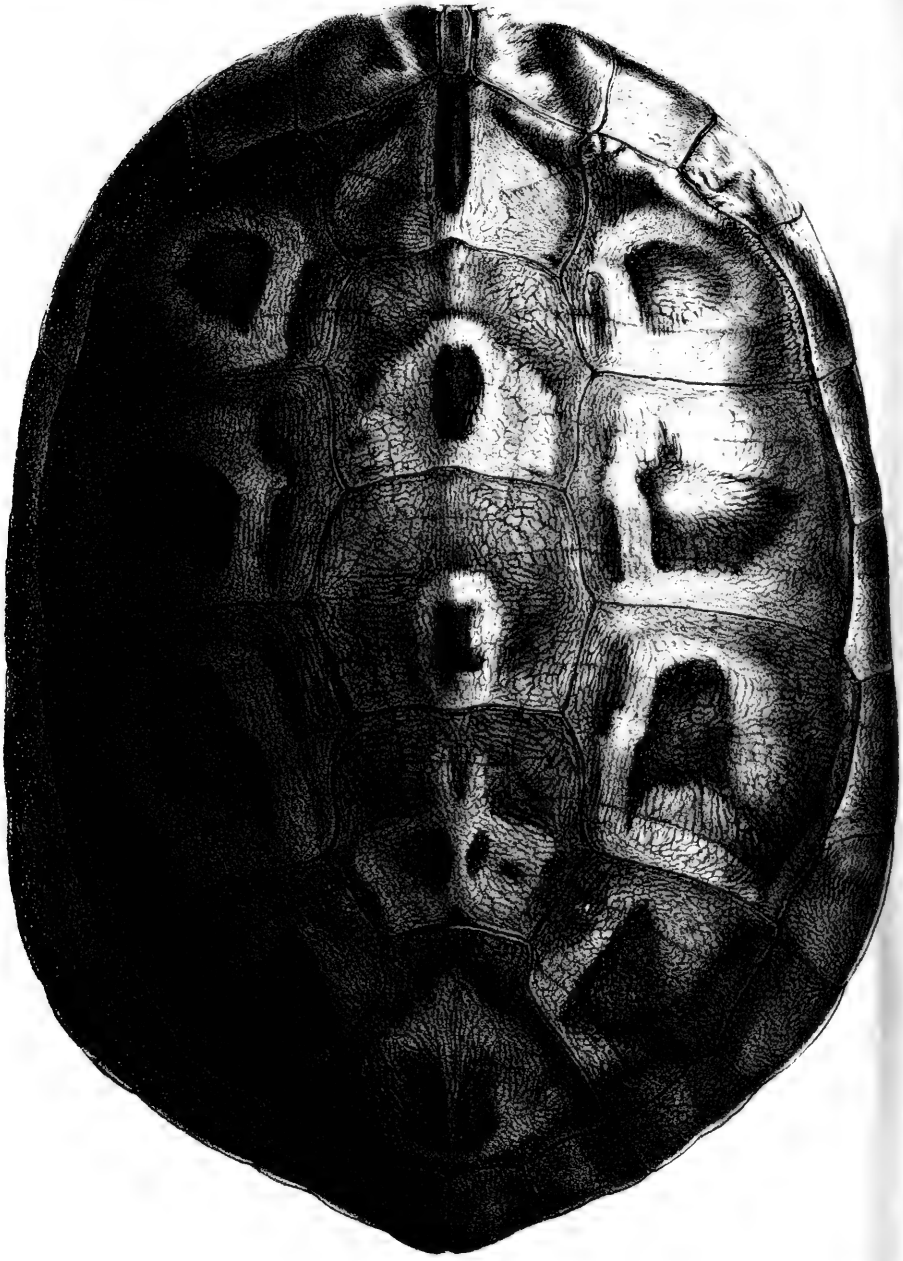
W. West, Imp.





TESTUDO ELONGATA Gray

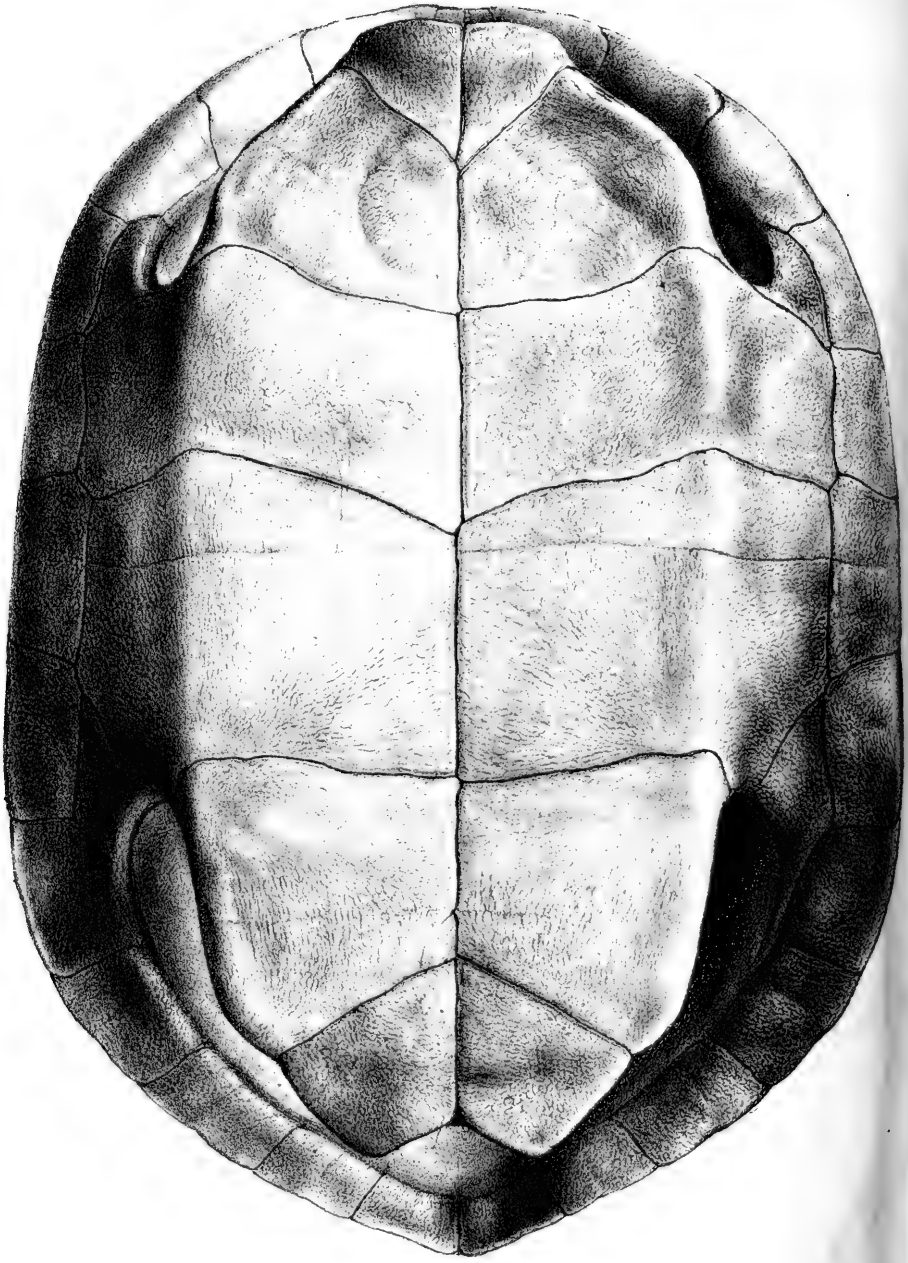
W. West Imp.



G.H.Ford

W.West Imp

BATAGUR OCELLATA Gray.



G.H.Ford.

BATAGUR OCELLATA. Gray

W.West Imp.

Ley.) possesses the same singular mode of attachment of the membranes. Not having carefully examined either of these, I am unable to offer any positive opinion respecting their affinity with the genera above described. It appears, however, probable that other characters would be discovered common to *Hyonycteris* and *Murina*, if a close examination were instituted.

2. Notice of some Indian Tortoises (including the description of a New Species presented to the British Museum by Professor Oldham). By Dr. J. E. Gray, F.R.S. P.B.S., etc.

(Reptilia, Pl. IX. X.)

The most interesting specimen of the very curious series of Indian Tortoises presented to the British Museum by Professor Oldham, is a fine full-grown specimen of a species which so strongly resembles the South American *Testudo tabulata*, in size, form and colours, that it might easily be mistaken for a specimen of that species which had been taken to India in some vessel. But on a closer examination it is easily distinguished from the American kind by the following particulars :—

First. It belongs to the Old World divisions of the genus, or true genus *Testudo*, characterized by the last vertebral plate being as wide only as the caudal, and the hinder half of each of the hinder marginal plates, instead of being of the width of the caudal and the hinder marginal plates, as is the case with the American "*Gophers*," including the species *Testudo tabulata* and *Testudo gopher*.

Secondly. It has a large, elongated, well-marked nuchal plate, which is never found in *Testudo tabulata*.

Thirdly. The hinder notch is more angular and acute.

The specimen sent from India has the deeply concave sternum, which is supposed to mark the male animals, as is the case with many specimens of *T. tabulata*. It is sent under the name of '*Testudo elongata*,' which I willingly adopt; as it may have been noticed under that name in some Indian periodical which has not yet come under my observation.

1. Testudo elongata. (Pl. IX.)

Thorax oblong, rather depressed, truncated in front, rounded behind, black; shield yellow-edged. Sternum rather narrow, truncated in front, angularly notched behind, yellow, largely black, varied. Nuchal plate elongate. The hinder vertebral plate as wide as the caudal and the hinder half of the hinder marginal plates.

Hab. India, "Mergui."

Note.—Since the above was written, I have received a Part of the Journal of the Asiatic Society of Bengal for 1856, and I find

the following observations on this species, which appears to have been mentioned in a preceding volume :—

Testudo elongata, Blyth, Journ. As. Soc. Bengal, xxxii. 639. Vol. xxv. 1856, lxxviii. 712.

Mr. Blyth states, "a number of living specimens have been received from Captain Berdmore.

"Colour of naked parts olive-grey varied with dull yellow, and with black head conspicuously dull yellowish white."

Mergui, Tenasserim River.

2. Testudo Horsfieldi, Gray, Cat. Tort. B.M. t. 1.

There is a fine large specimen of this species, showing it is very distinct from the *T. græca* of Europe. The upper jaw has a small notch on each side of the tip.

3. Emys crassicollis, Bell.

The Collection contains three adult specimens of this species, which are marked "*Emys nigra*, Blyth."

The adult examples are rather broader than the younger specimens in which are usually found a mucro, and the dorsal keels are almost entirely obliterated ; the hinder edge of the thorax is acutely dentate ; the sternum is pale grayish, with black areolæ and rays. It is probably the absence of the keels in the adult state that induced Mr. Blyth to regard it as a distinct species ; but the keels become generally more indistinct in all the species which are keeled in their younger condition.

The specimens are marked as coming from "Mergui." The jaws are even, and not notched in front.

4. Emys nigra, n.s., Blyth, Journ. As. Soc. Bengal, lxxviii. 712.

Mr. Blyth observes on the affinity of this species with *E. crassicollis*, but he does not appear to have the means of comparison.

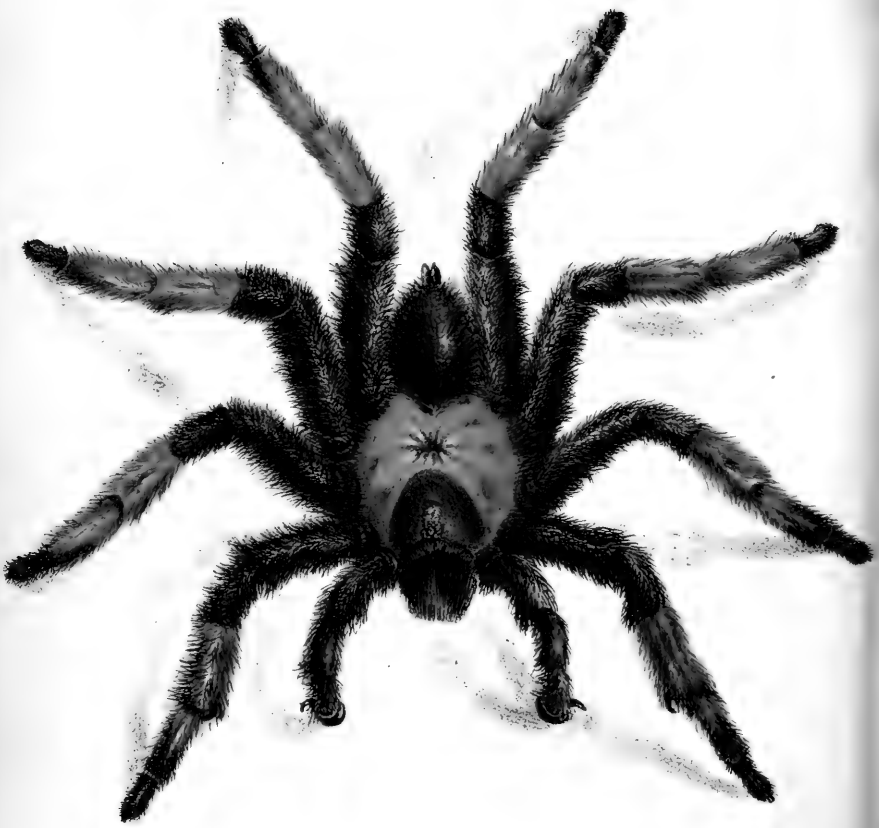
The Collection contains two species of the genus *Batagur* :—

5. Batagur baska, Gray, Cat. Tort. B.M. t. 16.

There is a very large adult shell of this species, which is marked "*Emys tentoria*, Blyth." It measures 21½ inches over the back, 19½ along the sternum, and is 18 inches across the back and 21½ over the convexity of the back. The jaws of the species are very strongly dentated, the upper one is toothed on the edge with two angular series of pits ; the lower jaw is furnished with two concentric series of acute spinose tubercles, those in the outer series the largest and very acute, the central one in front horny, very large.

6. Batagur ocellata, Gray, Cat. Tort. B.M. t. 36. (Pl. X.)

There is a beautiful specimen of a species of this genus from Mergui, which I am inclined to believe is referable to *Emys ocellata* of Dumeril and Bibron (Erpétologie générale, ii. 329. t. 15. f. 1) ; a species which I have not before seen in any English collection. I should



have no doubt of its being that kind from the description; but in the figures the dark spots on the costal plates are represented as being nearly regular, circular, broad rings round a pale circular centre, while in the specimen received from Professor Oldham the dark mark on the costal plate is an irregular oblong or square mark only, partly surrounding the paler centre of the shield.

Mr. Blyth in the same paper observes, "*Emys ocellata* would appear to be the commonest species in the Burmese rivers, and its naked parts are olive-grey, the crown blackish, with a yellowish-white V-like mark over the snout, continued as a supercilium over each eye and back upon the neck, another straight line behind the eye, and both are often more or less broken into spots.

"Carapax dusky mottled with yellowish, a great black spot surrounded with a pale *areola* upon each discoidal (!) plate, dorsal ridges blackish with pale border, and lower parts wholly yellowish-white.

"Some are brighter coloured than others, and the ocelli become proportionally smaller as they increase in size.

"The carapax of our largest specimen measured 9 by 6¼ inches, but it probably is not nearly full-grown."

Hab. Burmah.

7. Cistudo dentata, Gray.

There is a fine adult specimen of this species in the Collection, also from Mergui.

3. Description of Mygale Emilia, a Spider from Panama, hitherto apparently unrecorded. By Adam White, Assistant in the Zoological Department, British Museum.

(Annulosa, Pl. XLIII.)

The large Spiders of the New World, though generally sombre in hue, are occasionally varied in colour. The *Mygale versicolor* described by Baron Walckenaer (Apt. i. 211), has the cephalothorax covered with down-like hairs of a metallic green lustre, and some of the hairs of the body have in certain aspects a violet reflection. The *Mygale rosea* described by the same author from the collection of M. Guerin Meneville, who procured it from Chili, is deserving of its specific name. The *Mygale Zebra*, figured in the fourth volume of the 'Annales de la Soc. Entomologique,' pl. 19, has the abdomen strikingly striped. Generally speaking, however, these large *Mygales*, whether from the Old or the New World, are rough, plain brown, or black creatures, with greyish scattered hairs. Since Walckenaer's work was published in 1837, several species have been added to zoological science, especially in the 8vo German work of Koch. The following species, pre-eminent for its striking beauty of colour, was obtained by my friend Dr. Berthold Seemann, the distinguished naturalist who succeeded Mr. Edmonstone on board H.M.S. Herald under Capt. Kellett, R.N., C.B.

I have but once seen a *Mygale* alive; the specimen was sent to the late Mr. John Doubleday by post, and when it reached London was evidently much shaken by its transit from Liverpool. The day after its arrival he gave it cockroaches. They were put into the small box along with the *Mygale*. It apparently at first did not see them, but on these "Cursorial Orthoptera" running about *Mygale's* legs, the great spider drew itself up, and darted its chelicera into one of them, tearing its intestines with its fearfully armed hook. The *Blatta* was soon devoured, and the spider, evidently an invalid after its rough journey, died next day.

Mr. H. W. Bates, who has for the last eight years so successfully collected Annulosa, and observed their habits at various points on the Amazon, in a letter to me, dated "Santarem, 30 April, 1855," written on the eve of starting for "the wonderful country of the Upper Amazons," remarks:—"With regard to spiders, I have observed many curious points in their habits, but I cannot communicate them until I can send specimens, with numbers attached, to which the notes can be referred. There is one observation I made, however, which I am sure will be of the highest interest to science. It is with respect to the habit of the *Mygales* to prey on birds. Now I have detected them in the fact as far back as 1849, but thought little of it at the time, as I had the idea that it was a well-known and undisputed fact in science. Lately, however, I read an account (I think of Langsdorff's expedition in the interior of Brazil), where the fact is considered to rest on no foundation, and to be one *more* of the fables originated by Madame Merian. Now I will relate to you what I saw. In the month of June 1849, in the neighbourhood of Cameta, I was attracted by a curious movement of the large grey-brown *Mygale* on the trunk of a vast tree. It was close beneath a deep crevice or chink in the tree, across which this species weaves a dense web, open for its exit and entrance at one end. In the present instance, the lower part of the web was broken, and two pretty small finches were entangled in its folds; the finch was about the size of the common Siskin of Europe, and I judged the two to be male and female: one of them was quite dead but secured in the broken web, the other was under the body of the spider, not quite dead, and was covered in parts with the filthy liquor or saliva exuded by the monster. I was on my return from a day's excursion by land, at the time, with my boxes full of valuable and delicate insects, and six miles from my house, and therefore could not have brought the specimens home, even had I wished, which I did not, as the species was a very common species, easily to be procured nearer home.

"If the *Mygales* did not prey upon Vertebrated animals I do not see how they could find sufficient subsistence. On the extensive sandy campos of Santarem, so bare in vegetation, there are hundreds of the broad slanting burrows of the large stout species (that fine one, dark brown, with paler brown lines down the legs). The campos, I know, from close research, to be almost destitute of insects, but at the same time they swarm with small lizards, and some curious ground-finches of the *Emberiza* group (one of which has a song wonderfully resem-

bling our Yellow-bunting of England), besides which vast numbers of *Caprimulgi* (*C. psalurus*, Azara) and ground-doves lay their eggs on the bare ground. I believe this species of *Mygale* feeds on these animals and their eggs at night. Just at close of day, when I have been hurrying home, not liking to be benighted on the pathless waste, I have surprised these monsters, who retreated within the mouths of their burrows on my approach."

MYGALE EMILIA. (Pl. XLIII.)

M. nigro-fusca, cephalothorace, duobusque articulis singulorum pedum læte flavescenti-rubris.

Deep blackish-brown; the basal joint of chelicera with some scattered red hairs in front; the cephalothorax of a rich yellowish-red, the hairs short, close and velvet-like; the fourth and fifth joints of the legs clothed with yellowish-red hairs, the end of the fifth joint with many brown hairs; fourth joint of the first pair of legs, with the curiously hooked process near the end, also covered with red hairs, the under side of the fifth and sixth joints and the tarsi clothed with a close, dense, velvet pad. Body brown, with longish, scattered red hairs, which are deeper in hue than on the other parts.

Nomine Emiliæ dilectæ filiæ Henrici Verney, Equitis Baronetti de Cleydon, in comitatu de Buckingham, araneam hanc spectabilem, in Americâ Centrali a Bertholdo Seemann, Botanico celeberrimo, detectam in expeditione recenti, sub Henrico Kellett, Navarcho, insignire vult descriptor.

The figure, which is of the natural size, was drawn by Miss Spooner of Kentish Town.

July 8, 1856.

Dr. Gray, F.R.S., in the Chair.

The following papers were read:—

1. ON THE LAND AND FRESHWATER SHELLS OF KASHMIR AND TIBET, COLLECTED BY DR. T. THOMSON.

BY S. P. WOODWARD, F.G.S.

These shells, which I received through Dr. J. D. Hooker and Sir Charles Lyell, were collected by Dr. Thomson in 1847–8, when he accompanied Major Cunningham and Capt. H. Strachey in "one of the most adventurous journeys ever made in the Himalaya *."

The shells of continental India are nearly all distinct from those

* Western Himalaya and Tibet; a Journey through the Mountains of Northern India. By Dr. Thomas Thomson. 8vo, London, 1852.

of Europe, and although far inferior in beauty and variety to those of the Asiatic Islands, have yet a marked character, owing to the admixture of tropical forms and especially to the great development of the operculated genera (*Cyclostomidæ*), which are almost unknown in our quarter of the world *.

It was, therefore, a matter of considerable interest to ascertain what land and freshwater shells occur in the remote regions of Kashmir and Tibet, and somewhat surprising to find, that of about 22 sorts collected by Dr. Thomson, one-half were British species, and the rest of the commonest and most widely diffused Indian forms.

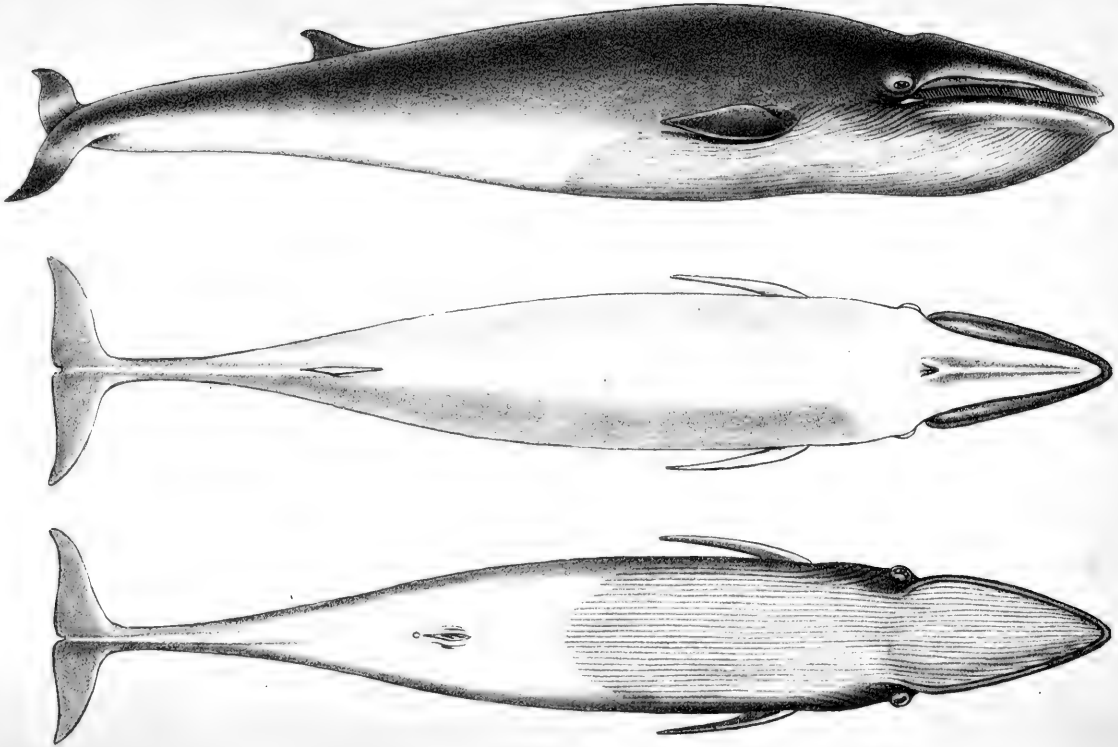
The species marked * are European.

**Helix pulchella*, small var., *subfossil*. Iskardo, Tibet (Europe, N. America).
**—— *costata*, large var., recent. Iskardo, 7200 feet.
**Helicella nitida*. Near Iskardo (Europe, N. America).
Bulimus candelaris, Pfr. Takht i Suliman, Kashmir.
—— *segregatus*, small var. Kashmir.
**Zua lubrica* (*subfossil*). Iskardo (Europe, N. America).
Pupa Huttoniana, Benson. Iskardo (also *subfossil*).
**Succinea Pfeifferi*, var. (*longiscata*, Morillet ?). Kashmir.
**Limnæa stagnalis*. Kashmir (Europe ; N. America, Oregon).
**—— *peregra*. Pitak, Tibet ; Kashmir.
——, var. *Hookeri*. Iskardo and Nubra, Tibet (18,000 feet).
**—— *auricularia*. Iskardo ; Thogji Lake (*subfossil*).
——, sp. Kashmir (resembling the Australian *L. simulata*).
**—— *truncatula*, Müll. Iskardo, in damp mŏss (also found at Candahar, Affghanistan ; at Madeira, and in the U. States).
—— *luteola*, Lam. (*succinea*, Dh.). Islamabad, Kashmir (also Prome, Burmah).
—— *acuminata*, Lam. Jamu hills.
Planorbis Coromandelicus, Fabr. Jamu hills ; Islamabad, Kashmir (also Ceylon and Malacca).
—— *nanus*, Benson ; *subfossil*. Tsoral Lake, Tibet (Capt. H. Strachey).
——, sp. Pitak and Iskardo ; Tertse, Nubra, *in lacustrine clay*.
Paludina Bengalensis, var. Jamu hills, Kashmir.
**Valvata piscinalis* (*subfossil*). Kashmir ; Tsoral Lake, Tibet.
**Cyrena fluminalis*, Müll. † (*Cashmiriensis*, Dh.). Avantipura, Kashmir.
Cyclas (*Pisidium*), sp., *subfossil*. Thogji Lake, Tibet.

These specimens have been submitted to the examination of Mr. W. H. Benson, who is unsurpassed in his critical acquaintance with Indian shells, and especially those of the Western Himalaya.

* Mr. Benson states that *Helix Bactriana* (Hutton), found in Affghanistan, is closely allied to the European *H. strigella*.

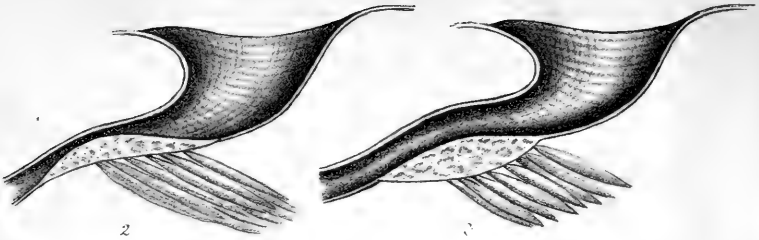
† Varieties of this shell are found in Sicily, Palestine, the Nile, and all the rivers of the East. These varieties have been regarded as constituting about twenty distinct species ; e. g. *C. Euphratica*, Bronn ; *ambigua*, Dh. ; *Cor*, Lam. ; *consobrina*, Caill. ; *triangularis*, Dh. ; *Panormitana*, Bivon, &c. When fossil, it is the *C. trigonula*, Searles Wood ; *C. Gemmellarii*, Phi.



J. Jennens lith.

PHYSALUS DUGUIDII. Heddle.

W. West Imp.



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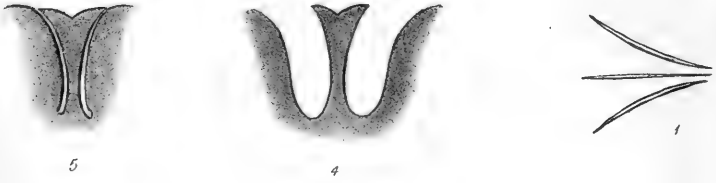

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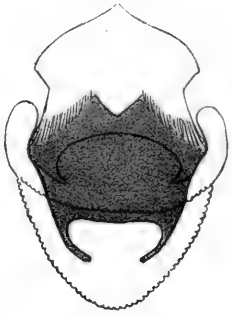

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PHYSALUS DUGUIDII Haddle

1. Blow holes. 2.3. Blow holes & Pad.
4.5. Blow holes closed sideways.
6. Jaws. 8 Plicæ contracted & stretched.

J. Jennens lith. W. West Imp.

Helix pulchella and *Zua lubrica* were only obtained in the condition of "dead shells" from the alluvial plains of Iskardo and Kashmir.

The *Pupa* and *Bulimus candelaris, Limnæa auricularia* and *Valvata piscinalis,* were found both recent and subfossil.

Limnæa auricularia occurred in prodigious abundance in the alluvial clay around the salt-lake of Thogji, at the height of 150 feet above its present level. There are no longer any living shell-fish in its waters, and Dr. Thomson remarks, "it may fairly be inferred that the lake was quite fresh at the time when it was inhabited by *Limnæa*." The increase of the height of the surface of the water to the small amount of 150 feet, appears to have admitted of its discharging its waters along the course of an open valley into one of the tributaries of the Zamkar river (p. 173).

Everywhere to the northward of Tibet, from the Aral sea to Chinese Tartary, is a country of small salt-lakes having no outlet; and this region divides Northern India from the Siberian steppes, in which land and freshwater shells of *Germanic species* are known to occur.

Westward, however, the ranges of the Hindoo Koosh are prolonged through Persia to the Caucasus, and form a continuous route to the Lusitanian region.

Since the shells which have been mentioned as English species occurring in Tibet, are also common to the South of Europe, they are rather to be regarded as *Lusitanian* than Germanic species.

The land species (*Zua, Helix, Helicella* and *Succinea*) are, however, amongst the most ancient inhabitants of this island, being found in the newer-pliocene deposits of the Thames valley, associated with the same *Valvata* and the same species of *Cyrena,* and with remains of an Elephant (*E. meridionalis*) and a Rhinoceros (*R. leptorhinus*), which are not only extinct, but were succeeded by other races of the same animals (*Elephas primigenius* and *Rhinoceros tichorhinus*), before they finally disappeared from this portion of the globe.

If, therefore, the small land shells of our newer tertiaries originally migrated into this country from the East, we must ascribe to their occupancy of the lofty plains of Kashmir and Tibet a very high antiquity compared with any of the monuments which Man himself has reared, even in the country most usually regarded as the cradle of his race.

2. On a Whale of the Genus Physalus, Gray, captured in Orkney. By Robert Heddle.

(Mammalia, Pl. XLIV. XLV.)

A Whale of the genus *Physalus* of Dr. Gray was stranded on the small island of Laman or Lambholm in Orkney on the 9th of March ultimo.

It was afterwards towed from Laman, and beached upon the shore of Scapa Bay, about two miles from Kirkwall.

The individual was a female.

The following measurements were made with the greatest care by Mr. George Petrie and myself:—

	ft.	in.
Length from point of lower jaw to notch in tail	50	0
Girth beneath pectorals	23	6
„ at 20 feet from point of lower jaw	19	3
„ close behind dorsal	11	7
„ 7 feet behind dorsal	6	0
„ close to tail	5	0
Depth at 3 feet from end of vertebral column	2	0
„ at 9 feet from end of vertebral column	3	10
Thickness at 9 feet from end of vertebral column	1	6
Thickness where thinnest	0	10
Between upper angles of pectorals (over the back)	10	0
Keel extending above from commencement of tail	16	0
Keel extending below from commencement of tail	10	0
Point of lower jaw to termination of plicæ	26	0
„ of lower jaw to reproductory organ	30	0
„ of lower jaw to umbilicus	24	6
Length of pectoral from tip to anterior junction with body	5	9
Length of pectoral from tip to posterior junction with body	4	9
Breadth of pectoral	1	7
Angle of mouth to anterior junction of pectoral with trunk	4	6
Centre of eye to anterior junction of pectoral with trunk	5	3
Tip of upper jaw (snout) to anterior junction of pectoral with trunk	14	4
Posterior curve of dorsal to posterior junction of pectoral	23	0
Base of dorsal	2	9
Height of dorsal (perpendicular from its tip)	1	9
Anterior of dorsal from snout	35	9
Posterior curve of dorsal from tip of tail	14	0
Width of tail	10	3
Depth of notch in tail	0	5
Between angles of mouth round the throat	11	0
Point of lower jaw to angle of mouth	11	3
„ of snout to angle of mouth	9	0
Depth of under jaw (including lip) where greatest	1	8
„ of under jaw 3 feet from tip	1	2
Projection of under jaw from beneath the snout	0	6
Across insertions of baleen 7½ feet from snout	3	4
Length of longest or "sample" baleen	1	8
„ of baleen at snout	0	6

	ft.	in.
Breadth of sample at base	0	9
Projection of sample over upper lip	0	6
Centre of eye to snout	9	5
,, of eye to posterior angle of blowhole	3	5
Posterior of blowholes in advance of a line joining the eyes	0	9
Eye to eye	6	10
Centre of eye to base of nearest baleen	1	8
Snout to spiracles	7	9
Each spiracle in length	0	10
Length of blind slit between spiracles	0	$8\frac{1}{2}$
Between near points of spiracles	0	$1\frac{1}{2}$
Between divergent points of spiracles	0	9
Ear behind eye	2	9
Length of depression of external ear	0	$1\frac{3}{4}$
Breadth of depression of external ear	0	$\frac{1}{4}$
Diameter of perforation of ear	0	$\frac{3}{16}$
Length of reproductory organ, including anus	3	0
Length of mammary slits	0	10

The accompanying drawings, in which every point was determined by the measurements, give a perfectly correct idea of the proportions of the animal. Consequently, further dimensions may be taken from them, due allowance being made for the curves.

The external *ear*, which was difficult of detection, consisted of an aperture capable of admitting a quill, situated in a very shallow groove of the dimensions given above. When the blubber was removed, the aperture was continued, in the immediate vicinity of a strong glandular substance, of a cylindrical form, 2 inches in diameter, passing into the skull.

The *blowholes* were situated in a hollow on the summit of a low rounded eminence, immediately in front of a depression directly over the eyes. When first seen, this latter depression was hardly apparent, and seems to owe its existence partly to the falling in of the integuments after death. The relative position of the spiracles is given in Pl. XLV. fig. 1. Between the spiracles was a shallow groove, at first sight resembling a third opening, beginning 1 inch before the anterior commissures of the spiracles, and continued to an imaginary line joining their posterior extremities.

The sides of the blowholes, which lay in close juxtaposition, could, from the elasticity of the parts, be separated to the extent of 3 or 4 inches, without affecting the extremities of the openings.

Pl. XLV. fig. 2, shows a section of one of the spiracles, laid open through the commissures, together with the retracted pad or valve, which, when set free, closes the nares, as represented in fig. 3. The pad consisted of a tough, fatty substance, and was retracted by a strong muscle, which had its attachments in a deep groove in the bone of the upper jaw. When the spiracles were partially excised, the working of this beautiful apparatus was easily exhibited by grasping with the hands the strong muscle, and drawing out the

pad, which, on being set free, returned to its place in the nares with a very audible "thud." The *nares*, each 4 inches in their horizontal diameter, were protected above and at the sides by cartilaginous arches, which extended nearly to the surface of the spiracles posteriorly, and united at a point a little anterior to the section shown in figs. 4 and 5, cut transversely to the spiracles; fig. 4 representing the dilated, fig. 5 the closed access to the lungs.

The whole lining of the spiracles, breathing canals, and bronchial cavities, was of a deep black.

The septum immediately between the two *nares* was membranous, attached to the line of union of the cartilaginous arches before mentioned.

From the blowholes a ridge composed of a tendonous fatty substance extended, gradually disappearing ere it reached the snout.

The *eyes* were situated on bony prominences, which projected outwards and downwards from the line of the head and upper jaw. The external opening of the eye was about 4 inches. The *ball* 5 inches. The *conjunctiva* whitish, and the *iris* very dark brown. The excised crystalline lens measured two-thirds of an inch in diameter.

The bones of the lower jaw were covered to nearly half of their apparent depth by strong, firm lips, turned inwards superiorly. The jaw at no point projected much over the folds on the throat, and beneath the eye passed away imperceptibly into the neighbouring surface. The rounded upper surface of the lips fitted accurately, when the mouth was closed, into corresponding retuse hollows in the upper jaw, extending two-thirds of the distance from the eye to the snout.

The *baleen* extended from within 4 inches from the snout to the interior angles of the mouth. The plates were largest halfway between these points. Their exterior outline was considerably falcate, causing the points of the plates to project, where longest, 6 inches past the edge of the upper jaw.

The back part of the mouth, in the neighbourhood of the throat, was thinly covered with soft white hairs, inserted on the plaited and wrinkled skin.

Fig. 6 represents an ideal section through both jaws, partially opened, showing the palatal ridge, the projecting baleen, and the overlapping under-lips.

The tongue is represented lying in the distended pouch, and by the red lines as seen in the same pouch when drawn upwards to the jaws.

The baleen towards the snout gradually gave place to narrower plates, three or four occupying the place of one. This change of form commenced at the inside. At the snout, the plates were still more broken up, there assuming the appearance of small rods of baleen, of the thickness of a crow-quill, slightly compressed, and each tipped by a tuft of long white bristles. The baleen completed the circuit of the snout, at a distance of 4 inches within the upper lip. At the snout, the base of the baleen was 1 inch in width, gradually increasing until, where the largest plates were inserted, it at-

tained the breadth of 9 inches, whence it decreased to a rounded point at the interior angles of the mouth. Here the baleen was entirely resolved into white hair, which took its rise from the gum, without the intervention of the quill-like rods of the anterior extremity.

The surface of the plates was longitudinally striated: their colour for one-third of their breadth from the outer margin brown, sometimes in one broad shade, sometimes more or less banded lengthwise, in either case leaving the interior surface of the plates of a yellowish-white, tinged slightly with green, occasionally dashed with pale rose-colour, with here and there a stripe of brown. From the outside no colour but the white was visible, except at the snout, where the plates and tufts, even to the outer margin, were in some places a dirty white, in some almost black.

The whole inner edges of the baleen were split up into coarse but pliant white hair.

The *gum* ("cheese" of the whalefisher) was from 2 to 4 inches thick, between which and the bone of the jaw intervened a strong callous bed of muscular substance, two-thirds of an inch thick.

The *tongue* was above of a flesh colour, and beneath, where its substance united with the lining of the pouch, of a leaden grey. It had no edges, the colour being the only means of distinguishing its upper from its under surface. The looseness of the tissue on its lower side enabled the animal to sweep the whole under surface of the baleen with the tip of the tongue, carrying any adhering food to the throat. The actual tip was not free for more than 10 inches; but, as when drawn back towards the gape, it was impossible to define the limits of the lower side of the tongue and the lining of the pouch: it seemed to be of much greater length. When retracted the tongue filled with its huge rounded mass the posterior cavity of the mouth, the tip projecting upwards, and the substance of the under side tightened from the base of the tip to the point of the under jaw.

The *throat* easily admitted the closed hand.

The *trunk* joined the head with no perceptible line of union, and, with the exception of a slight depression behind the spiracles, and the protuberance of the dorsal fin, the outline preserved an even and beautiful curve from head to tail. Beginning 2 feet before the dorsal fin, a strong ridge passed along the back, gradually diminishing till it reached the end of the vertebral column. A still bolder ventral ridge commenced 10 feet from the tail, and terminated at the same point.

The expansions of the tail were continued 2 or 3 feet along the sides of the trunk, there passing away, and giving along with the dorsal and ventral carinæ a rhomboidal form to that part of the animal. These keels consisted entirely of a fatty tendinous substance, each permeated through its entire length by strong round tendons 1 inch in diameter. On the removal of the ridges, the body beneath became of the same rounded form as the rest of the trunk.

The *epidermis* was $\frac{1}{16}$th of an inch thick, easily torn, and finely striated, except on the fins and tail, and on the jaws, lips and such

parts. Where black, much of the pigment could be removed by washing, and from the inner surface was readily communicated to the fingers.

The true blubber on the back and sides measured on an average 2 inches in thickness. On the throat where the plicæ occurred, it became tendinous and tough, and, though removed, was not expected to yield much oil.

The whole posterior part of the body was beset by strong round tendons, about an inch thick, originating as flat tendons within the muscles above the pectorals.

The extent and direction of the *plicæ* on the throat and abdomen are shown in the drawings of the animal. Pl. XLV. fig. 8, represents sections of the stretched and unstretched surface of the *plicæ*. At those portions of the throat and belly which required more capability of distention than the rest, furrows supplementary to the general arrangement of the *plicæ* were introduced. These however invariably disappeared ere they reached the termination of the regular *plicæ*, and were inserted unsymmetrically. The furrows continued of their full depth to their termination on the abdomen.

Where the body of the animal was black, the furrows and their interspaces were black also, being there covered with skin of the same texture as that of the body. Where the black of the body began to *wash off* into the white of the lower parts, the furrows were black and the interspaces pure white. On the lower surface, again, where the sole apparent colour was white, the *plicæ* were found on separation to be lined with a rosy, longitudinally striated, transversely wrinkled epidermis. The depth of the furrows varied excessively, being, in some parts, when the pouch was undistended, nearly $1\frac{1}{2}$ inches deep, while on the jaws and between the eye and pectoral, they were so shallow as hardly to bear measurement at all. When the pouch was distended, the plicæ were partially obliterated, their hollows becoming nearly as high as the surface of their highest prominences.

The normal breadth of the interspaces between the furrows was about 2 inches. Near the chin, however, in some places three or four occurred in the space of an inch, the skin being there very soft and pliant. The ridge between the two furrows which passed mesially along the throat and abdomen was broader than the rest, the furrows diverging slightly towards their posterior termination, where the scarcely perceptible umbilicus was situated, thereafter converging as shown in the figure.

The *reproductory organs* were situated 4 feet behind the termination of the *plicæ*, and immediately between the slits into which the *mammæ* were retracted. The *mammæ* were of a yellowish flesh-colour, 11 inches long and 4 inches in diameter, ending in lax nipples 2 inches in diameter.

The *uterus* extended in the body of the Whale 5 feet forwards from the opening. It did not contain a fœtus. The *anus* was 2 feet 10 inches behind the anterior commissure of the reproductory organ.

Decomposition prevented such a careful examination of the interior of the animal as might have been desired. The *heart* was 4 feet in length, 3 feet at its greatest breadth. The *venæ cavæ* 4 inches in diameter. The *aorta* $3\frac{1}{2}$ inches thick. The *liver* resembled in consistence that of the terrestrial Mammalia, and was of great size.

Near the base of the tongue lay two large bodies of glandular appearance, much resembling the salivary glands of quadrupeds, each of which would have filled a bushel measure. The *lungs* did not appear of great proportional size; the bronchial tubes were lined with black membrane.

Near the vertebral column could be imperfectly traced the plexus of arteries which forms the reservoir of blood during the prolonged divings of the Whale. Much extravasated blood and hastening decomposition interfered with a proper investigation of its course and structure.

The vertebral formula was as follows:—

Cervical 7, Dorsal 15, Remains 40. Total 62.

Circumstances prevented me from distinguishing the lumbar from the caudal vertebræ, but the numbers above given are absolutely correct.

The last vertebra was not larger than a walnut, and part of its bulk was cartilage. Its articulation was, however, very distinct.

The last six vertebræ diminished in size very rapidly, much more decrease taking place in their dimensions than proportionally in any other part of the spine.

There were fifteen pairs of ribs. The first pair simple, the second, third and fourth with necks, directed towards, but not reaching, the bodies of the vertebræ. The rest simple.

The greatest length of the *cranium* was $11\frac{1}{2}$ feet. The greatest length of the bone of the under jaw $11\frac{1}{4}$ feet.

From the tip of the pectoral to the head of the *humerus* measured 6 feet 3 inches.

The colour of the back of the head and of the sides to a line passing from the tail beneath the pectoral, black.

The jaws, and upper and under sides of both pectorals and tail, also black.

The black *washed off* at the sides into a brilliant white, of which colour were all the other parts, except, as before mentioned, the hollows of the *plicæ*.

Scattered irregularly over the back were greyish spots, from three to four in a square foot, much resembling the appearance that would have been produced by touching the skin with a slightly whitened finger. Their shortest diameter was transverse to the body of the animal, and towards their anterior end they exhibited a nucleus whiter than their general hue. It must be noted, that these spots, though sufficiently obvious under certain lights and on close inspection, were not apparent at a little distance, and did not in the smallest degree interfere with the general intense black of the upper parts.

When viewed obliquely, on the other hand, the whole dark portion of the animal seemed a dull leaden grey; a deception arising,

no doubt, from the refraction of the light from the polished surface. Even when near to the object, those parts not directly opposite to the eye seemed much paler than they really were.

As a species of *Physalus* has been described as "slate-grey," and as, despite its real jetty hue, casual observers who had seen the Laman Whale, spoke afterwards of its grey colour, I have thought this circumstance worthy of mention.

Since this paper was read, the following additional notes have been addressed by the author to Dr. Gray, under the dates of July 16, Aug. 16, and Sept. 24.

16th July, 1856.

Oddly enough, I had not been two hours in Orkney ere I heard of another whale being ashore. On the first opportunity I started for Copinshay, where I found it had beached itself a week previously. The finders had already flensed it, and it was lying in a position most unfavourable for examination. The back was down, the tide alongside the body, and it was impossible to get at the dorsal fin. It is a male, and I feel sure the same species as the one I described; most probably the mate of that individual.

As it must be of great importance to compare a specimen from the same locality as, and probably the mate of, the last, I send you the only measurements I could make.

I would respectfully direct your attention to the fact, that in both this and the female formerly examined, the pectoral, measured from tip to head of humerus, is *exactly* $\frac{3}{25}$ths of the whole length of the body. This should be the length taken from the pectoral, as it is impossible to know where the true union with the body is, there being of course an anterior and posterior junction.

The head in each bears very nearly the same proportions to the whole length.

You can imagine with what keenness I made the last few cuts in the putrid mass of carrion, which exposed clearly the mass of cervical vertebræ;—two whales from the same station, of nearly the same size, at nearly the same time, alike in external appearance and in the exact proportion of pectoral, one a male and the other a female. And there the bones lay—so like, as I said, that a drawing of the one would do for a likeness of the other.

I feel sure that you will agree with me, that the variations beforementioned do not weaken the identity of these individuals.

As soon as the bones are clean I shall pack them carefully, and send them up. I regret that the fearful state of the carcase prevented me from counting the ribs or vertebræ. Indeed it was with the utmost difficulty that I could get any one to lend a hand in securing the bones, so awful was the smell and condition, and so huge was the mass of decomposed flesh to be removed,—the whale, unfortunately, lying on its back, while no power on earth could have turned it in its then condition. However, my own repugnances vanished at the call of Science, and example works wonders.

16th Aug. 1856.

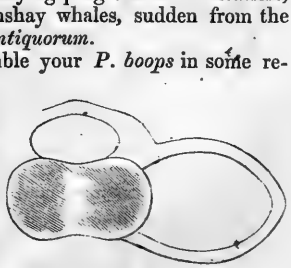
After an unusually hard day's work, I succeeded in safely detaching the cervical vertebræ of the whale ashore in Copinshay. They are at present safely lying in the sea within a tidal enclosure at Kirkwall, till the crabs and gammari, and such influences, remove the last portions of muscle from them. I shall take the whet off your curiosity by telling you that a drawing of the cervical vertebræ of the whale I formerly examined would do for these bones. Though there are some minor differences on a close examination, these are all on the lower side of the bones, viewing them from the direction opposite to the spinous processes. And I think, when you get the specimen, you will feel convinced, on comparing it with that of a Laman whale, that these minor differences are unimportant, and cannot be allowed to interfere with the specific identity of the two whales.

These differences are as follows:—In the Laman whale the superior and inferior transverse processes of the 5th cervical vertebra are united, and the lower process of the 6th short; whereas, in the Copinshay whale, the transverse processes of the 5th are not united, and the lower process of the 6th is as long as those of the 3rd, 4th, and 5th.

Still, with deference I submit, that when all the other resemblances are taken into account, these variations cannot be considered essential. I think it will be more easy to point out specific characters in the bones by the union or disunion of the processes of the 2nd cervical vertebra; by the comparative length of processes as regards the body of the vertebræ, and by the form and angular aperture of ring, than by the circumstance of the lateral processes after the second being united or not. At any rate, I cannot readily imagine that the union or separation of the 5th, and still less so the length of the lower process of the 6th, can be of great value. In this last, the specimen in the Zoological Gardens of Edinburgh and your own set up in the Museum differ, while they certainly resemble each other in every other way, and are evidently of the same species.

I feel sure, that drawings of the dorsal aspect of all these bones of all the species known to you will show considerable and tangible differences, especially in the comparative spread of the processes as you approach the dorsals; in their varying progression in thickness, —gradual in the Laman and Copinshay whales, sudden from the 7th cervical to the 1st dorsal in *P. antiquorum*.

Our Orkney whales seem to resemble your *P. boops* in some respects, but then the processes are longer, and the wing of the 2nd cervical in the Orkney whales with its perforation is very different from the short development of the 2nd cervical vertebra in *P. boops*. In *P. antiquorum* again, the processes *rise* from the plane of the body of the vertebræ somewhat thus :—



in the Laman and Copinshay whale, they *fall* somewhat thus:—

In fact, in some points our Orkney whales seem to connect the characters of the two sections of your genus *Physalus*, resembling, however, *P. boops* more than *P. antiquorum*. In my poor opinion, nevertheless, there are amply sufficient characters for separation, and I feel that, when placed side by side, the two specimens I have been so fortunate as to put into your hands will help much to clear up this cetacean mystery, as well as to show what characters are permanent and worthy of selection.

I have some plates of whalebone, which you shall have by and by. It varies slightly in shape and colour from that of the Laman whale, and indeed there is danger, *I think*, in forming a *specific* character from the baleen.

The colours on the whale were, according to the description of the finders, identical with those of the Laman whale; the under jaw a little wider. I shall make a sketch of the form from the measurements, and transmit it to you.

	ft.	in.
Tip of under jaw to notch in tail	45	6
Tip of upper jaw to eye	8	2
„ „ to anterior of pectoral	15	0
Tip of lower jaw to genital (penis)	28	0
„ „ to anus	31	5
From pectoral to pectoral under belly	8	0
Length of pectoral to anterior junction	4	6
Breadth of pectoral	1	0
Length of pectoral (tip to head of humerus)	5	6
Width of tail	9	6
Length of cranium (as nearly as possible)	10	4

"Back black; belly white."

The description of the cervical vertebræ would form a useful appendix to that of the Laman whale. The measurements may be meantime useful, as showing the similarity of proportion. I feel convinced that the two individuals belong to one species, and hope that the neck vertebræ will bear out that opinion. I shall be delighted to hear your wishes in the matter, and to carry them out.

Sept. 24, 1856.

I propose despatching and booking by first packet the cervical vertebræ, &c. of the Copinshay whale. I am on the point of starting for Canada, and I trust they will reach you safe. They are in capital condition and keeping, and will, I am sure, give you assistance

in re Rorqual. I enclose herewith some notes regarding the Caithness (Nybster) whale.

As regards the ribs of Rorquals, as exemplified in the Copinshay and Laman whale, allow me to call your own attention, and that of cetaceologists and others to the following fact.

The first pair of ribs is not articulated to the first dorsal vertebra, nor to any vertebra whatever; but the first ribs have their ends buried in a mass of ligament, which connects all the upper lateral processes of the cervical and the first dorsal vertebræ together.

No articulating surface exists on these processes on the first dorsal vertebra; the articulating surfaces are on the other hand well marked on all the other dorsal vertebræ.

I am certain that you will perceive some value in this observation, of the accuracy of which I am positive, being put on the alert by observing it in the first specimen I examined. One sees the use of the lateral apophyses and their great development in some species.

Notes on Nybster Whale.

I was unable to do more in the examination of the neck than *feel* for some of the characteristic processes. The broad wing of the second cervical was perforated by a hole as in the Copinshay and Laman whales, and in every particular that I could ascertain the vertebræ corresponded with those of these individuals. The external characters, colours, &c. also corresponded. The whale was afloat, being in a creek where the tide did not leave it. Its length, which I was too late to measure in person, was, I am assured, 65 to 68 feet; its pectoral *from the head of humerus* (the only *useful* measurement) nearly 8 feet. The length of the cranium was 15 feet. The whale was for a finner exceedingly fat, the blubber or "speck" being 8 to 10 inches in thickness. These were all the measurements I could make, from the condition of the carcase.

On my passage home, amid the thousand herring-boats of Wick, lying becalmed in a glassy sea, we were exceedingly interested by the movements of a very large Finner, apparently of the same species as the one I had just left. It rushed round us in every direction with its upper jaw above water, blowing with great violence and noise, and diving, sometimes tranquilly, sometimes in a seething wave, created by its fins and tail.

It was evidently feeding on herrings, as every now and then it would rush headlong into portions of the sea where the smooth surface was broken by the shoals of fish.

The *blowholes were at times flat and unprojecting, at other times boldly protuberant*, the animal evidently having the power of raising or depressing these organs. As the protuberance of the spiracles has been thought characteristic of species, this is worth noting. The dorsal fin was exactly outlined like those of the Rorquals previously examined. The contour of the snout or upper jaw also exactly resembled that of the Copinshay, Laman, and Nybster whales. This whale was computed by the boatmen and myself to be at least as large as the Nybster whale. I have no manner of doubt but that

these four whales were of one species. Certainly the Nybster whale was not *Physalus antiquorum*, therefore *P. antiquorum* is not alone in *exceeding* 60 feet in length, a dimension supposed to be confined to that species.

The fin-whales of Orkney and Caithness, every season observed in pursuit of herrings, would seem in all probability to be of the species of which you have received portions. They are not *P. boops*, for three out of four specimens captured (and the fourth was *not* killed) agree with each other, and differ from *P. boops* in the upper and lower lateral processes of the second cervical vertebra being united, leaving a subcentral foramen.

They will no doubt prove to be of a new species, though unexamined individuals may have doubtless come ashore in Orkney over and over again.

3. Descriptions of Shells from the Gulf of California, and the Pacific Coasts of Mexico and California. Part II. By A. A. Gould, M.D., and Philip P. Carpenter.

Dr. Gould, the well-known author of the Rep. Invert. Mass. and the U. S. Exp. Shells, having most obligingly sent over the whole of his collections from the Pacific shores of N. America, in order to furnish materials for my Report to the British Association, there have appeared among them several shells not to be identified with recorded species. Of some of these Dr. Gould enclosed names and diagnoses. For the remainder of the following paper I am alone responsible. Most of the new species in this collection were described by Dr. Gould in the Proceedings of the Boston N. H. Society; and have been published in a separate form with three plates. I have therefore regarded this communication as a supplement to that paper, and have adopted the same title. The references apply to it, unless otherwise expressed.

P. P. C.

Bristol, June 21st, 1856.

1. Pholadidea ovoidea, Gould.

Pholas ovoidea, Mex. & Cal. Shells, pt. 1. p. 15. pl. 15. f. 1.
Hab. San Diego (*Lieut. Green*). Mus. Gould.

2. Petricola robusta, Sow.

Petricola bulbosa, Gould, p. 16. pl. 15. f. 5; B.M. Mazatlan Cat. p. 17. no. 24.

3. Corbula polychroma, n. s.

C. t. gibbosa, transversa, solida; postice angulata, carinulis duabus, altera ad marginem ventralem, altera juxta cicatr. musc. adeuntibus; sub superficiem externam concentrice sulca-

tam, griseam, aurantia, purpureo radiata; intus purpurea, dent. card. obtusis, cicatr. musc. distinctis, sinu pallii minimo. Long. ·37, lat. ·53, alt. ·27.

Hab. In Sinu Californiensi (*Lieut. Shipley* in Mus. Cuming); Sta. Barbara (*Col. Jewett* in Mus. Gould).

Of the general appearance of *C. bicarinata*, but much less gibbous, less angulated, and highly coloured. It resembles, but appears distinct from, one of the Claiborne fossils in Mr. Nuttall's collection. Col. Jewett's specimens were all dead valves.

4. Lyonsia nitida, Gould.

Osteodesma nitidum, Gould, p. 17. pl. 15. f. 6=(probably) *Lyonsia Californica*, Conr. jun.

Hab. Sta. Barbara (*Lieut. Green*). Mus. Gould.

5. Semele flavescens, Gould.

Amphidesma flavescens, Gould, p. 19.

Semele proxima, B. M. Maz. Cat. p. 28. no. 40. Mus. Cum. pars, non C. B. Adams nec Mus. Cum. pars.

The Mazatlan species was identified from the supposed types in the Cumingian collection. On finding Dr. Gould's shell identical, it appeared extraordinary that he should have re-described one of Prof. Adams' species. In another drawer of Mr. Cuming's cabinet, however, appeared another shell, also named *Semele proxima*, C. B. Ad., which is probably the real type. It is larger and more pointed at the beaks than the present species. Several of the described species of *Semele* are extremely similar. So long, however, as they are kept distinct, the Mazatlan shells must rank under the present name, and not under that of Prof. Adams, under which they have been freely distributed.

6. Sanguinolaria miniata, Gould.

Tellina miniata, Gould, Proc. B. N. H. S. Nov. 1851; Mex. &c., p. 24. pl. 16. f. 1.

Sanguinolaria purpurea, Desh. P. Z. S. 1854, p. 346. no. 137; B. M. Maz. Cat. p. 31. no. 46.

Hab. San Juan (*Lieut. Green*).

Although I have not seen the type of Dr. Gould's shell, there can hardly be a doubt that it is the same as that of Desh., and therefore has priority over the name adopted in the B.M. Cat. While the earlier sheets of that work were passing through the press, I had only the advantage of Dr. Gould's plates, without print or dates. A more rapid intercommunication of materials between naturalists in different countries is greatly to be desired.

7. Tellina tersa, Gould, p. 25. pl. 16. f. 2.

Hab. Panama (*Jewett*). Mus. Gould.

8. Tellina pura, Gould, p. 25. pl. 16. f. 3.

Hab. Panama (*Jewett*). Mus. Gould.

9. Tellina gemma, Gould, p. 26. pl. 16. f. 5.

Hab. San Juan (*Green*). Mus. Gould.

10. Strigilla carnaria, Linn.

Tellina (*Strigilla*) *fucata*, Gould, p. 26. pl. 16. f. 4; Proc. B. S. N. H. 1851, p. 91.

Strigilla (*Tellina*) *carnaria*, B.M. Maz. Cat. p. 39. no. 66.

Strigilla miniata, Gould's Plates, MS.

11. Donax flexuosus, Gould, p. 21. pl. 15. f. 8.

Hab. Sta. Barbara (*Jewett*). Mus. Gould.

A comparison of types proves that this is distinct from all varieties of *D. punctato-striatus*. From the figure alone they were supposed identical; *vide* B.M. Maz. Cat. p. 44. no. 73.

12. Donax Californicus, Conr.

Donax obesus, Gould, p. 21. pl. 15. f. 9. (Non *D. Californicus*, Desh., *vide* B.M. Maz. Cat. p. 47. no. 76.—N.B. The *D. culminatus*, no. 72 of the same catalogue, is proved from types to be the *D. rostratus* of C. B. Ad.)

13. Gnathodon mendica, Gould.

Mactra mendica, Gould, Proc. B. N. H. S. Nov. 1851; Mex. &c. p. 20. pl. 15. f. 4.

Gnathodon trigona, Petit, B.M. Maz. Cat. p. 52. no. 81.

14. Mactra exoleta, Gray, B.M. Maz. Cat. p. 50. no. 78.

Lutraria ventricosa, Gould, p. 17.

15. Mactra undulata, Gould.

Lutraria undulata, Gould, p. 18. pl. 15. f. 7.

This shell is most closely related to *M. elegans*, Sow. Tank. Cat. App.; but I do not venture to unite them, without seeing the types.

16. Tapes gracilis, Gould, MS.

"*T. t. parva, tenui, transversa, elongato-ovata, inæquilaterali; albida, obsolete fusco radiata, et ad aream dorsalem posticam fuscata, concentrice striulata; extremitatibus rotundatis; intus candida.*

"Long. ·75, alt. ·5, lat. ·12 poll.

"Resembles *T. florida* and *T. geographica*, but is less angular and less inæquilateral."—*Gould, MS.*

Hab. San Pedro; legit *W. P. Blake* *.

17. Tapes tenerrima, n. s.

T. t. tenerrima, albido-fusca, obovali, compressa; marginibus æqualiter excurvatis; striulis radiantibus creberrimis, antice

* Mr. Blake's collections, along with Dr. Webb's, do not appear to have been made during the Mexican war.

et postice fortioribus, et lirulis acutis concentricis, plus minusve distantibus, eleganter ornata ; lunula vix stria majore definita ; intus, dent. card. iii. *radiantibus, quorum valva in altera* ii. *altera* i. *bifidi sunt ; sinu pallii maximo, elongato, lateribus suberectis, parum divergentibus, apice cicatr. ant. contiguo, subrotundato ; margine vix crenulato.*

Long. ·94, lat. 1·13, alt. ·38.

Hab. Panama; legit *Col. Jewett.* Mus. Gould.

Of this extremely elegant species, the two specimens sent were broken in transit. It is recognized at once by its fragility and delicate sculpture.

18. Trigona tantilla, Gould.

Venus tantilla, Gould, p. 33. pl. 15. f. 10.

Hab. Sta Barbara (*Jewett*). Mus. Gould.

19. Cyclina subquadrata, Hanl.—B.M. Maz. Cat. p. 66. no. 91.

Arthemis saccata, Gould, p. 23. pl. 15. f. 2.

20. Cardium luteolabrum, Gould, Mex. &c. p. 28.

C. xanthocheilum, Gould, MS. Cat.

21. Cardium cruentatum, Gould, M.S.

"*C. t. parva, tenui, transversim rotundato-ovata, ventricosa, inæquilaterali ; levi et nitida ; straminea, et ad aream dorsalem posticam rufo tincta, lineis radiantibus crebris vix insculpta ; umbonibus elevatis, obtusis ; extremitatibus rotundatis ; intus citrina, rufo-sanguineo conspersa ; margine concinne crenulato.*

"Long. ·62, alt. ·62, lat. ·42.

"Compares with *C. Elenense* and *C. Mortoni.*"—*Gould, MS.*

Hab. San Pedro; legit *W. P. Blake.*

[Probably = *C. substriatum*, Conr. J. A. N. S. p. 228. pl. 17. f. 2.]

22. Lucina Artemidis, n. s.

L. t. alba, solidiore, subrotundata, subplanata ; marginibus ventrali antice producto, postico subplanato, dorsali subangulato ; umbonibus appressis, haud prominentibus ; superficie sulcis concentricis crebris ornata ; lunula parva, vix excavata, in valva altera omnino sita, altera margine incurvata ; intus, dent. card. ii.–ii. *divergentibus, lat. ant.* i.–ii. *prominentibus, distantibus, post.* i.–ii. *valde distantibus, parvis ; cicatr. musc. ant. elongatis, serratis, post. parvis ; linea pallii a margine haud distante.*

Long. ·75, lat. ·84, alt. ·37.

Hab. ? Acapulco, teste Gould ; Mus. suo, sp. un.

Found in company with *Tellina vicina*, C. B. Ad. Has the characteristic shape and interior of *Lucina*, with the sculpture of *Dosinia*.

23. Diplodonta orbella, Gould.

Lucina orbella, Gould, p. 22. pl. 15. f. 3.

? = *Diplodonta semiaspera*, var.: *v.* B.M. Maz. Cat. p. 102. no. 150.

Hab. Santa Barbara (*Jewett*). Mus. Gould.

24. Cyrena Mexicana, var. altilis, Gould.

Cyrena altilis, Gould, p. 27. pl. 16. f. 5; *vide* B.M. Maz. Cat. p. 115, no. 165.

Hab. Mazatlan. Mus. Gould, Brit.

25. Anodon ciconia, Gould, p. 29; B.M. Maz. Cat. p. 117. no. 166.

26. Mytilus glomeratus, Gould, p. 29. pl. 16. f. 8.

Hab. San Francisco (*Maj. Rich.*). Mus. Gould.

27. Modiola nitens, n. s.

M. t. tenui, gibbosa, maxime elongata, striis incrementi conspicuis; epidermide olivaceo-cornea nitente induta; parte antica angusta, umbonibus obtusis, spiralibus, terminalibus; parte postica maxime producta; angulo diagonali indistincto, maxime tumente; marginibus, ventrali incurvato, dorsali plus minusve angulato; intus purpurea, parte ventrali albida, translucida; linea cardinali tenui, edentula.

Long. 1·05, lat. ·2–·45, alt. ·38.

Hab. California, teste Gould. Mus. suo.

Has the shape of *Mytilus multiformis* (B.M. Maz. Cat.), the internal colouring of *M. Braziliensis*, and a glossy epidermis over the irregular lines of growth of a lustrous olivaceous hue.

28. Lithophagus falcatus, Gould.

Lithodomus falcatus, Gould, Proc. B. N. H. S. Nov. 1851; Mex. &c. p. 30. pl. 16. f. 9.

=*L. Gruneri*, Phil. (New Zealand). Mus. Cum.

I do not know which name has precedence; but a comparison of types of these most remarkable shells affords no opportunity for separating the species, widely as their habitats are removed.

Hab. Monterey (*Rich.*). Mus. Gould.

29. Byssoarca pernoides, n. s.

B. t. subquadrata, planata, albida, epidermide spongiosa fusca induta; striis exilibus radiantibus, confertissimis; minutissime tuberculosis; umbonibus obtusis, antice sitis, area parva; intus linea dentium maxime arcuata, dentibus extremis validis, interioribus parvis, confertis, quadratis; cicatr. musc. rotundatis, politis; pagina interna, intra lineam pallii, radiatim striata; margine simplici; ligamento fossis quadratis minutis

confertis, haud dentibus convenientibus, sito, aream quoque tegente.

Long. ·68, lat. ·53, alt. ·32.

Hab. San Diego (*Dr. Webb*). Valv. unic. in Mus. Gould.

Somewhat resembling the fine variety of *B. solida*, but squarer, and known at once by the teeth and ligament. This is (under the glass) in minute pits, as in *Isognomon*, but with an extra layer covering the whole area.

30. Avicula sterna, Gould, p. 31. pl. 16. f. 7; B.M. Maz. Cat. p. 148. no. 203.

31. Lima tetrica, Gould, p. 32. pl. 16. f. 6.

Hab. La Paz (*Rich*). Mus. Gould.

32. Bulimus pallidior, Sow.

Bulimus vegetus, Gould, p. 2. pl. 14. f. 2.

33. Bulimus vesicalis, Gould, p. 2. pl. 14. f. 1.

"Probably immature."—*Cuming.*

Hab. Lower California (*Rich*). Mus. Gould.

34. Bulimus excelsus, Gould, p. 3. pl. 14. f. 3.

Hab. California (*Rich*). Mus. Gould.

35. Physa elata, Gould, p. 6. pl. 14. f. 4; B.M. Maz. Cat. p. 180. no. 237.

36. Tornatina culcitella, Gould.

Bulla (*Akera*) *culcitella*, Gould, p. 4. pl. 14. f. 8.

Hab. Sta. Barbara (*Jewett*). Mus. Gould.

37. Tornatina cerealis, Gould.

Bulla (*Tornatina*) *cerealis*, Gould, p. 5. pl. 14. f. 9.

Hab. Sta. Barbara (*Jewett*). Mus. Gould.

38. Tornatina inculta, Gould, MS.

"*T. t. minuta, eburnea, solidula, elongato-ovali, longitudinaliter minutissime striata; spira elevata; anfr.* iv. *tabulatis; apertura* ⅓ *longitudinis testæ adæquante, antice dilatata; labro inflexo, postice rotundato; columella arcuata, callosa, uniplicata.*

"*Bulla* (*Tornatina*) *inculta.* May be compared with *B. fusiformis*, A. Ad., and *B. constricta*, Gould. The spire is sometimes scarcely exserted."—*Gould, MS.*

Hab. San Diego; teste Gould.

39. Haminea vesicula, Gould.

"*H. t. parva, fragili, ovato-globosa, pallide citrina, postice truncata; apertura corpus testæ duplo excedente, spiram superante,*

postice et antice late rotundata; columella valde arcuata, vix callosa.

"*Bulla* (*Haminea*) *vesicula.* About the size and general appearance of *B. rotundata*, A. Adams; not so large a body; aperture larger."—*Gould, MS.*

Hab. San Diego; legit *W. P. Blake.*

40. Nacella depicta, Hinds.

Patelloida depicta, Hinds, Ann. Nat. Hist. x. p. 82; Voy. Sulph. Moll. p. 53. no. 217.

Acmæa paleacea, Gould, p. 3. pl. 14. f. 5.

41. Omphalius Pfeifferi, Phil.

Trochus marcidus, Gould, p. 8. pl. 14. f. 11.

Comp. *Chlorostoma maculosum*, A. Ad.—Philippi's name is given on the important authority of Mr. Cuming. Dr. Gould's shell seems more like that of A. Adams; while his *Trochus Montereyi*, Kien., appears to be *T. Pfeifferi*, Phil.

42. Osilinus gallina, var.

Trochus (*Monodonta*) *pyriformis*, Gould, p. 9.

43. Livona pica, Linn.

Trochus picoides, Gould, p. 8.

This species is said to have been taken alive at Santa Barbara by Col. Jewett, who brought home five specimens. Dr. Gould, for geographical reasons, describes them as a distinct species. The exclusive peculiarities assigned to the Pacific shells are often seen in the very variable W. Indian specimens. The dead shell sent by Dr. Gould was unhesitatingly pronounced by Mr. Cuming to be the true *Trochus pica*, Linn. It did not occur in the Mazatlan collection, nor has it been found by Messrs. Cuming, Hinds, C. B. Adams, Nuttall, Kellett, Belcher, Chiron, Shipley, Hartweg, or any other of the careful explorers of the Pacific coast.

44. Phasianella compta, Gould, MS.

"*Ph. t. parva, solida, ovato-conica, imperforata, polita, cinerascente, lineis minutis olivaceis, oblique volventibus, ornata; anfr.* iv. *rotundatis, ultimo ad peripheriam subangulato, et interdum tessellatim fasciato; apertura circulari; labro tenui, albo; columella planulata, alba; faucibus callo incrassatis.*"

Variat t. rubida, ut in Ph. perforata *picta.*

Hab. Sta. Barbara (*Col. Jewett*); San Diego (*Dr. Webb, W. P. Blake*). Mus. Gould.

For the differences between this species and the equatorial *Ph. perforata, vide* B.M. Maz. Cat. p. 225. no. 284.

45. Crucibulum corrugatum, n. s.

C. t. compacta, conica, solida, alba; costis irregularibus angustis, haud acutis, primum paucis, postea plurimis, corrugatis; inter-

stitiis quoque corrugatis; cyatho (*ut in* C. spinoso *juniore*) *incompleto, duabus marginibus affixo, intus planato et angulato; margine a costis crenulato.*

Long. ·7, lat. ·68, alt. ·48.

Hab. Mazatlan (*Col. Jewett*); sp. unic. in Mus. Gould.

It is hazardous to describe a Calyptræid from a single specimen. This has the general aspect of *C. violascens*, with sculpture resembling *C. imbricatum* var. *Broderipii*, and a cup, which, although the shell has an appearance of normal growth, preserves the incompleteness which is characteristic of the genus in its early stage. The young state seems to have been externally like that of *Siphonaria gigas*, with few, narrow, projecting ribs. The apex is rubbed. It resembles *Calyptræa striata*, Say.

46. Crepidula explanata, Gould, p. 4. pl. 14. f. 7.

Crepidula perforans, Val. Voy. Ven. Moll.

Crepidula exuviata (quasi Nutt.), Jay's Cat. no. 3027.

This shell, remarkable as is the form of the adult, is normal when young. Specimens of *C. nivea* were found in the Mazatlan collection of similarly distorted form, from living in the holes of *Lithophagi*; but they never displayed the cancellations between the laminæ which appear in some specimens, but not all, of the present species. The prior name of Valenciennes is rejected, as implying an untruth.

47. Modulus disculus, Phil.

Modulus dorsuosus, Gould, p. 10. pl. 14. f. 12.

48. Fossarus (Isapis) ovoideus, Gould.

Narica ovoidea, Gould, p. 7. pl. 14. f. 10.

Comp. *Fossar reticulatus*, A. Ad.; *vide* B.M. Maz. Cat. *in loco*.

Hab. ? Mazatlan (*Col. Jewett*). Mus. Gould.

49. ? Lacuna unifasciata, n. s.

? *L. t. parva, solida, conica, ad basin angulata; anfr.* v. *lævibus, parum convexis, sutura distincta; rufo-fusca, linea intensiore ad carinam suturæ convenientem, interdum maculis adjacentibus; rima umbilicali a labio subcelata; apertura ovali; apice regulari.*

Long. ·23, long. spir. ·11, lat. ·15, alt. ·45°.

Hab. Sta. Barbara (*Col. Jewett*). Mus. Gould.

This shell has the shape of *Littorina angulifera*, the general aspect of the small *Phasianellæ*, and the chink of *Lacuna*. Its operculum is unknown, all the specimens in Mus. Gould being dead.

50. Cerithidea albonodosa, n. s.

C. t. solida, C. varicosæ *simili, compacta, fusco-purpurea, varicibus et nodulis albis, fasciis spiralibus intensioribus sæpe ornata; anfr.* xii. *parum convexis, sutura impressa; liris spiralibus* iv. *in anfr. penult. et liris creberrimis transversis vix undatis, ad intersectiones nodosis, ornata; varicibus* iii. *in*

anfr. ii.; *apertura subquadrata, sinu minimo, labio haud expanso; operculo subplanato, nucleo mucronato, anfr. plurimis indistinctis, fusco, ad marginem tenuissimum diaphano.*

Long. ·8, long. spir. ·57, lat. ·33, div. 20°.

Hab. San Diego; legit *Dr. Webb.* Mus. Gould.

Known from *C. varicosa* var. *Mazatlanica,* by the light purplish-brown tinge, the colour of which wears off at the varices and nodules, and by the details of sculpture.

51. Cerithidea (? sacrata, var.) fuscata, Gould, MS.

Cerithium (*Potamis*) *sacratum,* Gould, Exp. Shells, p. 60.
Pirena Californica, Nuttall, MS.

"*C. t. turrita, gracili, solida, rudi, fusco-cinerea; anfr. ad* x. *convexiusculis, plicis circiter* xvi. *longitudinalibus arcuatis, compressis, instructis, et filis ad* v. *volventibus cinctis; ultimis* iii. *varices ferentibus; apertura parva, subcirculari, basi vix effusa vel contorta; labro expanso, nitide rufo-nigricante.*

"Long. 1·25, lat. ·4 poll.

"*Potamis fuscata.* Distinguished from *P. sacrata* by its much more slender form, small size, colour of aperture, and longitudinal folds. It varies greatly in proportions, and sometimes displays a delicate, ochraceous revolving line."—*Gould, MS.*

This shell is regarded by Mr. Nuttall and myself as a variety of the very variable *C. sacrata.*

Hab. San Diego; legit *W. P. Blake.* Mus. Gould.

52. Erato ? columbella, Mke. Zeit. f. Mal. 1847, p. 183. no. 26.

Erato leucophæa, Gould, p. 13. pl. 14. f. 20.
Hab. Sta. Barbara (*Jewett*). Mus. Gould.

53. Euryta fulgurata, Phil.

Terebra arguta, Gould, p. 7. pl. 14. f. 19; *vide* B.M. Maz. Cat. *in loco.*

54. Conus ravus, Gould, p. 13. pl. 14. f. 21.

Hab. Sta. Barbara (*Jewett*). Mus. Gould.

55. Conus purpurascens, Sow.

Conus comptus, Gould, p. 14. pl. 14. f. 23.

Dr. Gould's type specimen is pronounced by Mr. Cuming to be a worn young specimen of that previously described. It is probably, as Dr. G. supposes, the *C. achatinus* of Menke's catalogue.

56. Conus pusillus, Gould, p. 15. pl. 14. f. 22.

Hab. Mazatlan (*Jewett*). Mus. Gould.

57. Obeliscus achates, Gould.

Odostomia achates, Gould, p. 12. pl. 14. f. 13.
Comp. *Obeliscus clavulus,* A. Ad.
Hab. Mazatlan (*Jewett*). Mus. Gould.

58. Odostomia gravida, Gould, p. 11. pl. 14. f. 14.
Hab. Sta. Barbara (*Jewett*). Mus. Gould.

59. Chemnitzia tenuicula, Gould, p. 10. pl. 14. f. 15.
Hab. Sta. Barbara (*Jewett*). Mus. Gould.

60. Chemnitzia torquata, Gould, p. 11. pl. 14. f. 16.
Hab. Sta. Barbara (*Jewett*). Mus. Gould.

61. Sigaretus debilis, Gould, p. 6. pl. 14. f. 17.
Hab. La Paz (*Lieut. Green*). Mus. Gould.

62. Fasciolaria bistriata, n. s.

F. t. regulari, tenui, aurantio-fusca, epidermide tenui induta; anfr. ix. *quorum duo nucleosi læves, apice mamillato, subdeclivi; normalibus convexis, sutura distincta; costis transversis (in anfr. penult.* xvi.) *tumentibus sed planatis, attingentibus, interstitiis parvis, ad basin evanidis; lirulis acutis spiralibus (in anfr. penult.* vi.) *et inter eas striulis crebris, costis transeuntibus, eleganter ornata; apertura ovali, albida; labro acuto, secundum lirulas intus sulcato; pariete secundum lirulas plicato; labio ad basin parvo, vix plicato; canali elongato, subrecto.*

Long. 1·07, long. spir. ·42, lat. ·48, div. 50°.
Hab. Panama, teste Gould; sp. unic. in Mus. suo.
The columellar folds in this very elegant and delicate shell are indistinct, but are compensated by the continuations of the spiral lirulæ over the body whirl.

63. Olivella intorta, n. s.

O. t. parva, ovoidea, subtumente; sutura vix sulcata; albido-grisea, fascia indistincta subsuturali olivacea, flammulis et maculis purpureo-fuscis plus minusve ornata; apertura antice aperta, postice angusta; callositate parietali ad suturam penultimam producta; columella maxime intorta, plica ad basin acuta, in pariete duabus sæpe indistinctis; extus, linea spirali antica unica.

B. M.

Long. ·52, long. spir. ·17, lat. ·26, div. 60°.
Hab. San Juan; legit *Dr. Green.* Mus. Gould. Item, loc. incert. Mus. Cuming.
A well-marked species, resembling the West Indian *O. bullata*, on a much larger scale. The specimens vary in tumidity and height of spire. The parietal callosity extending over the penultimate whirl hides the colour of the spire.

64. Marginella Jewettii, n. s.

M. t. parva, alba, ovoidea; spira depressa, sutura celata, antice angustiore, postice tumidiore; labro vix incrassato, medio in-

flexo, supra calloso, callositate suturam et anfr. penult. tegente; labio iv.-*plicato, et supra dentato.*

Long. ·18, long. spir. (super suturam) ·03, lat. ·12, div. 120°.

Hab. Sta. Barbara, rarissime (*Col. Jewett*). Mus. Gould.

Closely resembling the small white species from the Panama, W. Indian and N. African provinces; but distinguished from all in shape and plications.

65. Columbella Santa-Barbarensis, n. s.

C. t. elongata, subconica, fusco-aurantia, albido varie picta; epidermide tenui, transversim striata, munita; anfr. vii. *subplanatis, suturis distinctis, spiraliter striatis, striis distantibus; apertura subquadrata, intus violascente; labro acutiore, vix sinuato, vix denticulato; labio parvo, plica unica canali contigua; anfr. primis sæpe decussatis.*

Long. ·36, long. spir. ·18, lat. ·15, div. 40°.

Hab. Sta. Barbara (*Jewett*). Mus. Gould.

This elegant species is known by its faintly striated surface, violet-tinted, open mouth, and the extremely minute labral denticles. The discovery of this and other species of the genus in the Upper Californian province, corrects the error as to its northern limit in Forbes' Zoological Map. The markings of the two specimens sent vary, as in the next species.

66. ? Nitidella Gouldii, n. s.

N. t. parva, elongata, conica, lævi, circa basin spiraliter striata; anfr. vii. *subplanatis, suturis distinctis; albida, aurantio varie picta; apertura subquadrata, labro sinuato, subacuto, intus conspicue dentato; labio parvo, vix crenato; apice interdum decollato.*

Long. ·32, long. spir. ·15, lat. ·15, div. 37°.

Hab. Sta. Barbara (*Jewett*). Mus. Gould.

Closely resembling *N. cribraria*; distinguished from *C. Sta.-Barbarensis* by the smooth whirls and apex, and the conspicuous labral teeth. The two specimens examined differ too much from each other in colour-markings to found specific characters upon these features.

67. Fusus ambustus, Gould, p. 12. pl. 14. f. 18.

Hab. Mazatlan (*Green*). Mus. Gould.

68. Purpura patula, Linn.

Purpura pansa, Gould, p. 33.

This shell, occurring unexpectedly to Dr. Gould on the Pacific shores, was, according to his theory, described as a fresh species; the few, poor, young specimens at his disposal affording him supposed points of distinction. These however do not apply to the fine series which has been examined from the Mazatlan collection. *Vide* B.M. Cat. *in loco*.

4. Monograph of the Shells collected by T. Nuttall, Esq., on the Californian Coast, in the years 1834–5. By Philip P. Carpenter.

The following shells were collected by Mr. Nuttall at various stations from Oregon to San Diego. Most of them were described by T. A. Conrad in the Journal of the Academy of Natural Sciences of Philadelphia, vol. vii. part ii. 1837 (Read, Jan. and Feb. 1837). This paper is accompanied by four coloured plates; but the descriptions are in English. References are now given as far as known, and descriptions of a few overlooked species. The types are destined ultimately for the British Museum, where many of them are already to be found. They are at Mr. Nuttall's residence, Nut Grove, near Rainhill, Lancashire. Several of the species are only known by references in the Catalogue of Dr. Jay's Collection, U. S. A.

Philip P. Carpenter.

Bristol, June 1856.

Genus Parapholas, Conr.

"*Testa Pholadiformis; marginibus dorsalibus supra valvis late expansis; valvis accessoriis* ii., *subæqualibus, elongatis, altera ab umbone ad marginem posticum directa, altera ad basim affixa; area cardinali solida; cicatr. musc. adduct. valde elongatis.*

"Distinguished by the accessory valves, which appear soldered to the shell, elongated muscular impressions; form of the pallial sinus and valve on the base."—Journ. 1849, p. 214.

It is difficult to know what limits Conrad intended for this genus. It is used in the B.M. Maz. Cat. for the tripartite *Pholadideæ* with persistent cups, on the authority of Woodward's Manual; but Conrad uses it, besides the following species, in Journ. Jan. 1850, for *Pholadidea melanura*, which he calls *Parapholas bisulcata*; while the *Parapholas acuminata* (*vide* B.M. Maz. Cat. p. 12. no. 18) he calls *Penitella Wilsonii* *.

1. Parapholas Californica, Conr.

Pholas Californica, Conr. Journ. p. 236. pl. 18. f. 5, 6; Sow. Thes. Conch. *in loc.*

= *Pholas Janellii*, Desh. Rev. Zool. 1839, teste Gould.

Parapholas Californica, Conr. Journ. 1849, p. 214.

Hab. Sta. Barbara, rupibus argillaceis. Mus. Nutt., Cum., Brit., Jay.

* In the same paper is described a genus *Solecardia* (species) *eburnea*; and then occur the following additional synonyms:—

Petricola sinuosa, Conr. = *P. robusta*, Sow.

Pholadopsis pectinata, Conr. = *Triomphalia*, sp., Sow.

Triton perforatus, Conr. = *T. Chemnitzii*, Gray = *Argobuccinum nodosum*, Chemn.

Oliva propatula, Conr. = *O. testacea*, Lam.

The animal forms a tube of indurated clay, represented at f. 6 (7, err. typ.), extending nearly to the surface of the bed in which it burrows.

2. Parapholas penita, Conr.

Pholas penita, Journ. p. 237. pl. 18. f. 7.
Parapholas penita, Conr. Journ. 1849.
=*Pholas concamerata*, Desh. Rev. Zool. 1839.
Hab. Sta. Barbara, una cum *P. Californica*. Mus. Gould, Jay.

Is much smaller than *P. Californica*; without an internal callus at the posterior hinge margin; and with a differently shaped apophysis.

Subgenus Platyodon, Conr.

Testa Myæ *simili, sed dente cardinali minus prominente, magis dilatata; linea pallii sinu antice angusto, postice profundo. Animal siphonibus duabus haud divergentibus, valvulis quatuor testaceis extremitates claudentibus.*

3. Platyodon cancellata, Conr. Journ. p. 236. pl. 18. f. 2; H. & A. Ad. Gen. vol. ii. p. 354.

Hab. Sta. Barbara; inter paludes limosas, et rupes. Mus. Nutt., Brit., Jay.

Subgenus Cryptodon, Conr.

Testa Lutrariæ *simili, sed margine cardinali profunde canaliculato. Animal siphonibus duabus haud divergentibus, valvulis corneis duabus extremitates claudentibus.*

4. Cryptodon Nuttallii, Conr. Journ. p. 235. pl. 18. f. 1.—(Non *Mactra Nuttallii*, Reeve, Conch. Ic. pl. 21. sp. 125.)

Hab. Sta. Barbara, in paludes, inter fluxum maris. Mus. Nutt.
? =*Cypricia Nuttallii*, quasi Conr. B.M.

5. Sphænia Californica, Conr. Journ. p. 234. pl. 17. f. 11. (1834).

=*Cryptomya Californica*, Conr. loc. cit. 1849, p. 208; H. & A. Ad. Gen. vol. ii. p. 359.
Hab. Sta. Barbara, inter paludes, infrequens. Mus. Nutt., Jay.

Conrad describes the pallial line as "without a sinus, but forming a right angle posteriorly;" in Mr. Nuttall's specimen, however, the sinus may be traced, though very faintly marked.

6. Thracia curta, Conr. Journ. p. 248. pl. 19. f. 8.

Hab. Sta. Barbara. Mus. Nuttall.

A fine pair (not a single valve only, as stated by Conrad) is in Mr. Nuttall's cabinet. It is remarkable for its great squareness at the posterior end.

Genus MYTILIMERIA, Conr. Journ. p. 246.

Testa æquivalvis, subovalis, tenuis; umbonibus subspiralibus; cardine edentulo, cavitate parva, lineari, sub umbonibus sita; cicatricibus muscularibus ii. *minoribus; sinu pallii lato, obtuso.*

Apparently a subgenus of *Lyonsia*, with the regular form of *Crenella* = *Mytilimeria*, H. & A. Ad. Gen. vol. ii. p. 363, pars.

7. MYTILIMERIA NUTTALLI, Conr. Journ. p. 247. p. 19. f. 5.

Hab. California, inter spongias et radices fucorum, mari profundo. Mus. Brit., Jay.

8. LYONSIA CALIFORNICA, Conr. Journ. p. 248. pl. 19. f. 20. (non 21.)

? = *Lyonsia nitida*, Gould. Mus. suo.
Hab. Sta. Barbara. Mus. —— ?

9. PERIPLOMA ARGENTARIA, Conr. Journ. p. 238. pl. 18. f. 8.

Hab. In limine Stæ. Diego, inter paludes limosas. Mus. Cuming, Jay, Gould.
= *Periploma planiuscula*, Sow. 1834, teste Gould.

10. PANDORA PUNCTATA, Conr. Journ. Phil. 1834, p. 228. pl. 17. f. 1.

Hab. Sta. Barbara; valvæ solitariæ. Mus. Cuming, Nutt.

Genus MACHÆRA, Gould.

= *Siliqua*, Megerle := *Leguminaria*, Schum.

11. MACHÆRA LUCIDA, Conr.

Solecurtus lucidus, Conr. Journ. p. 231. pl. 17. f. 8.
= *S. radiatus*, Gould, non Linn. (teste Conr. 1849).
Siliqua lucida, Conr. Journ. Aug. 1849.
Hab. Sta. Barbara, rarè. Mus. Nutt., Brit.

Closely resembling the European species; but, according to Conrad, differing from this, and agreeing with that of New England. The rib is seen through the shell, resembling a yellowish ray.

12. SOLECURTUS NUTTALLII, Conr. Journ. p. 232. pl. 17. f. 9.

Siliqua Nuttallii, Conr. Aug. 1849.
= *S. maximus*, Gould, non Wood (teste Conr. 1849) = Wood, pl. 31. f. 3, teste Gould, 1855.
= *S. splendens*, Chenu (teste Conr. 1849).
Hab. In æstuario fluminis Columbiæ, "near Point Adams," paludibus. Mus. Nutt., Jay.

Subgenus CULTELLUS, Conr.

"*T. convexa, marginibus ventrali et dorsali parallelis; marginibus antico et postico subæqualibus, valde hiantibus; dentibus plerumque* ii. *in utraque valva; costæ internæ carens.*"

Ex. *S. caribbæus, S. Dombeii, S. strigillatus,* &c., Journ. p. 233. pl. 17. f. 10.

13. SOLECURTUS SUBTERES, Conr. Journ. p. 233. pl. 17. f. 10.

Hab. Sta. Barbara. Mus. Nutt., Brit., Jay.

14. SOLECURTUS CALIFORNIANUS, Conr. Journ. p. 233. pl. 18. f. 3.

Hab. Sta. Barbara, inter paludes limosas; frequens. Mus. Nuttall, Brit., Jay.

15. SANGUINOLARIA PACIFICA, Conr.

Psammobia pacifica, Conr. Journ. p. 241. pl. 18. f. 13.

Hab. San Diego, inter arenam, mari subprofundo. Mus. Brit.

The figure displays no radiating lines, a thin cardinal margin, and a solitary tooth. It appears to be a thin Tellinoid shell.

16. SANGUINOLARIA NUTTALLII, Conr. Journ. p. 230. pl. 17. f. 6.

Hab. Sta. Diego, in paludibus. Mus. Nutt., Cum., &c.

= *Psammobia decora,* Hinds, Voy. Sulph. Moll. *in loco.*

This very well-marked species, approaching *Solecurtus,* was overlooked by Mr. Hinds, notwithstanding his usual care.

17. SANGUINOLARIA CALIFORNIANA, Conr. Journ. p. 231. pl. 17. f. 7.

Hab. In æstuario fluminis Columbiæ, paludibus limosis. Mus. ?

S. CALIFORNIANA, var. A, Conr.

Testa alba, æquilaterali.

? An eadem species. Mus. Nuttall.

18. SANGUINOLARIA RUBRO-RADIATA, Conr. [? ubi.]

Appears allied to *Psammobia.*

Hab. California. Mus. Nuttall.

19. SEMELE RUBROLINEATA, Conr.

Amphidesma rubrolineata, Conr. Journ. p. 239. pl. 18. f. 11.

= *Semele simplex,* A. Ad.

This species, of which Mr. Nuttall had not retained a specimen, fortunately reappears in Dr. Gould's collection, and is pronounced by Mr. Cuming identical with Mr. Adams's shell.

Hab. San Diego, mari profundo. Mus. Cuming, Gould.

20. SEMELE DECISA, Conr.

Amphidesma decisa, Conr. Journ. p. 239. pl. 19. f. 2; Rve. Conch. Ic. pl. 4. sp. 24.

Hab. Una cum præcedente. Mus. Cuming, Nuttall, Brit., Jay.

Of this very characteristic shell, the length is stated by Conrad (probably erroneously) to be 5 inches. It grows however to a large size.

= *Amphidesma roseum*, Brod. & Sow., teste Gould.

21. CUMINGIA CALIFORNICA, Conr. Journ. p. 234. pl. 17. f. 12.

Hab. Sta. Barbara, infrequens; Mazatlan, do. Mus. Cum., Brit., Jay.

22. TELLINA ALTA, Conr. Journ. p. 258; Hanl. Rec. Shells, p. 71; Jay's Cat. no. 520.

Hab. Sta. Barbara. Mus. Jay.

According to Conrad, this shell has the outline of a *Capsa*, Enc. Méth. pl. 231. f. 1. Mr. Nuttall and I, however, may have erred in regarding the shell described in P. Z. S. 1855, p. 230, as ? *Scrobicularia biangulata* as being distinct.

23. TELLINA EDENTULA, Brod. & Sow. Zool. Journ. iv. p. 363; Zool. Beech. Voy. p. 154. pl. 41. f. 5, et pl. 44. f. 7; Mid. Mal. Ross. p. 62.

This species grows to a very large size, and is eaten by the Chinhooks at the estuary of the Oregon.

Hab. Oregon. Mus. Nuttall.

24. TELLINA NASUTA, Conr. Journ. p. 258; Hanl. Rec. Shells, p. 71; Sow. Thes. Conch. p. 314. pl. 64. f. 224; Middendorff, Siber. Reise, p. 256. no. 50. pl. 23. f. 6–11; Jay, Cat. no. 633.

Hab. San Diego (*Nuttall*), teste Conrad; Tugurbusen, Okotsk Sea (*Middendorff*). Mus. Jay.

25. TELLINA SECTA, Conr. Journ. p. 257; Hanl. Rec. Shells, p. 67.

= *T. ligamentina*, Desh. in Guér. Mag. 1843, pl. 81, teste Jay, Cat. no. 633.

Hab. San Diego, inter paludes limosas. Mus. Nuttall, Jay.

26. DONAX CALIFORNICUS, Conr.

Donax Californica, Conr. Journ. p. 254. pl. 19. f. 21 (non *D. Californicus*, Desh., *vide* B. M. Mazatlan Cat. p. 47. no. 76).

Hab. Sta. Barbara, inter arenam. Mus. Nuttall, Brit., &c.

This is a small, gibbous shell, resembling *D. punctatostriatus*, but without the dots. The *D. Californicus* of Deshayes is the young state of the white variety of the *D. Conradi* of the same author.

= *Donax obesus*, Phil.

27. Mactra Californica, Conr. Journ. p. 240. pl. 18. f. 12.

Hab. In paludes limosas, inter fluxum maris, Sta. Barbara, rarius. Mus. Gould.

Allied to *M. exoleta*, but much smaller, flatter, and more transverse.

28. Mactra planulata, Conr. Journ. p. 240.

Hab. Una cum præcedente. Mus.?

29. Petricola Californica, Conr.

Saxicava Californica, Conr. Journ. p. 256. pl. 20. f. 9.

Petricola Californica, Conr. Journ. Aug. 1849; Desh. B.M. Cat. Ven. p. 208. no. 3.

= *Petricola arcuata*, Desh. Rev. Zool. Cuv. 1839, p. 358.

Hab. Sta. Barbara, San Diego, &c. Mus. Gould, Cuming.

Var. = *Saxicava carditoides*, Conr. Journ. p. 255. pl. 20. f. 8: = *Petricola carditoides*, Conr. Journ. Aug. 1849.

Comp. *Petricola cylindracea*, Desh. Rev. Zool. Soc. Cuv. 1839, p. 358; B.M. Cat. Ven. p. 208. no. 5.

The *S. carditoides*, constituted by Conrad for a single valve found near Sta. Barbara, is regarded by him as identical with the *P. cylindracea* of Deshayes. After a comparison of a large series of specimens belonging to Dr. Gould and Mr. Cuming, I have, with Mr. Nuttall's consent, united Conrad's two species; retaining the latter name, though least expressive, because already adopted by Deshayes for his own *P. arcuata*. Dr. Gould regards both the *P. arcuata* and *P. cylindracea* of Desh. as being identical with Conrad's *P. carditoides*; but I have not sufficient confidence that such is the case to venture on uniting them.

30. Rupellaria lamellifera, Conr.

Venus lamellifera, Conr. Journ. p. 251. pl. 19. f. 19.

= *Venerupis Cordieri*, var. β, Desh. B.M. Cat. Ven. p. 191, no. 1.

Petricola Cordieri, Desh. Rev. Zool. Soc. Cuv. 1839, p. 358; Mag. Zool. pl. 18.

Hab. San Diego. Mus. Cuming, Nuttall, Gould.

On comparing the solitary valves on which Conrad's species was founded, with a series of very variable specimens in Dr. Gould's and Mr. Cuming's collections, there appears scarcely a doubt of its identity with that of Deshayes.

31. ? Tapes tumida, Conr.

T. t. subquadrata, valde inæquilaterali, alba, huc et illuc aurantio punctata; postice latiore, tumente; costulis plurimis rotundatis radiantibus, haud extantibus, interstitiis subæquantibus; liris concentricis satis confertis, rotundatis, secundum costas pectinatis; ligamento haud conspicuo, area minima, sulcis duabus circumeuntibus; lunula minima, parum definita; dent. card. in utraque valva iii. *valde divergentibus, quorum centrales, et in valva altera posticus bifidi sunt; margine cardinali interno*

excavato; sinu pallii haud parvo, rotundato; margine tenue crenato.

Long. ·62, lat. ·74, alt. ·4.

Hab. Sta. Barbara, legit *T. Nuttall*; sp. unic. Museo suo.

Mysia tumida, Conr., Nutt. MS.

This shell has the general shape and aspect of a *Tapes*, with a sculpture resembling *Venus* (*Chione*) *gnidia* and its congeners, and a hinge not exactly corresponding with any of the defined genera. The anterior teeth are short and divergent; the central teeth are bifid and interlock; the posterior tooth is bifid in one valve, single in the other, with an obscure lateral tooth inside the almost concealed ligament. The pallial sinus is not so large as in *Tapes*.

32. TAPES STRAMINEA, Conr.

Venus straminea, Conr. Journ. p. 250. pl. 19. f. 14 (non 15).
Tapes straminea, Sow. Thes. Conch. p. 699. pl. 151. f. 151.
Chione straminea, Desh. B.M. Cat. Ven. p. 141. no. 66.
= *Venus dispar*, Gould, MS.

Hab. Sta. Barbara et San Diego. Long. 1·5 poll. Mus. Brit. Nuttall, Cuming, &c.

This belongs to a group of closely allied species intermediate between *Venus* and *Tapes*, and is replaced in the Mexican fauna by *Tapes histrionica* (B.M. Mazatlan Cat. p. 76. no. 109).

Genus SAXIDOMUS, Conr.

Saxidomus, Conr. Journ. p. 249; Desh. B.M. Cat. Ven. p. 186.

"*Testa æquivalvis, postice hians; cardine, valva dextra dentibus compressis* iv.-v., *valva sinistra* iv.; *cicatricibus muscularibus* ii. *magnis, rotundatis; sinu pallii profundo.*

"Differs from *Tapes* in its gaping extremity and rounded pallial sinus." This description is enlarged by Deshayes so as to include eight species.

33. SAXIDOMUS NUTTALLI, Conr. Journ. p. 249. pl. 19. f. 12; Desh. B.M. Cat. Ven. p. 188. no. 4.

This species inhabits the Californian coast as far as San Diego; where it is found burrowing into soft clay-stone, along with *Pholades*, *Cumingiæ*, &c. The differences between this and the sub-boreal species, *S. giganteus* (Desh. B.M. Cat. Ven. p. 187. no. 2; quoted by Middendorff from Sitka and Kamtschatka), appear extremely slight. They are united by Jay.

Genus TRIGONA, Megerle.

Trigona, Megerle, Desh. B.M. Cat. Ven. p. 45.
= *Trigonella*, Conr.: indicated in Journ. 1837, p. 253; described in Journ. 1849, p. 213.

34. TRIGONA CRASSATELLOIDES, Conr.

Cytherea (*Trigonella*) *crassatelloides*, Conr. Journ. p. 253. pl. 19. f. 17; Hinds, Voy. Sulph. Moll. p. 65. pl. 21. f. 1.

Trigonia crassatelloides, Desh. B.M. Cat. Ven. p. 46. no. 1; B.M. Mazatlan Cat. p. 58. no. 86.

Hab. Sta. Barbara, San Diego, &c. Mus. Gould, Nuttall, Cuming, Brit. &c.

This shell attains the length of 7 inches, and is found about a foot deep in the sand.

35. DOSINIA CALLOSA, Conr.

Cytherea callosa, Conr. Journ. p. 252 (non *Chione callosa*, quasi Conr., Desh. B.M. Cat. Ven. p. 135. no. 48).

"*D. t. subovata, subdepressa, alba; costis concentricis, confertis, planatis, huc et illuc antice et postice bifurcantibus; intus irregulariter callosa, margine tenuiore; sinu pallii valde impresso, profundo.*"

Long. 2 poll.

Hab. Sta. Barbara. Mus. Nuttall.

Mr. Nuttall found numerous valves of this species; but, although so thick, they were always broken by gulls. It is said by Conrad to resemble the fossil *C. erycinoides*.

36. VENUS NUTTALLI, Conr. Journ. p. 250. pl. 19. f. 15 (non 14); Hanl. Rec. Shells, p. 113; Wood, Suppl. pl. 16. f. 46.

Chione Nuttallii, Desh. B.M. Cat. Ven. p. 135. no. 47.

+ *Chione callosa*, Desh. loc. cit. no. 48 (pars quidem Californiensis):—non *Venus callosa*, Conr.

Hab. Sta. Barbara et San Diego. Long. 2 poll. Mus. Brit., Nuttall, Cuming, &c.

37. VENUS CALIFORNIENSIS, Brod. Proc. Zool. Soc. 1838, p. 43; et auct.

= *Venus Californiana* (quasi Sow.), Conr. Journ. p. 251. pl. 19. f. 16 (non 15).

Chione Californiensis, Desh. B.M. Cat. Ven. p. 133. no. 44.

Hab. San Diego, inter paludes limosas. Mus. Brit., Cuming, Nuttall, &c.

= *Venus leucodon*, Sow. teste Desh. loc. cit.

38. VENUS SIMILLIMA, Sow. Thes. Conch. p. 708. pl. 153. f. 17, 18.

Chione simillima, Desh. B.M. Cat. Ven. p. 133. no. 43.

Mus. Nutt. California.

39. VENUS (CHIONE) EXCAVATA, n. s.

V. t. cordata, subtumida, solida, alba, ad umbones antice incurvatas, appropinquantes, fusca; costis radiantibus, rotundatis, interstitiis æquantibus, postice parvis, acutioribus, antice confertis, rotundatis; lamellis concentricis nitentibus, crebriori-

bus, eleganter crenatis, ornata; lunula tumente, radiatim costata; area magna, planata, excavata; carinis acutis definita; intus alba, postice fusco-purpurea; dent. card. ii.-iii. *validis; sinu pallii minimo; epidermide tenui, sericea.*

Long. 1·34, lat. 1·5, alt. ·9.

Hab. San Diego; legit *T. Nuttall*; sp. unic. in Mus. suo.

This exquisitely beautiful species belongs to the group of *V. amathusia*, &c. Although only one specimen is known, its characters are not such as to accord with the numerous similar species already described.

40. Cypricardia Californica, Conr. Journ. p. 236. pl. 18. f. 4.

Hab. Sta. Barbara et San Diego; rupibus argillaceis, inter fluxum maris; una cum Pholadibus. Mus. Nuttall.

= *Cypricardia Duperryi*, Desh. in Guér. Mag. 1841, teste Gould.

41. Chama exogyra, Conr. Journ. p. 256; Reeve, Conch. Ic. sp. 38. pl. 7.

Hab. Sta. Barbara, San Diego, &c. in rupibus, glomerantes. Mus. Nuttall, Gould, Cuming, Brit.

One of Dr. Gould's specimens, probably belonging to this species, is dextral.

42. Chama? frondosa, var. ?Mexicana, jun., B.M. Maz. Cat. p. 87. no. 121.

Hab. Sta. Barbara. Mus. Nuttall.

One fine young specimen appears to belong to this species.

43. Chama pellucida.

Hab. Sta. Barbara. Mus. Nuttall.

One very fine specimen in company with the other species.

44 *a*. Cardium Nuttallii, Conr. Journ. p. 229. pl. 17. f. 3.

Hab. "Straits of San Juan da Fuco," paludibus luteosis. Mus. Nutt., Brit.

The natives cross a little peninsula to get to the place where this fine species lives, which they use as food, being of flavour superior to the English kinds. It grows so large that Mr. Nuttall found a squaw baling out a canoe with one of the valves.

44 *b*. Cardium Californianum, Conr. Journ. p. 229. pl. 17. f. 4.

Hab. Sta. Barbara; valvæ solitariæ, rarè. Mus.?

=*C. Nuttallii*, var. teste Mid.; non *C. Californiense*, Desh.

45. Cardium quadragenarium, Conr. Journ. p. 230. pl. 17. f. 5.

Hab. Sta. Barbara, rarè. Mus. Jay.

?= *C. luteolabrum sive xanthocheilum*, Gould.

46. Cardium substriatum, Conr. Journ. p. 228. pl. 17. f. 2.

Hab. San Diego, paludibus luteosis. Mus. Nutt.

Closely resembles the young of *C. elatum*: differs from *C. Mortoni*, Conr., in being less ventricose, and in its striæ and serrate margin.

47. Lucina bella, Conr. Journ. p. 254. pl. 19. f. 11.
= *L. pecten*, var. teste Jay.

Hab. San Diego, in paludes limosas, haud rarè. Mus. ? Jay.

48. Lucina Californica, Conr. Journ. p. 255. pl. 20. f. 1.

Hab. San Diego, una cum præcedente; rarè. Mus. Jay.

49. Lucina Nuttalli, Conr. Journ. p. 255. pl. 20. f. 2.

Hab. San Diego, una cum præcedente. Mus. Nuttall.

This beautiful species is recognized by its winged growth.

50. Diplodonta orbella, Gould.

Lucina orbella, Cal. & Mex. Shells, p. 22; vide B.M. Maz. Cat. p. 102. no. 150; P. Z. S. 1856, p. 202.

Hab. Santa Barbara, in æstuario limoso. Mus. Nuttall, Gould.

51. Anodon Nuttalliana, Lea, Trans. Am. Phil. Soc. vol. vi. pl. 20. f. 62.

Hab. In flumine Wahlamat, Oregon. Mus. Nutt., Jay.

52. Anodon Oregonensis, Lea, Trans. Am. Phil. Soc. vol. vi. pl. 21. f. 67.

Hab. In flumine Wahlamat, Oregon. Mus. Jay.

53. Anodon Wahlamatensis, Lea, Trans. Am. Phil. Soc. vol. vi. pl. 20. f. 64.

Hab. In flumine Wahlamat, Oregon. Mus. Jay.

54. Modiola capax, Conr. Journ. p. 242; B.M. Mazatlan Cat. p. 120. no. 170, q. v.

Hab. San Diego, inter paludes limosas. Mus. Brit., Cuming, Gould, &c.

55. Modiola recta, Conr. Journ. p. 243. pl. 19. f. 1.

Long. 2·1, lat. ·94, alt. ·8.

Hab. Sta. Barbara, rarius. Mus. Gould.

The measurements are taken from a very fine specimen in Dr. Gould's collection, in which the epidermis is posteriorly clothed with squamose hairs.

56. Mytilus edulis, var. latissimus.

M. e. t. curta, triangulari, latissima.

Long. 1·1, lat. ·77, alt. ·5.

Hab. California Superior; legit *T. Nuttall*: sp. unic. in Mus. suo.

Among the specimens of this species brought by Mr. Nuttall, some appeared exactly like the normal European type; one presented the well-known thin striped variety; and that above indicated presents the extreme broad stunted form occasionally seen in this country. All the specimens present the subepidermal apical denticles noticed by Middendorff as (*i. e.* in form and number) characteristic of the species.

57. Mytilus Californianus, Conr. Journ. p. 242. pl. 18. f. 15.

Hab. Santa Barbara, Monterey, San Diego, in rupibus. Mus. Gould, Jay.

58. Mytilus bifurcatus, Conr. Journ. p. 241. pl. 18. f. 14.

Hab. ? California. Mus. Gould, Jay.

This shell is stated by Conrad to inhabit the "Sandwich Islands (Ouau, &c.), attached to rocks bare at low water;" but his authority, when unconfirmed by the notes or remembrance of Mr. Nuttall, is not binding, as one shell which he assigns to the Sandwich Islands he calls *Perna Californica* (p. 245). It occurs among Dr. Gould's Mexican War Shells with the unsatisfactory reference "Californian coast, somewhere."

59. Isognomon costellata, Conr.

Perna costellata, Conr. Journ. p. 246.

Hab. Sta. Barbara, sub saxis. Mus. Jay, Nuttall.

The habitats of Conrad's *Pernæ* are not satisfactorily ascertained. Of *P. incisa* Mr. Nuttall (whose specimen has 6, not 5 teeth) confirms Conrad's locality, viz. Sandwich Islands. Of the shell called *P. Californica*, Mr. Nuttall has no specimen, but believes Conrad is right in stating that it "inhabits with the preceding," *i. e.* in the Sandwich Islands. The third species, described above, is also assigned by Conrad to the Sandwich Islands, but Mr. Nuttall, who retains his specimen, distinctly refers it to the above locality.

60 *a*. Pecten latiauratus, Conr. Journ. p. 238. pl. 18. f. 9; Rve. Conch. Ic. pl. 1. sp. 5; Sow. Thes. Conch. vol. i. p. 57.

Hab. San Diego et Sta. Barbara; sub effluxum maris. Mus. Nutt., Cum.

60 *b*. Pecten Monotimeris, Conr. Journ. p. 238. pl. 18. f. 10.

Hab. Una cum præcedente. Mus. Jay.

Mr. Nuttall considers that this shell is probably a variety of *P. latiauratus*. The young are occasionally found attached to Fuci by a slender byssus.

61. Ostrea conchaphila, B.M.Cat. Maz. Moll. p. 161. no. 214.
Hab. Oregon, San Diego. Mus. Nuttall.

62. Bulla nebulosa, Gould.
— *Vide* B.M. Maz. Cat. p. 173. no. 225.
Hab. Sta. Barbara. Mus. Nutt., Brit., Cuming.

63. Helix Californiensis, Lea, Trans. Am. Phil. Soc. vol. vi. pl. 23. f. 79, 84; Küst. Conch. Cab. pl. 57. f. 14, 15; Rve. Conch. Ic. pl. 115. f. 661; Pfr. 890.
+*H. Nickliniana*, Lea, teste Jay, Cat. no. 3452.
Hab. Columbia River. Mus. Jay.

64. Helix Columbiana, Lea, Trans. Am. Phil. Soc. vol. vi. pl. 23. f. 75; Rve. pl. 118. sp. 692; Pfr. 897.
Hab. California. Mus. Jay.

65. Helix fidelis, Gray, P. Z. S. 1834, p. 67; Rve. pl. 114. sp. 657; Pfr. 888.
=*H. Nuttalliana*, Lea, Trans. &c. pl. 23. f. 74.
Hab. Oregon. Mus. Jay.

66. Helix Oregonensis, Lea, Trans. &c. pl. 23. f. 85; Pfr. 1121.
Hab. Oregon. Mus. Jay.

— 67. Helix Vancouverensis, Lea, Trans. &c. pl. 23. f. 72; Rve. pl. 116. sp. 669; Pfr. 519.
Hab. Oregon. Mus. Nutt., Jay.

— 68. Helix Townsendiana, Lea, Trans. &c. pl. 23. f. 80.
Hab. Oregon. Mus. Gould.

69. Succinea Oregonensis, Lea, Trans. &c. 1841, p. 32; Pfr. 34.
Hab. Oregon. Mus. Jay.

70. Limnæa Nuttalliana, Lea, Trans. &c. 1841, p. 9.
Hab. Oregon. Mus. Jay.

71. Physa, *sp. ind.*
Allied to *Ph. elata*, Gould, B.M. Maz. Cat. p. 180. no. 237; P.Z.S. 1856, p. 203.
Hab. Oregon. Mus. Nuttall.

— 72. Planorbis subcrenatus, n. s.
P. t. tumida, tenuissima, cornea; anfr. vi. *rotundatis, suturis impressis; lirulis radiantibus acutis, subconfertis, interdum minutissime crenulatis; apertura rotundata, pariete parva,*

anfr. penult. parum attingente; labro parum deflecto, intus fusco; umbilico profundo.

Long. ·95, lat. ·8, alt. ·36.

Hab. Oregon; legit *T. Nuttall*; sp. unic. in Mus. suo.

"Differs from *P. trivolis*, Say, in the acuteness of the ribs, and in their being more distant."—*Cuming, MS.*

—— 73. Chiton Nuttalli, Cpr. P. Z. S. 1855, p. 231.

—— 74. Chiton acutus, Cpr. P. Z. S. 1855, p. 232.

75. Chiton ornatus, Nutt. P. Z. S. 1855, p. 232.

This may be the *Chiton armatus*, Nutt. of Jay's Cat. 2678; and if so = *Ch. muscosus*, Gould, Exp. Shells, p. 6. The descriptions do not however exactly correspond.

76. "Acmæa patina, Esch. Zool. Atl. ed. Rathke, 1831, p. 19. pl. 24. f. 7, 8; Mid. Bull. Ac. St. Pet. vol. vi. no. 20; Sib. Reise, p. 187. pl. 16. f. 1 *a–d*, 2 *a–c*, 3.

+ *A. scutum*, Esch. loc. cit. p. 19. pl. 23. f. 1–3; teste Mid. loc. cit. et Phil. in Zeit. f. Mal. 1846, p. 107; ? D'Orb. Voy. Am. Mér. p. 479 (excl. fig.).

= *Patella mammillata*, Nutt. in Jay's Cat. no. 2839; Rve. Conch. Ic. pl. 42. f. 140, *a*, *b*.

+ *Patella tessellata*, Nutt. in Jay's Cat. no. 2885.

+ Jun. *Patella fenestrata*, Nutt. in Jay's Cat. no. 2815; Rve. Conch. Ic. pl. 38. f. 121, *a*, *b*.

+ *Patella verriculata*, Rve. Conch. Ic. pl. 31. f. 87, *a*, *b*.

+ *Patella cinis*, Rve. Conch. Ic. pl. 24. f. 60, *a*, *b*. *c*.

? + *Patella Nuttalliana*, Rve. Conch. Ic. pl. 30. f. 80, *a*, *b*.

? + *Patella Cumingii*, Rve. Conch. Ic. pl. 16. f. 37, *a*, *b* (Valparaiso, *Cuming*).

? + *Patella diaphana*, Nutt. non Rve. (*v. supra*, p. 203).

= *Lottia pintadina* (pars), Gould, loc. cit. in p. 203.

Hab. Sitcha (*Eschscholtz, Wosnessenski*); Kenai Bay (*do.*); Aleutian Islands, Unalashka (*Kastaljski*); Tugur Bay, Schantar Islands (*Middendorff*); California, passim (*Nuttall*); Monterey, San Diego (*Lieut. Green*); Mazatlan, 2 fresh sp. (*L'pool Coll.*); (?) Chili, Bolivia, Peru (*D'Orbigny*)."—B.M. Maz. Cat. no. 265. p. 207.

77. Acmæa pelta, Esch.

= *Patella leucophæa*, Nutt. MS. (non Gmel.); Jay's Cat. no. 2827; Rve. Conch. Ic. pl. 34. sp. 101.

+ *P. monticola*, Nutt. MS. = *P. monticolor*, Jay's Cat. no. 2844.

+ *P. strigillata*, Nutt. MS.; Jay's Cat. no. 2881.

78. "Acmæa persona, Esch. Zool. Atl. p. 20. pl. 24. f. 1, 2; Mid. Mal. Ros. pt. ii. p. 36. pl. 1. f. 3.

+ Jun. = *A. radiata*, Esch. loc. cit. p. 20. no. 8 (teste Mid.).

+ *A. ancylus*, Esch. loc. cit. p. 20. no. 10. pl. 24. f. 4 *bis*, 6 (do.).

= *A. scutum*, D'Orb. loc. cit. pl. 64. f. 8–10, excl. diagn. (teste Mid.) non *A. scutum*, D'Orb. MS. in B.M. Coll.

?=*Lottia punctata*, Gray (non Quoy & Gaim.), teste Mid.

=*Patella Oregona*, Nutt. in Jay's Cat. no. 2852; Rve. Conch. Ic. pl. 36. f. 112, *a. b.*

+*P. umbonata*, Nutt. loc. cit. no. 2887; Rve. loc. cit. pl. 35. f. 107, *a, b.*

+*P. pileata*, Nutt. loc. cit. no. 2861.

Hab. Sitcha (*Eschscholtz*); Mouth of Columbia River (*Nuttall*); Sta. Barbara (*Col. Jewett*); San Diego (*Lieut. Green*); Mazatlan, 1 fresh sp. (*L'pool Coll.*)."—B.M. Maz. Cat. no. 266. p. 208.

79. "ACMÆA SCABRA, Nutt.

Lottia scabra, Jay's Cat. no. 2907.

Patella scabra, Rve. Conch. Ic. sp. 119. pl. 37. f. 119, *a, b.* Non *Patella* (*Lottia*) *scabra*, Gould, Exp. Shells, p. 10 = *Patella spectrum*, Nutt.

Hab. California (*Nuttall*); Monterey and Sta. Barbara (*Col. Jewett*); Mazatlan, 1 sp. only (*L'pool Coll.*); S.W. Mexico, 1 sp. (*P. P. C.*)"—B.M. Maz. Cat. no 267. p. 209.

80. ACMÆA SPECTRUM, Nutt. Jay's Cat. no. 2877; Rve. Conch. Ic. pl. 29. sp. 76. f. 76, *a, b.*

= *Patella* (*Lottia*) *scabra*, Gould, Exp. Shells, p. 10.

Hab. California. Mus. Nutt., Cum., Gould.

81. SCURRIA MITRA, Less. & Esch.

Patella scurra, Less. Voy. Coq. 1830, Zool. p. 421. no. 198.

Acmæa scurra, D'Orb. Voy. Am. Mér. p. 478.

Patella (*Acmæa*) *scurra*, Mid. Mal. Ross. ii. p. 34.

=*Acmæa mitra*, Esch. Zool. Atl. 1833, p. 18. pl. 23. f. 4.

+*A. mammillata*, Esch. p. 18.

+*A. marmorea*, Esch. p. 19.

= ? *Lottia pallida*, Gray, Zool. Beech. Voy. p. 147. pl. 39. f. 1.

=*Scurria scurra*, Gray, olim.

=*Scurria mitra*, Gray, Gen. 1856.

Hab. Valparaiso, abundans (*Cuming*); Monterey, haud rarè (*Nuttall*); Sitcha (*Eschscholtz & Wosnessenski*).

82. FISSURELLA ORNATA, Nutt. MS.

F. t. ovata seu elongata, plus minusve elevata; costis rotundatis, subtuberculosis, haud extantibus, haud æqualibus, confertis, interstitiis parvis, et striulis exillimis concentricis confertissimis ornata; epidermide tenui, subnitente, adhærente; apertura subcentrali, normaliter tripartita, plus minusve elongata; colore, extus griseo (t. juniore rosaceo), radiis plus minusve latis, xiii.–xvi., *fusco-purpureis seu roseis, eleganter picta; intus, superficie alba, porcellana, margine viridi-cinereo, ra-*

diorum finibus penicillato; callositate parum rugosa, t. juniore linea rosea circumeunte.

Var. MONSTROSA. *Variat t. subrotundata, conica, radiis penicillatis, apertura normali rotundata; apertura altera abnormali minima, extus alteri adjiciente, intus distante, callositate magna.*

Hab. California Superior; legit *T. Nuttall.* Mus. suo, B.M.

	long.	long. apert.	lat.	alt.
Sp. normale	1·6	·2	1·12	·42 poll.
Sp. elongatum ..	1·09	·2	·63	·23 „
Sp. monstrosum..	1·	·1	·78	·5 „

This extremely beautiful species varies almost as much as *F. rugosa*, Sow. A similar monstrosity occurring in *F. virescens*, Sow., is described in the B.M. Mazatlan Cat. p. 214. It is, by an oversight, assigned to St. Helena as a habitat, by Dr. Jay, Cat. no. 3003.

83. GLYPHIS * ASPERA, Esch.

Fissurella aspera, Esch. Zool. Atl. pt. v. p. 21. pl. 23. f. 5.
=*F. densiclathrata*, Rve., teste Cum. MS.
=*F. exarata*, Nutt. MS.
Hab. Sitcha (*Eschscholtz*); Sta. Barbara (*Nuttall*). Mus. Nutt., Cum.

84. LUCAPINA CRENULATA, Sow.

Fissurella crenulata, Sow. Conch. Ill. no. 19. f. 31, 38; Tank. Cat. App. p. vi.
Hab. San Diego. Mus. Nutt., Cum., Nat. Hist. Philadelphia.
Mr. Nuttall describes the animal of this beautiful shell to be nearly as large as a cheese. He presented his specimen to the Mus. Nat. Hist. Phil. in hopes that the authorities there would describe it; in which he has been thus far disappointed.

85. HALIOTIS CALIFORNIENSIS, Swains. Zool. Ill. vol. ii. pl. 80.
Hab. San Diego.

86. HALIOTIS CRACHERODII, Leach, Sow. Conch. Ill. pl. 7. f. 23.
=*H. glaber*, Schub. & Wagn. pl. 224. f. 3086–7.
Hab. Monterey. Mus. Jay, Nutt.

87. HALIOTIS SPLENDENS, Rve. Conch. Ic. pl. 3. f. 9.
Hab. San Diego.
The black animals of one of these species adhere with such tena-

* Subgenus GLYPHIS=*Lucapina*, H. & A. Ad. Gen. i. 447, maxima pars, non *Gray*.

Animal *margine pallii fimbriato, marginem testæ superante.* Testa *superficie cancellata, margine crenulato, callositate sæpe truncata, interdum laminata; testa juniori* Rimulæformi, *spira in apertura crescente absorpta.*

Vide B.M. Maz. Cat. p. 220. *Etym.* γλυφις, a notch or triglyph; from the sculptured surface.

city to the rocks, that a clasp knife is broken in endeavouring to loosen them. The natives remove them with bayonets and eat them.

88. Pomaulax undosus, Mawe.

Trochus undosus, Wood, Suppl. pl. 5. f. 1. p. 16.
Hab. Monterey. Mus. Nutt., Brit., Cuming.

89. Trochiscus Norrisii, Sow.

Hab. Monterey. Mus. Nutt., Brit., Cuming.
The young shell (teste *Nuttall*) has scarcely any umbilicus, and has a small tooth in the mouth.

90. Trochus filosus, Wood, Suppl. pl. 5. f. 23.

=*Trochus ligatus*, Gould, Exp. Sh. p. 55.
=*T. castaneus* (Nutt. MS.), Forbes, P. Z. S. 1850, p. 271.
Var.=*T. doliarius*, Gould, MS., non Chem.
? Var. = *Ziziphinus annulatus*, A. Ad. P. Z. S. 1851, p. 164 = *Trochus virgineus*, Gould, MS., non Mart. in Lam. An. s. Vert. vol. ix. p. 144. no. 51.
=*Trochus virgineus*, Chemn.
The Lamarckian species are said to come from New Zealand, and are probably allied forms. If that should prove incorrect, the name of Wood will give way. As it is, so indifferent a figure scarcely deserves precedence of the described species of Gould. Mr. Nuttall considers the two Californian forms conspecific.

91. Omphalius ater, Less.

=*T. gallina*, Forbes, P. Z. S. 1850, p. 271.
Hab. California. Mus. Nutt., Cum., Brit., &c.

92. Omphalius fuscescens, Phil.

=*Trochus luridus*, Nutt. MS.
Hab. Sta. Barbara. Mus. Nutt., Cum., Brit.

93. Omphalius marginatus, Nutt.

Hab. California. Mus. Nutt., Brit.

94. Omphalius aureotinctus, Forbes.

Trochus aureotinctus, Forbes, P. Z. S. 1850, p. 271.
? =*Trochus pallidus*, Nutt. MS.
=*T. cateniferus*, Poliez, teste Gould.
Hab. California. Mus. Nutt., Brit., Cum.

95. Crepidula rugosa, Nutt. MS.

Cr. t. "Cr. onici" *simili, sed epidermide nitente, tenui, adhærente; vertice nucleoso Velutinæ-formi; t. juniore intense atro-*

fusca; septo subdiaphano, margine magis declivi; intus et ad apicem atro-purpureo; margine acuto.

Long. 1·97, lat. 1·26, alt. ·54.

Hab. California Superior; legit *T. Nuttall.* Museis suo, Jay, Cuming.

This shell is regarded by Dr. Jay as identical with *Cr. onyx*, Sow. (=*Cr. hepatica*, C. B. Ad.? non Desh.), which it resembles in the character of the spire, and in the general appearance. The specimens examined differ in colour, which is not so lustrous; in habit of growth, which is not lamellar; in the septum, which is rather less opaque, particularly in the young shell; and especially in the epidermis, which is glossy, and only interrupted by the wrinkles of growth beneath. Whether these differences are of specific value, must await the examination of more numerous specimens. *Vide* B.M. Maz. Cat. no. 340. p. 278.

96. Crepidula ——, sp. ind.

Crepidula navicelloides, Nutt. MS. in Jay's Cat. no. 3035.

Comp. *Crepidula minuta*, Mid. Mal. Ross. pl. 11. f. 6, 7. p. 101 (Sitka).

Comp. *Crepidula nummaria*, Gould, Exp. Shells, p. 15.

Hab. California. Mus. Jay, Nutt.

From the very imperfect materials, it is impossible to determine this species with confidence. It has a great resemblance to *C. nivea*, var. *squama* (*v.* B.M. Maz. Cat. no. 341. p. 280), but the apex appears distinct both from that and *C. unguiformis*. Middendorff's young shell is probably conspecific; and the species may hereafter include the following.

97. Crepidula explanata, Gould, Mex. & Cal. Shells, p. 4. pl. 14. f. 7; P. Z. S. 1856, p. 205.

=*Crepidula exuviata*, Nutt. MS. in Jay's Cat. no. 3027.

=*Crepidula perforans*, Val. Voy. Ven.

Hab. California. Mus. Jay, Gould, Cuming.

This shell appears an aberrant form of the last species, caused by living in the hole of a *Lithophagus*. The young shell is normal; the nucleus is large, smooth, not imbedded as in *Cr. unguiformis*, nor standing out as in *Cr. nivea*. There is only one large spiral turn. The most peculiar character of the shell is the cancellation between the laminæ, but this only appears in some of the specimens. Distortions occur of the true *Cr. nivea*, almost equally aberrant in form. *Vide* B.M. Maz. Cat. p. 284.

98. Crepidula aculeata, var.

= *Crepidula Californica*, Nutt. MS. B.M. Maz. Cat. p. 268. no. 334.

Hab. Sta. Barbara, frequens. Mus. Nutt., Brit., Warrington, &c.

99. Crucibulum spinosum, Sow. B.M. Cat. Maz. Moll. no. 344. p. 290.

Hab. Monterey, rarissime. Mus. Nuttall.

100. Hipponyx Grayanus, Mke. Proc. Zool. Soc. 1856, p. 4 ; B.M. Maz. Cat. no. 350. p. 299.

Hab. California, rarissime. Mus. Nuttall.

101. Spiroglyphus ——, sp. ind.

Hab. Sta. Barbara, *Crepidulam aculeatam* erodente. Sp. jun. in Mus. Nuttall.

102. Aletes* squamigerus, n. s.

A. t. majore, flavido-albida, solute spirali, plerumque glomerata ; superficie costis spiralibus, squamis instructis ; costulis pluribus intercalantibus, squamulis minoribus ; squamis et squamulis imbricatis, arcuatis ; interdum aperturam versus sculptura obsoleta.

Hab. Sta. Barbara. Sp. magn. glomer. in Mus. Nuttall; San Diego, Mus. Gould.

A fine group of this shell is in Mr. Nuttall's collection. It agrees in the main with the Mazatlan species, but differs in colour and sculpture. Mr. Nuttall believes that he found another species without scales.

103. Petaloconchus macrophragma, n. s., B.M. Maz. Cat. no. 359. p. 309 ; et *Monogr. Petaloconchorum* (Proc. Z. S. *postea*).

Hab. San Diego, *Euraphiæ Hembeli* adhærens. Mus. Nuttall.

Of the remarkable *Cirripedi* to which this shell is attached, only two specimens were found by Mr. Nuttall, and described by Conr. Journ. p. 261. pl. 20. f. 13.

104. Cerithidea sacrata, Gould.

Cerithium (*Potamis*) *sacratum*, Gould, Exp. Shells, p. 60.
= *Pirena Californica*, Nutt. MS.
Hab. Monterey, Sta. Barbara, &c., aquis mixtis. Mus. Nutt., Brit.

105. Litorina planaxis, Phil.

= *Littorina tenebrata*, Gould.
Hab. California. Mus. Nutt., Brit.

* The genus *Siphonium* is thus characterized and divided in the B.M. Maz. Cat. p. 301.

Genus Siphonium, Bronne.

Testa valde irregularis, juniore haud turritelloidea. Operculum tenue, concavum, simplex.

A. Species typici. *Operculo valde concavo, vix spirali.*

Oceanis Indico et Atlantico repertæ.

B. Subgenus Aletes (ἀλήτης, errator). *Operculo parum concavo, multispirali, fere ut in* Turritella *formato.*

For further information on the opercula of *Vermetidæ*, v. B.M. Maz. Cat. pp. 300–312.

106. Natica? Maroccana, var. Californica.

N. ?M. t. aurantio-fusca, labio intus suturam calloso; operculo extus solidiore, margine minus extante, ad nucleum magis calloso.

Long. ·88, long. spir. ·22, lat. ·72, div. 100°.

Hab. California Superior; legit *T. Nuttall*, Mus. suo; legit *Lady K. Douglas*, Mus. Brit.

The specific identity of shells belonging to this type from different faunas, is not yet decided. As compared with the W. Mexican shells (*N. Pritchardi*, Forbes, = *N. Chemnitzii*, Pfr.), the Californian specimens are rather more coarse-grained and solid, with the parietal callosity stronger under the suture. The operculum is thicker, with the margin less turned-up in proportion. Colour orange-brown, sometimes obscurely banded.

107. Ranella triquetra, teste Nutt. MS.

Hab. San Diego. Mus. Nuttall.

Exceedingly like a young *Vitularia salebrosa*.

108. Mitra maura, teste Nutt. MS.

Hab. California Superior. Mus. Nuttall.

109. Olivella glandinaria, Nutt.

Glandinaria Californica, Nutt. MS.

O. t. bulbiformi, in medio inflata, utrinque regulariter constricta; spira satis elevata, acuta; haud polita, purpureo-fusca, in spira aurantia, circa basin violaceo tincta; apertura antice dilatata; columella ad basin biplicata; labio calloso, lævi; callositate basali haud lata.

Long. ·88, long. spir. ·29, lat. ·47, div. 70°.

Hab. In California Superiore; legit *T. Nuttall.* Sp. unic. in Mus. suo.

The genus *Glandinaria* appears to have been proposed (not published) by Mr. Nuttall, in ignorance of the establishment of *Olivella* by D'Orbigny, with which it exactly coincides. The name is retained for the very well marked species, in preference to the ill-used *Californica*.

110. Buccinum Poulsoni, Nutt. MS.

Hab. Upper California. Mus. Nuttall.

111. Purpura aperta, Blainv. var.

Purpura aperta, Kien. Icon. Conch. p. 81. no. 51. pl. 20. f. 59, et var. pl. 22. f. 64; Rve. Conch. Ic. pl. 3. sp. 15; Jay's Cat. no. 8942.

Purpura macrostoma, Conr. Journ. p. 267.

Hab. Sta. Barbara. Mus. Jay.

Conrad says this species may be readily distinguished from *P. aperta*, but does not say how. Dr. Jay considers the two identical;

and as he seems to have the type, his opinion is followed. Mr. Reeve's reference to the Nouv. Ann. Mus. cannot be verified. It appears to have been published by Kiener from a manuscript name.

112. PURPURA HARPA, Conr. Journ. p. 266. pl. 20. f. 25.

Hab. Sta. Barbara. Mus. Nuttall.

—— 113. PURPURA EMARGINATA, Desh.

= *P. Conradi*, Nutt. MS.; teste Jay, Cat. 8972. Mus. suo.

Hab. California.

—— 114. MONOCEROS ENGONATUM, Conr.

P. (*Monoceros*) *engonata*, Conr. Journ. p. 264. pl. 20. f. 17: diagn. auct.

"*M. t. fusiformi; anfractibus superne angulo saliente carinatis, spiraliter sulcatis, striis incrementi vix decussatis; anfr. tertio longitudinaliter costellato; pallida, maculis fuscis, intensioribus, angulatis, ornata; intus alba, maculis paucis purpureis;*" *apertura valde elongata; canali haud parva; labro intus dentibus plurimis;* "*acanthina tenui, gracillima.*"

Hab. Sta. Barbara. Mus. Nuttall, Brit., Jay, 9067.

= *Monoceros unicarinatum*, Reeve, Conch. Ic. sp. 1: diagn. sol., syn. plerumque excl., pl. 1. f. 1, excl.: non *M. unicarinatum*, Sow., nec Desh.

Comp. *Purpura spirata*, Blainv. Nouv. Ann. Mus. vol. i. 1832, pl. 12. f. 8. p. 252. no. 105; Kien. Icon. Conch. p. 121. no. 76. pl. 38. f. 90.

= *Monoceros unicarinatum*, pars, Desh. in Lam. An. s. Vert. vol. x. p. 124. no. 10, syn. Angl. excl.

The shell figured by Conrad and found in Mr. Nuttall's collection is very triangular, with a pointed base. The *P. spirata* of Blainville (described and figured with his usual accuracy, for which credit has not been given to him by some authors, who, wanting it in their own works, have added great labour to students) is a Sandwich Island shell, brought by M. Botta, very obtusely angulated, with a swollen base, scarcely acanthoid, and a canal long enough for *Chorus*, Gray. It is remarkable for the scaly keel of the upper whorls. This shell is reproduced by Kiener in a different form, who affiliates Sowerby's species (apparently constituted from a Nuttallian specimen received through Dr. Jay by Mr. Cuming) to that in the Paris Museum. Deshayes, copying this error, and not even adopting Blainville's earlier specific name, gives the name and reference of Sowerby, with a description in the main belonging to the Blainvillian species, although perhaps with some additions from Sowerby's figure. Mr. Reeve completes the confusion by describing a shell, "anfr. *superne* angulatis," very probably the true *P. engonata* of Conrad which he quotes; at the same time quoting the two different shells above named (one of them under two names, *P. spicata* and *P. spirata*), and figuring a very different shell, not angulated at all. To mere

learners, like the author of the present paper, such differences are exceedingly perplexing.

115. Monoceros brevidens, Conr.

P. (*Monoceros*) *brevidens*, Conr. Journ. p. 264: diagn. auct.

"*M. t. fusiformi, solida, spira curtiore; anfr. superne angulo haud saliente munitis*," *tumidioribus basin versus*; "*acantha curtiore, solidiore; spiraliter sulcatis*," *sulcis interdum obsoletis.*

Monoceros unicarinatum, Sow. Conch. Ill. no. 14. p. 4. f. 5; non Reeve, Conch. Ic. sp. 1, nec Desh. in Lam. An. s. Vert. no. 10, diagn.

= *Monoceros*, pl. 1. f. 2 (non sp. 2); Reeve, loc. cit.

Non *Monoceros brevidentatum*, Gray in Wood, Suppl. (1828) p. 12. no. 10, p. 43. pl. 4. no. 10; Sow. Conch. Ill. f. 4; Reeve, Conch. Ic. pl. 1. sp. 4. f. 4 *a*, *b*; Desh. in Lam. An. s. Vert. vol. x. p. 123. no. 9=*Purpura cornigera*, Blainv. Nouv. Ann. Mus. vol. i. p. 213. no. 28. pl. 9. f. 10; Kien. Icon. Conch. p. 123. no. 78. pl. 39. f. 92=*Monoceros maculatum*, Gray ipse in Zool. Beech. Voy. p. 125.

Hab. Sta. Barbara. Mus. Nutt., Cum., Jay.

The exact date of Sowerby's species, which is generally referred to the *P. engonata* of Conrad, but differs from the figure of that shell, and agrees much better with the description of this, is difficult to determine. The volume bears date 1841. It differs from *P. engonata* in being swollen at the base, with less sculpture and angulation.

116. Monoceros lapilloides, Nutt.

P. (*Monoceros*) *lapilloides*, Conr. Journ. p. 265. pl. 20. f. 18 (1837).

"*M. t. fusiformi, curta, solida; anfr. superne vix concavis; sulcis spiralibus obsoletis; pallida, maculis fuscis quadratis seriebus spiralibus ornata; apertura et columella purpureis; labro marginem versus albida.*"

= *Monoceros punctulatum*, Sow. Conch. Ill. p. 4. no. 13. f. 3.

=*Monoceros punctatum*, Gray in Zool. Beech. Voy. (1839), p. 124; Reeve, Conch. Ic. sp. 2. pl. 1. f. 1 (non f. 2).

Hab. Sta. Barbara (*Nuttall*). Is. Cocos, in rupibus (*Capt. Colnett*). Mus. Brit., Nutt., Cuming, &c.

The differences between the specimens of Californian *Monoceros* are so numerous, and similar species from other quarters are so variable, that the three species here repeated from Conrad are given with very great hesitation. That the forms figured by Sowerby and Reeve are conspecific, is by no means improbable; the form *engonata* is the most aberrant, but it is by no means unapproached.

Murex, Subgenus Cerostoma, Conr.

Murex; labro ut in Monoceros (Acanthina) *dentato, dente erecto.*

117. Cerostoma Nuttalli, Conr. Journ. p. 264. pl. 20. f. 22; Jay's Cat. no. 8298.

Hab. Sta. Barbara. Mus. Nuttall, Jay.

5. Synopsis Avium Tanagrinarum.—A descriptive Catalogue of the known species of Tanagers.

By Philip Lutley Sclater, M.A., F.Z.S. etc.

Part III.—Containing the genera *Spindalis, Tanagra, Dubusia, Compsocoma, Buthraupis, Stephanophorus, Pœcilothraupis, Iridornis, Calliste, Diva, Pipridea, Chlorochrysa, Tanagrella, Glossiptila, Chlorophonia,* and *Euphonia.*

Genus XXV. Spindalis.

Spindalis, Jard. & Selby, Ill. Orn. n. s. (1836).

Rostrum Tanagræ, *sed basi latiore et culmine incurviore : alæ modicæ ; remigibus tertia et quarta longissimis, secunda quintam æquante, prima sextam paulo superante : cauda modica, quadrata : sexus dissimiles.*

1. Spindalis nigricephala.

Serinus jamaicensis, Briss. Orn. iii. 189 (*undè*),
Fringilla cana, Gm. S. N. 290 (?).
Tanagra nigricephala, Jameson, Ed. N. Phil. Journ. xix. 213 ; Gosse, Ill. B. Jam. pl. 56.
Spindalis bilineatus, Jard. & Selby, Ill. Orn. n. s. pl. 9.
Tanagra zena, Gosse, B. Jam. p. 231.
Tanagra zenoides, Des Murs, Icon. Orn. pl. 40.
Spindalis nigricephala, Bp. Consp. p. 240.

Olivacea : uropygio flavicante : capite toto cum gutture nigris, superciliis latis et stria rictali cum gula summa albis : abdomine aurescente, pectore aurantiaco, ventre imo et crisso albis : alis nigris albo marginatis : cauda nigra, rectrice una utrinque extima albo extus limbata et intus terminata : tectricibus subalaribus albis. ♀. *Olivacea, capite cinerascentiore, uropygio flavescentiore : subtus cinerea, abdomine medio aurescente : ventre imo crissoque albidis : alis caudaque nigris, illis albo limbatis.*

Long. tota 7·5, alæ 4·2, caudæ 3·2.
Hab. Jamaica (*Gosse*).
Mus. Brit., &c.

2. Spindalis multicolor.

Tanagra multicolor, Vieill. Enc. Méth. p. 776 ; Gal. Ois. i. p. 100. pl. 76.
Spindalis multicolor, Bp. Consp. p. 240.

Capite nigro : stria utrinque superciliari et maxillari albis : cervice postica aurantia, interscapulio olivaceo, dorso imo aurescenti-castaneo : alis nigris albo limbatis : tectricibus alarum minoribus castaneis : subtus, mento albo ; gula media flava, macula utrinque magna nigra ; pectore summo castaneo, inferiore cum ventre aureis ; ventre imo cum crisso albis ; rectri-

cibus nigris, duabus utrinque extimis albo variis; rostro et pedibus nigris. ♀. *Supra olivascens, uropygio flavescentiore: subtus albescens olivaceo indutus, ventre medio albo: alis nigris, albo limbatis.*

Long. tota 6·2, alæ 3·2, caudæ 2·8.

Hab. S. Domingo (*Vieillot*) (*Sallé*).

Mus. Brit.

This is a smaller bird than the *S. nigricephala*, and has the lesser wing-coverts chestnut and not black. From the true *zena* it may be distinguished by its smaller bill, the more extended and brighter yellow colour on the belly, and by its having the whole back of the neck bright yellow, not dark chestnut.

3. Spindalis zena.

Fringilla bahamensis, Briss. Orn. iii. 168; Catesby, Car. i. pl. 42.

Fringilla zena, Linn. S. N. i. 320.

Tanagra zena, d'Orb. in Sagra Hist. Cub. p. 74. pl. 11; Gray, Gen. p. 365. sp. 13 (*partim*).

Tanagra pretrei, Less. R. Z. 1839, p. 102; Cent. Zool. p. 122. pl. 45; Gray, Gen. p. 365. sp. 14.

Spindalis zena et *pretrei*, Bp. Consp. p. 248.

Spindalis pretrei, Cab. Journ. f. Orn. 1855, p. 476.

Supra nigra: cervice postica et dorso imo brunnescenti-castaneis: stria superciliari et maxillari utrinque albis: alis nigris albo limbatis: mento summo albescente: gula media flava, laterali utrinque nigra: pectore summo castaneo, inferiore aureo: ventre cinerascente, crisso albo: rectricibus nigris: harum utrinque extimis albo variegatis.

Long. tota 5·8, alæ 2·9, caudæ 2·6.

Hab. Cuba (*Ramon de la Sagra*); Bahamas (*Catesby*).

Mus. Brit.

Genus XXVI. Tanagra.

Tanagra, Linn. S. N. i. p. 316 (1766).

Thraupis, Boié, Isis, 1826, p. 974.

Rostrum subincurvum, tam altum quam latum, modice elongatum et dente finali instructum; culmine incurvo; gonyde paulo ascendente: alæ modicæ; remigibus secunda tertia et quarta longissimis, prima paulo breviore: cauda modica, quadrata: ptilosis cærulea: sexus plerumque similes, sed aves juniores diversæ.

1. Tanagra episcopus.

Episcopus avis, Briss. Orn. iii. p. 40.

Tanagra episcopus, Linn. S. N. i. p. 316; Strickl. Ann. N. H. xx. p. 332; Bp. R. Z. 1851, p. 170; Note s. l. Tang. p. 21; Sclater, P. Z. S. 1855, p. 157.

Gracula glauca, Sparm. Mus. Carls. pl. 54.

Tanagra glauca, Gray, Gen. p. 364. sp. 5.

Tanagra serioptera, Sw. An. in Men. p. 313; Schomb. Guian. iii. 670; Cab. Mus. Hein. p. 28.

Cærulescenti-cana; dorso obscuriore; uropygio cyaneo lavato: alis caudaque nigris cæruleo limbatis: tectricibus alarum minoribus albis, nitore cyaneo; majoribus autem eodem colore vix marginatis.

Long. tota 6·0, alæ 3·5, caudæ 2·4.

Hab. British Guiana (*Schomb.*); Cayenne; New Grenada, Bogota.

Mus. Brit., &c.

The *T. episcopus* of Linnæus depends upon Brisson's '*Episcopus avis*,' and from Brisson's description and locality I think there can be little doubt that the present species with white shoulders and narrow edgings to the greater coverts was intended.

The only bird likely to be confounded with it is the next following species *T. cœlestis*, which has a regular *white bar* across the wings formed by the pure white terminations of the greater coverts.

2. Tanagra cœlestis.

Tanagra cœlestis, Spix, Av. Bras. ii. p. 42. pl. 55. fig. 2; Bp. P. Z. S. 1837, p. 121; R. Z. 1851, p. 169; Note s. l. Tang. p. 20; Sclater, P. Z. S. 1854, p. 115.

Tanagra sayaca, Tsch. Wiegm. Arch. 1844, p. 286; F. P. p. 203.

Thraupis episcopus, Cab. Mus. Hein. p. 28 (note).

Cærulescenti-cana, subtus dilutior: alis caudaque nigris cæruleo limbatis: tectricibus alarum minoribus candidis, majoribus quoque albo late terminatis.

Long. tota 6·5, alæ 3·8, caudæ 2·7.

Hab. Upper Amazon, Fonteboa (*Spix*); Pintobamba (*Cast.* et *Dev.*); prov. Quixos, Ecuador.

Mus. Parisiensi.

3. Tanagra cana.

Tanagra cana, Sw. Orn. Dr. pl. 37 ♂ (adult); Strickl. Ann. N. H. xx. p. 332; Sclater, P. Z. S. 1855, p. 157.

Tanagra cœlestis, Sw. Orn. Dr. pl. 41 (juv.)?

Tanagra Swainsoni, Gray, Gen. p. 364. sp. 7.

Thraupis cana, Cab. Mus. Hein. p. 29.

Tanagra episcopus, Schomb. Guian. iii. p. 670?

Tanagra sayaca, Bp. R. Z. 1851, p. 170; Note s. l. Tang. p. 21.

Cærulescenti-cana; dorso obscuriore: uropygio cyanescente: alis caudaque nigris cæruleo limbatis: tectricibus alarum minoribus violaceo-cyaneis: majorum autem marginibus angustis intense cæruleis.

Long. tota 6·4, alæ 3·6, caudæ 2·4.

Hab. Venezuela; Trinidad; Tobago (*Kirk.*); New Grenada, Bogota; British Guiana (*Schomb.*).

Mus. Brit., &c.

These blue '*Bishop*' Tanagers are very puzzling, and I confess I am as yet quite unable to arrange them satisfactorily. After separating the true '*episcopus*' and '*cœlestis*' (which are clearly distinct) and the large South Brazilian '*cyanoptera*' (which may also be recognized without much difficulty), there remain four or five birds with different names attached to them varying a good deal in the amount of blue on the wings, but not otherwise presenting very appreciable differences. At present I am inclined to refer them to two species—a South American bird with the lesser wing-coverts of a more or less violet tint—and a Central American and Mexican species with these parts deep blue—like the South Brazilian *T. cyanoptera*. The former bird is common in collections from Bogota and Trinidad, and seems to range so far south as the Amazon at Para. The latter extends from the north coast of New Grenada through Central America as far north as the province of Vera Cruz, whence specimens have lately been brought by M. Sallé.

4. Tanagra diaconus.

Tanagra (*Aglaia*) *diaconus*, Less. R. Z. 1842, p. 175.
Calliste diaconus, Gray, Gen. p. 466. sp. 29.
Tanagra episcopus, Bp. P. Z. S. 1837, p. 116.
Tanagra diaconus, Sclater, P. Z. S. 1856, p. 142.
Tanagra cyanilia, Bp. Notes Orn. p. 62?
Thraupis glaucocolpa, Cab. Mus. Hein. p. 28?

Cærulescenti-cana: dorso toto obscuriore: uropygio vix cærulescente: alis caudaque nigris cæruleo limbatis: tectricibus alarum minoribus lætissime cæruleis.

Long. tota 6·2, alæ 3·5, caudæ 2·5.

Hab. South Mexico, Cordova (*Sallé*); Guatimala (*Bp.*) (*Constancia*); Nicaragua, Realejo (*Less.*); Chiriqui (*Bridges*); New Grenada, S. Martha (*Verreaux*).

5. Tanagra cyanoptera.

Tanagra brasiliensis varia, Briss. Orn. iii. p. 18 (?).
Tanagra sayaca, Linn. S. N. i. p. 316 (?); Max. Beitr. iii. 484 (*certè*).
Loxia virens, Linn. S. N. i. p. 303 (?).
Tanagra virens, Strickl. Ann. N. H. xx. 332 (*certè*).
Lindo saihobi, Azar. Pax. i. p. 370.
Saltator cyanoptera, Vieill. N. D. d'H. N. xiv. p. 104; Enc. Méth. p.
Tanagra episcopus, Hartl. Ind. Az. p. 6; d'Orb. Voy. p. 274; Sw. Orn. Dr. pl. 39 (adult).
Tanagra inornata, Sw. Orn. Dr. pl. 40 (juv.); Gray, Gen. p. 364. sp. 8; Bp. Consp. p. 238.
Tanagra argentata, Gray, Gen. p. 364. sp. 6.
Tanagra prælatus, Less. Tr. d'Orn. p. 463.
Tanagra cyanoptera, Bp. R. Z. 1851, p. 170; Note s. l. Tang. p. 21.

Thraupis cyanoptera, Cab. Mus. Hein. p. 29.
Thraupis sayaca, Cab. Mus. Hein. p. 28.

Major : supra virescenti-cana : subtus grisescentior : alis nigris virescenti-cæruleo limbatis : tectricibus minoribus intense cæruleis.

Long. tota 6·5, alæ 3·8, caudæ 2·8.

Hab. South-east Brazil (*Max.*); Rio Grande do Sul (*Plant*); Paraguay (*Az.*); Corrientes and Buenos Ayres (*d'Orb.*); Bolivia, Cochabamba, Valle Grande and Yungas (*d'Orb.*).

Mus. Brit., &c.

6. TANAGRA ORNATA.

Tanagra ornata, Sparm. Mus. Carls. pl. 95; Sw. Orn. Dr. pl. 42; Gray, Gen. p. 364. sp. 2; Bp. Consp. p. 238; R. Z. 1851, p. 470; Note s. l. Tang. p. 21 (*partim*).

Tanagra archiepiscopus, Desm. Tan. pl. 17; Spix, Av. Bras. ii. p. 42. pl. 55. fig. 1; Max. Beitr. iii. 481; Schomb. Reise, iii. 670.

Thraupis ornata, Cab. Mus. Hein. p. 28.

Archbishop Tanager, Lath. G. H. vi. 16.

Olivaceo-viridis : interscapulio obscuriore : pileo cæruleo : subtus fuscus cæruleo lavatus : alis caudaque nigris olivaceo limbatis : campteriis cæruleis : tectricibus alarum minoribus flavis.

Long. tota 6·5, alæ 3·8, caudæ 2·8.

Hab. South-east Brazil (*Max.*); British Guiana (*Schomb.*).

Mus. Brit., &c.

7. TANAGRA PALMARUM.

Tanagra palmarum, Max. Reise, ii. p. 76 (1821); Beitr. iii. 489.

Tanagra olivascens, Licht. Doubl. p. 32; d'Orb. Voy. p. 274; Sw. Orn. Dr. pl. 38; Schomb. Reise, iii. 670.

Thraupis olivascens, Cab. Mus. Hein. p. 28.

Tangara Evêque, femelle, Desm. Tan. pl. 16!

Tanagra ornata ♀, Bp. R. Z. 1851, p. 170, et Note s. l. Tang. p. 21!!

Tang. de Cayenne, femelle, Buff. Pl. Enl. 178. fig. 2?

Intense oleagineus : interscapulio obscuriore : tectricibus alaribus capite fere concoloribus sed paulo clarioribus : remigibus et rectricibus cum alula spuria fusco-nigris olivaceo-viridi marginatis : remigum basi albescenti-olivacea, vittam indistinctam transalarem formante.

Long. tota 7·0, alæ 3·7, caudæ 2·7.

Hab. Brazil, Para (*Wallace*); Rio Bahia, &c.; Bolivia (*d'Orb.*); British Guiana (*Schomb.*); Cayenne; Trinidad.

Mus. Brit., &c.

Prince Bonaparte, in his 'Note s. l. Tangaras,' has followed the example of some of the older authors in considering this bird as the female of *T. ornata*; but I have not the slightest doubt that it is quite a distinct species. See d'Orbigny's Voyage, p. 274, and P. Max. of Neu Wied's Beitrage, iii. 489.

8. TANAGRA MELANOPTERA.

Tanagra olivascens, Tsch. F. P. p. 204?
Tanagra palmarum, Sclater, P. Z. S. 1855, p. 177?
Tanagra melanoptera, Hartl. R. Z.

Similis T. palmarum, *sed paulo minor et coloribus lætioribus, dorso et ventre purpurascentioribus: alæ dimidio apicali nigro, plumis non viridi limbatis.*

Long. tota 6·7, alæ 3·7, caudæ 3·3.

Hab. East Peru (*Hartlaub*); New Grenada, Bogota.

Mus. Bremensi.

This is perhaps a local variety only of the common *T. palmarum*, presenting no green edgings to the primaries or secondaries beyond the green bar. I have birds from S. Martha, Trinidad and Bolivia, which seem intermediate between this and the former species.

9. TANAGRA ABBAS.

Tanagra abbas, Licht. Preis-Verz. no. 70 (1831).

Tanagra vicarius, Less. Cent. Zool. pl. 68; Gray, Gen. p. 364. sp. 4; Bp. Consp. p. 238; P. Z. S. 1837, p. 116; R. Z. 1851, p. 171; Note s. l. Tang. p. 22.

Thraupis vicarius, Cab. Mus. Hein. p. 29.

♂. *Pallide olivascens: capite cæruleo, gutture cærulescente: interscapulii pennis medialiter nigricantibus: alis caudaque nigris: speculo in basi primariorum et secundariorum flavissimo: tectricibus alarum majoribus olivaceis, minoribus cærulescentibus: rostro et pedibus nigris.*

♀. *Mari similis, sed coloribus paulo dilutioribus: gutture vix cærulescente.*

Long. tota 7·0, alæ 4·0, caudæ 2·9.

Hab. S. Mexico, Cordova (*Sallé*); Orizaba (*Botteri*); Honduras (*Dyson*); Guatimala (*Constancia*).

Mus. Brit., Derbiano, &c.

10. TANAGRA STRIATA.

L'Onglet, Buff. H. N. iv. p. 256.

Tanagra striata, Gm. S. N. i. p. 899; d'Orb. Voy. p. 275; Bp. Consp. p. 239; Hartl. Ind. Az. p. 6.

Le Noir-souci, Buff. H. N. iv. 150?

Loxia bonariensis, Gm. S. N. p. 850?

Lindo celeste oro y negro, Azar. Pax. i. p. 375.

Tanagra chrysogaster, Cuv. Règ. An. i. p. 366; Puch. Arch. Mus. Paris, vii. 344.

Aglaia striata, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 32; G. R. Gray, Darwin's Voy. Beagle, p. 97.

Tanagra darwini, Bp. P. Z. S. 1837, p. 121 (♀); Darwin's Voy. pl. 34 (♂).

Tanagra frugilegus, Tsch. Av. Consp. in Wiegm. Arch. 1844, p. 286; F. P. p. 204. pl. 17. fig. 1; Hartl. R. Z. 1849, p. 286 (♀).

Calliste frugilegus, Bp. Consp. p. 236. sp. 41.

Chrysothraupis frugilegus, Bp. R. Z. 1851, p. 143; Note s. l. Tang. p. 22.

♂. *Niger, dorso postico et abdomine aurantiacis, ventre imo in flavum transeunte: capite et gutture undique cum marginibus alarum et caudæ cæruleis: rostri ambitu nigro.*

♀. *Mari similis, sed dorso et scapularibus olivaceis, abdomine toto aurescenti-flavo.*

Avis junior. *Fusco-olivascens subtus grisescenti-albidus: capite cærulescente, uropygio flavido tincto.*

Long. tota 6·8, alæ 3·7, caudæ 2·8.

Hab. Southern Brazil, Rio Grande do Sul (*Plant*); Uruguay, Maldonado (*Darwin*); Montevideo, Buenos Ayres, Corrientes, Peru and Bolivia (*d'Orb.*); Paraguay (*Azara*); Western Peru, Lima (*Tsch.*); Western Ecuador, fruit gardens of Lima (*Tsch.*).

Mus. Brit., &c.

I believe now that there is little doubt that the olive-backed bird named *T. darwini* by Prince Bonaparte, and afterwards *T. frugilegus* by Tschudi, is really the female of *T. striata*, though at one time I thought otherwise. I have not yet seen the black-backed male from the western side of the Andes; but d'Orbigny's Bolivian collection in the Paris Museum contains examples of both sexes from the eastern side.

If the birds from all the localities given are identical, which I believe to be the case, this *Tanager* presents an instance of a remarkably extensive geographic range for a bird of this family.

11. Tanagra cyanocephala.

Aglaia cyanocephala, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 32.

Tanagra maximiliani, d'Orb. Voy. p. 276. pl. 23. fig. 2.

Tanagra cyanocephala, Gray, Gen. p. 364. sp. 11; Bp. Consp. p. 238; Tsch. Wiegm. Arch. 1844, p. 286; F. P. p. 205 (?).

Thraupis cyanocephala, Cab. Mus. Hein. p. 29?

Supra flavo-olivacea: pileo cæruleo: nucha viridescente: capitis lateribus nigris: subtus cinerea: ventre imo crissoque flavis viridi tinctis: tectricibus subalaribus pure flavis.

Long. tota 7·8, alæ 3·5, caudæ 3·1.

Hab. Bolivia, Sicasica (*d'Orb.*); Western Peru, Lima (*Tsch.*).

Mus. Brit., Paris.

12. Tanagra auricrissa.

Dubusia cyanocephala?, Sclater, P. Z. S. 1855, p. 157.

Dubusia auricrissa, Sclater, P. Z. S. 1855, p. 227.

Supra flavescenti-olivacea: capite toto et nucha cæruleis: loris nigris: subtus cærulescenti-cinerea: tectricibus subalaribus et ventre imo crissoque cum tibiis flavissimis.

Long. tota 6·5, alæ 3·6, caudæ 3·0.

Hab. New Grenada, Bogota.

Mus. Brit., Paris.

13. Tanagra olivicyanea.

Tanagra olivicyanea, Lafr. R. Z. 1843, p. 69 ; Bp. Consp. p. 238.
Tachyphonus olivicyaneus, Gray, Gen. p. 365. sp. 15.
Dubusia olivicyanea, Sclater, P. Z. S. 1855, p. 157.

Supra flavescenti-olivacea : capite undique et corpore subtus cæruleis : ventre imo crissoque olivascenti-flavis : tibiis et tectricibus subalaribus flavissimis : loris nigris.
Long. tota 7·3, alæ 2·5, caudæ 2·8.
Hab. Venezuela, Galipan alt. 8000 ft. (*Dyson*) ; New Grenada.
Mus. Brit.

Genus XXVII. Dubusia.

Dubusia, Bp. Compt. Rend. Ac. Sc. Par. xxxi. p. 424 (Sept. 1850).

Rostrum elongatum, incurvum, compressiusculum, dente finali distincto ; gonyde recta : alæ modicæ, rotundatæ, remigibus quarta et quinta longissimis : cauda longissima et rotundata : ptilosis nigra, cærulea, et flava : sexus similes.

1. Dubusia tæniata.

Tachyphonus tæniatus, Boiss. R. Z. 1840, p. 67 ; Bp. Consp. p. 237.
Arremon tæniatus, Gray, Gen. App. p. 16.
Dubusia tæniata, Sclater, Tan. Cat. Sp. p. 10 ; P. Z. S. 1855, p. 157.

Supra ex nigro-cærulescens : alis caudaque nigris, cærulescente limbatis : capite toto cum collo undique et gutture nigris, superciliis in collum utrinque elongatis et tectricibus alarum minoribus argenteo-cyaneis : abdomine flavo ; pectore summo et crisso pallide ochraceis : tibiis nigricantibus : rostro et pedibus nigris.
Long. tota 7·3, alæ 3·7, caudæ 3·7.
Hab. New Grenada, Bogota.
Mus. Brit., Paris., &c.

2. Dubusia selysia.

Tanagra selysia, Bp. Consp. p. 239.
Dubusia selysia, Bp. Compt. Rend. xxxii. p. 81.

Supra ex cinereo cærulescenti-viridescens : capite toto cum gutture nigris : fronte et superciliis latis et elongatis, collum posticum cingentibus, cum tectricibus alarum minoribus argenteo-cyaneis : remigum et rectricum marginibus cærulescentibus : abdomine flavo, pectore summo brunnescentiore, crisso ochracescentiore : rostro et pedibus nigris.
Long. tota 7·7, alæ 3·5, caudæ 3·4.
Hab. Vicinity of Quito, forests of the Andes (*Jameson*).
Mus. Lugdunensi, Joh. Gould et Gul. Jardine, Bart.

Genus XXVIII. Compsocoma.

Compsocoma, Cab. Mus. Hein. p. 140 (1850).

Rostrum rectum, elongatum, subconicum, dente finali indistincto: alæ elongatæ, remigibus secunda, tertia et quarta fere æqualibus et longissimis: cauda longa, subrotundata; pedes validi: sexus similes: ptilosis nigra, cærulea et flava.

1. Compsocoma victorini.

Tachyphonus victorini, Lafr. R. Z. 1842, p. 336; Gray's Gen. p. 365.
Tanagra victorini, Bp. Consp. p. 239.
Compsocoma victorini, Cab. Mus. Hein. p. 140.
Tachyphonus elegans, Less. Echo d. M. S. 1844; Descr. d. Mamm. et Ois. p. 349.
Tanagra flavivertex, Lafr. MS.

Olivascenti-viridis: tectricibus alarum minoribus cæruleis: primariis et rectricibus thalassino marginatis: capite nigro, tænia lata verticali cum corpore subtus flavis.
Long. tota 7·0, alæ 3·8, caudæ 2·8.
Hab. New Grenada, Bogota.
Mus. Brit. et Paris.

2. Compsocoma sumptuosa.

Tachyphonus sumptuosus, Less. Tr. d'Orn. p. 463; Puch. Arch. Mus. Par. vii. p. 379. pl. 23.
Tanagra somptuosa, Bp. Consp. p. 239.
Tachyphonus flavinucha, Tsch. F. P. p. 208.
Compsocoma elegans, Cab. Mus. Hein. p. 140.
Tanagra chrysocome, Licht. in Mus. Berol.

Atra; dorso imo olivascente: humeris cæruleis: primariis et rectricibus thalassino marginatis: macula nuchali lata et corpore subtus flavis.
Long. tota 6·5, alæ 3·5, caudæ 2·8.
Hab. Ecuador, vicinity of Quito (*Jameson*); Peru (*Tschudi et Philippi in Mus. Berol.*); Venezuela (*Levraud*).
Mus. Brit., Paris., Berolinensi.
This bird has been confounded both with the preceding and with the next following species, but may be easily distinguished by its black back and olivascent uropygium.

3. Compsocoma flavinucha.

Tachyphonus flavinucha, Lafr. et d'Orb. Mag. de Zool. 1837, p. 29; d'Orb. Voy. p. 280. pl. 21; Gray's Gen. p. 365.
Tanagra flavinucha, Bp. Consp. p. 239.
Compsocoma flavinucha, Cab. Mus. Hein. p. 140.

Niger: humeris et dorso postico cum rectricum marginibus an-

gustis cæruleis: primariis externe thalassino marginatis: vitta nuchali media et corpore toto subtus flavis.

Long. tota 6·7, alæ 3·6, caudæ 2·8.

Hab. Bolivia, prov. Yungas (*d'Orb.*).

Mus. Parisiensi et Derbiano.

The blue on the rump at once distinguishes this Bolivian bird from its three congeners.

4. Compsocoma notabilis.

Tanagra notabilis, Jard. Edinb. N. Phil. Journ. n. s. ii. p. 119; Sclater, P. Z. S. 1855, p. 84. pl. 91.

Compsocoma notabilis, Sclater, ib.

Flavo-olivacea: capite undique et mento nigris: nucha triangulariter flava: alis nigris, cæruleo marginatis, tectricibus autem summis dorso concoloribus: cauda nigra, marginibus vix cærulescentibus: subtus aurantio-flava.

Long. tota 7·2, alæ 3·7, caudæ 3·0.

Hab. Ecuador, vicinity of Quito (*Jameson*).

Mus. Gul. Jardine, Britannico, Joh. Gould.

Since Sir William Jardine received his first examples of this beautiful species, which were transmitted by Professor Jameson from the Eastern Cordilleras near Quito, Mr. Gould has obtained other specimens from the same country. Some of these latter are now in the British Museum.

Genus XXIX. Buthraupis.

Buthraupis, Cab. Mus. Hein. p. 29 (1850).

Rostrum forte, subincurvum, breve, altum, compressiusculum, dente finali distincto: alæ longæ, remigibus tertia et quarta longissimis: cauda longa et paulum rotundata: pedes validi: tarsi longi: sexus similes: ptilosis cærulea, nigra et flava.

1. Buthraupis montana.

Aglaia montana, Lafr. & d'Orb. Mag. de Zool. 1837, p. 32.

Tanagra montana, d'Orb. Voy. p. 275. pl. 23. fig. 1; Gray, Gen. p. 365; Bp. Consp. p. 239.

Buthraupis montana, Sclater, Tan. Cat. Sp. p. 10.

Supra cærulea; cervice postica valde dilutiore, argentea: capite toto undique cum gutture atris: abdomine flavo.

Long. tota 9·0, alæ 5·0, caudæ 3·4.

Hab. Bolivia, prov. Yungas (*d'Orb.*).

Mus. Parisiensi, Britannico, Derbiano.

2. Buthraupis cucullata.

Tanagra cucullata, Jard. Ill. Orn. n. s. pl. 43.

"*Tanagra montana*, d'Orb.," Less. Descr. d. Mamm. et Ois. p. 348.

Dubusia gigas, Bp. Rev. Zool. 1851, p. 171, & Note s. l. Tang. p. 22.

Buthraupis cucullata, Sclater, P. Z. S. 1855, p. 157.

Supra læte cærulea: capite toto cum gutture atris: abdomine flavo.

Long. tota 8·2, alæ 5·2, caudæ 3·6.

Hab. New Grenada, Bogota; Ecuador, vic. of Quito (*Jameson*).

This is a common species in Bogota collections. In Gray's Genera and Prince Bonaparte's Conspectus it is erroneously united to *B. eximia*, from which it is quite distinct. Sir William Jardine possesses examples transmitted by Professor Jameson from the forests of the Andes near Quito, which are rather larger than Bogota skins, and have the bill stronger and are less black on the throat.

3. Buthraupis chloronota.

Buthraupis chloronota, Sclater, P. Z. S. 1854, p. 97. pl. 64; Tan. Cat. Sp. p. 15.

Supra viridis: pileo cæruleo: alis caudaque nigris, illarum tectricibus minoribus cæruleis; majoribus et secundariis viridi limbatis: subtus flava, crisso saturatiore: gutture toto atro: rostro et pedibus nigris.

Long. tota 8·8, alæ 4·6, caudæ 3·8.

Hab. Ecuador, vic. of Quito (*Jameson*).

Mus. Gul. Jardine, Bart., et P. L. S.

4. Buthraupis eximia.

Tanagra eximia, Boiss. Rev. Zool. 1840, p. 66; Gray's Gen. p. 365; Bp. Consp. p. 239.

Tanagra (*Saltator*) *eximia*, Less. Descr. d. Mamm. et Ois. p. 346.

Buthraupis eximia, Cab. Mus. Hein. p. 29; Sclater, P. Z. S. 1855, p. 157.

Supra viridis: pileo, tectricibus alarum minoribus et dorso postico cæruleis: capitis lateribus, gutture et cervice antica nigris: abdomine flavo.

Long. tota 7·2, alæ 4·6, caudæ 3·5.

Hab. New Grenada, Bogota.

Mus. Brit., Paris., &c.

Genus XXX. Stephanophorus.

Stephanophorus, Strickl. P. Z. S. 1841, p. 30.

Rostrum breve, altum, latum; mandibulis intumidis; culmine multum incurvo, gonyde ascendente; dente finali indistincto: alæ modicæ, rotundatæ, remigibus tertia quarta et quinta fere æqualibus, quarta paulo longissima: cauda longa, rotundata: ptilosis cærulescens: sexus similes.

1. Stephanophorus leucocephalus.

Lindo azul cabeza blanca, Azar. Pax. i. p. 375.

Tanagra leucocephala, Vieill. N. D. d'H. N. xxxii. p. 408; Enc. Méth. p. 774.

Tanagra diademata, Mikan, Fl. et F. Bras. pl. 4; Temm. Pl. Col. 243.

Pyrrhula cærulea, Vieill. Gal. Ois. p. 61. pl. 54.

Nemosia diademata, Steph. Zool. xiv. p. 5.

Stephanophorus cæruleus, Strickl. P. Z. S. 1841, p. 31; Gray, Gen. p. 365; Bp. Consp. p. 234.

Stephanophorus leucocephalus, Hartl. Ind. Az. p. 6.

Niger, sericeo-cærulescens: fronte loris et gutture cum alis caudaque nigris: alarum tectricibus cæruleis, remigibus et rectricibus cæruleo anguste limbatis: pileo postico albescenti-cæruleo: vertice mediali igneo-rubra: rostro et pedibus nigris.

Long. tota 7·0, alæ 4·0, caudæ 3·4.

Hab. South Brazil, S. Paolo (*Natt.*); Uruguay; Paraguay (*Azar.*).

Mus. Brit., Paris., Berol.

Genus XXXI. Pœcilothraupis.

Pœcilothraupis, Cab. Mus. Hein. p. 30 (1850).

Anisognathus, Reich. Av. S. N. pl. 77 (1850).

Rostrum Tanagræ, *sed rectius, brevius et basi dilatata, culmine minus incurvo: alæ longæ, remigibus tertia, quarta et quinta longissimis, secunda sextam æquante: cauda longa quadrata: sexus similes: ptilosis nigra, rubro aut flavo varia.*

1. Pœcilothraupis lunulata.

Tanagra lunulata, DuBus, Bull. Ac. Brux. vi. pt. 1. p. 439 (cum fig.) (1839); Esq. Orn. pl. 4; Bp. Consp. p. 239.

Tanagra (*Euphone*?) *constantii*, Boiss. R. Z. 1840, p. 3.

Aglaia erythrotis, Jard. & Selby, Ill. Orn. n. s. pl. 36 (1840).

Tanagra erythrotis, Less. Echo d. M. S. 1843, p. 947.

Tanagra igniventris, Tsch. Wiegm. Arch. 1844, p. 287; F. P. p. 203?

Tachyphonus lunulatus, Gray's Gen. p. 365. sp. 18.

Pœcilothraupis igniventris, Cab. Mus. Hein. p. 30.

Niger: uropygio et alarum tectricibus minoribus cæruleis: macula auriculari magna et abdomine rubris, crisso nigro, interdum rubro variegato.

Long. tota 7·0, alæ 3·8, caudæ 3·4.

Hab. New Grenada, Bogota; Ecuador, elevated region of the Andes near Quito (*Jameson*); Peru, Cordilleras, alt. 10,000 feet (*Tsch.*).

Mus. Brit., Paris., &c.

This species appears certainly distinct from d'Orbigny's *P. igniventris*, with which it is sometimes united. In that bird there are

blue edgings to the wings and tail, and the crissum is wholly red. In the present species the crissum is sometimes partly red, but I have never observed any traces of blue markings on the wings or tail.

2. Pœcilothraupis igniventris.

Aglaia igniventris, d'Orb. & Lafr. Syn. Av. in Mag. de Zool. 1837, p. 32.
Tanagra igniventris, d'Orb. Voy. p. 275. pl. 25. fig. 2; Bp. Consp. p. 239 (partim).
Anisognathus igniventris, Sclater, Tan. Cat. Sp. p. 11.

Supra cærulescenti-ardesiacus: capite colloque nigris: uropygio cæruleo: alis nigris; tectricibus alarum minoribus et tectricum majorum necnon remigum rectricumque marginibus cæruleis: macula magna auriculari utrinque et ventre toto cum crisso ruberrimis.

Long. tota 6·5, alæ 3·3, caudæ 2·8.
Hab. Bolivia, prov. Apolobamba (*d'Orb.*).
Mus. Brit., Bremensi, Derbiano.

3. Pœcilothraupis lacrimosa.

Tachyphonus lacrimosus, DuBus, Esq. Orn. pl. 10; Gray's Gen. App. p. 17; Bp. Consp. p. 237.
Tanagra palpebrosa, Lafr. R. Z. 1847, p. 71; Gray's Gen. App. p. 16; Bp. Consp. p. 239.
Anisognathus lacrimosus, Sclater, Tan. Cat. Sp. p. 11.

Ardesiaco-niger: uropygio, tectricibus alarum minoribus et tectricum majorum necnon remigum rectricumque marginibus cæruleis: macula magna auriculari et parva suboculari utrinque cum corpore toto subtus aurantiis.

Long. tota 6·8, alæ 3·5, caudæ 3·0.
Hab. New Grenada, Pasto (*Lafr.*); Bogota (*Mus. Brit.*); Eastern Peru (*DuBus*).
Mus. Brit., Derbiano, Bruxell.

Genus XXXII. Iridornis.

Iridosornis, Less. Echo d. M. S. 1844, p. 80.
Pœcilornis, Hartl. R. Z. 1844, p. 369.
Euthraupis, Cab. Mus. Hein. p. 30 (1850).

Rostrum subrectum, maxime compressum, culmine incurvo, gonyde ascendente, dente finali distincto: alæ modicæ; remigibus tertia, quarta et quinta longissimis, sexta his paulo breviore et secundam superante: cauda longiuscula, rectricibus acutis: ptilosis nitens, nigra, purpurea, flava: sexus similes.

1. Iridornis dubusia.

Arremon rufivertex, Lafr. R. Z. 1842, p. 335 (err.); Gray, Gen. p. 361. sp. 3.

Iridosornis rufivertex, Less. Echo d. M. S. 1844, p. 80; R. Z. 1844, p. 431; Descr. d. Mamm. et Ois. p. 350.
Pœcilornis rufivertex, Hartl. R. Z. 1844, p. 369.
Tanagra dubusia, Bp. Consp. p. 239.
Euthraupis dubusia, Cab. Mus. Hein. p. 30.
"*Tanagra chrysolopha*, auct.," Bp. R. Z. 1851, p. 131; Note s. l. Tang. p. 6.
Iridosornis dubusia, Strickl. Cont. Orn. 1852, p. 127. pl. 94.
Iridornis dubusia, Sclater, P. Z. S. 1855, p. 157.

Nigra; dorso toto cum tectricibus alarum minoribus et pectore purpureis; abdomine sensim obscuriore: ventre imo et crisso castaneis: pileo medio nuchaque cristatis, aurantiis: alis caudaque extus purpurascente marginatis: mandibula inferiore albicante, superiore cum pedibus nigris.

Long. tota 5·5, alæ 3·0, caudæ 2·6.
Hab. New Grenada, Bogota.
Mus. Brit., &c.

2. Iridornis analis.

Tanagra analis, Tsch. in Wiegm. Arch. 1844, p. 286; F. P. p. 205. pl. 18. fig. 1; Gray, Gen. App. p. 16; Lafr. R. Z. 1847, p. 71 (?).
Calliste analis, Bp. Consp. p. 236. sp. 42.
Euthraupis analis, Cab. Mus. Hein. p. 30 (note).

Supra ex cinereo-viridescens, alis caudaque nigris viridescente limbatis: fronte et capitis lateribus nigris: pileo plumbescente: subtus ochracea, mento summo nigro, gutture toto aureo: crisso castaneo: rostro albicante, culmine nigro.

Long. tota 6·0, alæ 3·3, caudæ 2·5.
Hab. Western Peru, fruit gardens of Lima (*Tsch.*).
Mus. Bremensi.

This species and the next following are certainly not very typical *Iridornithes*, but without creating a new generic appellation for them, I hardly know at present where to place them more satisfactorily.

3. Iridornis porphyrocephala.

"*Tanagra analis*, Tsch.," Licht. in Mus. Berol.
Iridornis porphyrocephala, Sclater, P. Z. S. 1855, p. 227. pl. cx.

Supra purpurea, dorso imo et alarum caudæque marginibus viridescentibus: fronte, loris, mento summo et regione auriculari nigris: gutture late et læte aureo-flavo: pectore summo purpurascente; ventre viridescente, medialiter rufescenti-ochraceo: ano intense ferruginescenti-castaneo: tectricibus alarum inferioribus viridescentibus: rostro superiore nigro, inferiore albo.

Long. tota 5·6, alæ 3·0, caudæ 2·2.
Hab. New Grenada; Ecuador, vic. of Quito.
Mus. Berol. et Joh. Gould.

This bird may be distinguished from the preceding species by its purple head and upper back, and the greenish tinge of the lower plumage.

Genus XXXIII. Calliste.

Calliste, Boie, Isis, 1826, p. 978.
Aglaia, Sw. Zool. Journ. iii. p. 347 (1827).
Calospiza, G. R. Gray, List of Gen. 1840.
Tatao, Bp. Compt. Rend. xxxii. p. 80 (1851).
Chrysothraupis, Bp. R. Z. 1851, p. 142.
Ixothraupis, Bp. R. Z. 1851, p. 143.
Gyrola, Rchb. Av. S. N. pl. 77 (1850).
Euschemon, Sclater, Cont. Orn. 1851, p. 95.
Euprepiste, Sclater, Cont. Orn. 1851, p. 95.
Procnopis, Cab. Wiegm. Arch. 1844, p. 284.
Chalcothraupis, Bp. R. Z. 1851, p. 144.

Rostrum rectum, breve, tenue, compressiusculum, culmine incurvo, gonyde paulum ascendente, dente finali distincto : alæ elongatiores, remigibus secunda, tertia et quarta longissimis, prima breviore : cauda modica, quadrata : pedes plerumque debiles : ptilosis nitidissima : sexus adulti plerumque similes : juniores colore obscuriores.

a. *Tatao.*

1. Calliste tatao.

Tangara du Brésil, Buff. Pl. Enl. 127. fig. 1.
Tangara, Buff. Pl. Enl. 7. fig. 1 (fig. pess.) ; Briss. Orn. iii. p. 3.
Le Septicolor, Buff. H. N. iv. 278.
Tanagra tatao, Linn. S. N. i. 315 ; Kittl. Küpf. d. Vög. pl. 31. fig. 3 ; Vieill. Enc. Méth. p. 778 ; Hayes, Osterly Park, p. 32 ; d'Orb. Voy. p. 270 ?
Aglaia tatao, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 32 ?
Aglaia paradisea, Sw. Class. Birds, ii. p. 286.
Callispiza tatao, Schomb. Reise, iii. p. 669 ; Cab. Mus. Hein. p. 26.
Tatao paradisea, Bp. Note s. l. Tang. p. 15 ; Rev. Zool. 1851, p. 141.
Calliste tatao, Gray, Gen. B. p. 366. sp. 13 ; Bp. Consp. p. 234. sp. 13 ; Sclater, Jard. Cont. Orn. 1851, p. 50.
Tangara septicolor, Desm. Tan. pl. 1.
The Paradise Tanager, Lath. G. H. vi. p. 27.
Titmouse of Paradise, Edwards, Glean. t. 349.

Supra velutino-atra : dorsi postici parte superiore coccinea, inferiore aurea : pilei summi et capitis laterum pennis coarctatis et squamatis, colore lætissime viridibus : fronte et oculorum ambitu anguste nigris : tectricibus alarum summis et corpore subtus splendide cæruleis ; gutture et pectore summo cum tectrici-

bus alarum mediis et marginibus remigum externarum purpureis : ventre medio crissoque atris.

♀. *Mari similis, sed coloribus minus vividis ; dorso postico omnino aureo.*

Long. tota 4·7, alæ 2·7, caudæ 2·0.

Hab. Cayenne ; Brit. Guiana (*Schomb.*) ; Upper Rio Negro (*Wallace*).

Mus. Brit., &c.

2. Calliste cœlicolor.

Calliste cœlicolor, Sclater, Cont. Orn. 1851, p. 51 ; P. Z. S. 1855, p. 157.

Supra velutino-atra : dorsi postici parte superiore coccinea, inferiore aurea : pilei usque ad nucham et capitis laterum pennis coarctatis et squamatis, colore lætissime viridibus : fronte angustissima et oculorum ambitu nigris : tectricibus alarum summis et corpore subtus splendide cæruleis : gutture cum tectricum alarum mediarum et remigum externarum marginibus purpureis : ventre medio et crisso atris.

♀. *Mari similis, sed coloribus obscurioribus et dorso postico omnino flavo.*

Long. tota 5·0, alæ 3·1, caudæ 2·1.

Hab. New Grenada, Bogota.

Mus. Brit.

3. Calliste yeni.

Aglaia chilensis, Vig. P. Z. S. 1832, p. 3 ; Jard. & Selb. Ill. Orn. n. s. pl. 25.

Aglaia yeni, Lafr. & d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 31.

Tanagra yeni, d'Orb. Voy. p. 270. pl. 24. fig. 2.

Callospiza yeni, Tsch. Wiegm. Arch. 1844, p. 286 ; Tsch. F. P. p. 201.

Calliste chilensis, Gray, Gen. p. 366. sp. 14.

Calliste yeni, Bp. Consp. p. 234 ; Sclater, Cont. Orn. 1851, p. 51.

Tatao yeni, Bp. R. Z. 1851, p. 141 ; Note s. l. Tang. p. 15.

Supra velutino-atra : dorso postico toto ruberrimo : pilei et capitis laterum pennis coarctatis et squamatis, colore lætissime viridibus : oculorum ambitu anguste nigro : tectricibus alarum summis et corpore subtus splendide cæruleis ; gutture et tectricum alarum mediarum et remigum externarum marginibus purpureis : ventre medio et crisso nigris.

Long. tota 5·2, alæ 2·9, caudæ 2·2.

Hab. Bolivia, Yuracares and Yungas (*d'Orb.*) ; Eastern Peru (*Tsch.*) ; River Ucayali (*Hawxwell*).

Mus. Brit., &c.

b. *Calliste.*

4. Calliste tricolor.

Tang. cayanensis varia chlorocephalos, Briss. Orn. vi. App. p. 59.
Tang. varié à tête verte, Buff. Pl. Enl. 32. fig. 1 (♂).
Le Tricolor, Buff. H. N. iv. 276 (partim).
Tanagra tricolor, Gm. S. N. i. 891; Vieill. Enc. Méth. p. 779; Temm. Pl. Col. 215. fig. 1 (♀).
Tanagra tatao, Max. Beitr. iii. 459.
Calliste tricolor, Gray, Gen. p. 366. sp. 1; Bp. Consp. p. 234; Sclater, Cont. Orn. 1851, p. 51.
Callispiza tricolor, Cab. Mus. Hein. p. 26.
Tatao tricolor, Bp. R. Z. 1851, p. 141; Note s. l. Tang. p. 16.
Tatao tricolor mâle, Desm. Tan. pl. 3.
Green-headed Tanager, Lath. G. H. vi. p. 24.

Læte viridis: rostri ambitu et collo antico interscapulioque nigris: capite undique et vitta gulam summam transeunte læte cærulescenti-viridibus: pectore cæruleo: dorsi postici parte superiore flammea: tectricibus alarum superioribus purpureis: rostro et pedibus nigris.

♀. *Mari similis, sed coloribus omnibus obscurioribus; dorso postico flavo.*

Long. tota 5·2, alæ 2·7, caudæ 2·1.
Hab. South-eastern Brazil (*P. Max.*).
Mus. Brit., &c.

5. Calliste fastuosa.

Tanagra fastuosa, Less. Cent. Zool. pl. 58. p. 184.
Calliste fastuosa, Gray, Gen. p. 366. sp. 20; Bp. Consp. p. 235; Sclater, Cont. Orn. 1851, p. 52.
Tatao fastuosus, Bp. R. Z. 1851, p. 142; Note s. l. Tang. p. 16.

Fronte, mento, gutture medio et interscapulio velutino-nigris: dorso postico aurantiaco: capite et cervice tota cum vitta gulam transeunte lætissime cæruleo-viridibus: alis caudaque nigris, purpureo marginatis: tectricibus alarum minoribus lætissime cæruleis: secundariarum trium ultimarum marginibus externis pallide aureis: abdomine toto purpureo, pectore lilacescente.

♀. *Mari similis, sed coloribus obscurioribus.*

Long. tota 5·5, alæ 2·8, caudæ 2·0.
Hab. Eastern Brazil, Pernambuco.
Mus. Brit., Paris., &c.

6. Calliste festiva.

Tang. cayanensis varia cyanocephalos, Briss. Orn. vi. App. p. 62.
Tang. à tête bleue de Cayenne, Buff. Pl. Enl. 33. fig. 2 (♂).
Le Tricolor, Buff. H. N. iv. p. 276 (partim).
Tanagra tricolor, var. β, Gm. S. N. 892; Don. Nat. Rep. pl. 23.
Tanagra festiva, Shaw, Nat. Misc. pl. 537.

Tanagra cyanocephala, Vieill. N. D. d'H. N. xxxii. p. 425 ; Enc. Méth. p. 780 ; Temm. Pl. Col. 215. fig. 2 (♀).
Tanagra trichroa, Licht. Verz. d. Doubl. p. 30 ; Kittl. Küpf. d. Vög. pl. 31. fig. 1.
"*Tanagra rubricollis*, Temm.," Max. Beitr. iii. 456.
Aglaia cyanocephala, Sw. Orn. Dr. pl. 5.
Calliste festiva, Gray, Gen. p. 366. sp. 2 ; Bp. Consp. p. 234 ; Sclater, Cont. Orn. 1851, p. 51.
Callispiza festiva, Cab. Mus. Hein. p. 26.
Tatao festiva, Bp. R. Z. 1851, p. 142 ; Note s. l. Tang. p. 16.
Tangara tricolor femelle, Desm. Tan. pl. 4.
Green-headed Tanager, var. A, Lath. G. H. vi. p. 25.

Læte viridis : rostri ambitu et interscapulio nigris : pileo toto nuchaque cum gutture cæruleis : oculorum ambitu et pilei cærulei margine antica thalassinis : regione auriculari cum collo laterali et postico late rubris : alis caudaque nigris viridi limbatis ; tectricibus alarum minoribus nigris aurantio terminatis : alis caudaque nigris.
♀. *Mari similis, sed coloribus dilutioribus ; dorso viridi nigro variegato.*
Long. tota 5·0, alæ 2·5, caudæ 1·9.
Hab. South-eastern Brazil (*P. Max.*).
Mus. Brit.

7. Calliste cyaneiventris.

Tanagra cyanoventris, Vieill. N. D. d'H. N. xxxii. p. 426 ; Enc. Méth. p. 781.
Tanagra elegans, Max. Reise n. Bras. i. p. 187.
Tanagra citrinella, Temm. Pl. Col. 42. fig. 2 ; Max. Beitr. iii. p. 464.
Aglaia citrinella, Sw. Orn. Dr. pl. 6.
Calliste citrinella, Gray, Gen. p. 366. sp. 3 ; Bp. Consp. p. 234.
Callispiza citrinella, Cab. Mus. Hein. p. 26.
Chrysothraupis citrinella, Bp. R. Z. 1851, p. 142 ; Note s. l. Tang. p. 17.
Calliste cyanoventris, Sclater, Cont. Orn. 1851, p. 54.

Supra aureo-flava ; dorso superiore et medio nigro variegatis : alis caudaque nigris viridi limbatis : infra nitide cyanea, mento summo et collo antico nigris : vitta gulam summam transeunte aurea, capite concolore : ventre medio crissoque ochracescenti-flavis viridi perfusis : rostro nigro : pedibus fuscis.
♀. *Mari similis, sed coloribus dilutioribus.*
Long. tota 5·25, alæ 2·7, caudæ 2·1.
Hab. South-eastern Brazil (*Temm.*).
Mus. Brit.

8. Calliste thoracica.

Tanagra thoracica, Temm. Pl. Col. 42. fig. 1.

Calliste thoracica, Gray, Gen. p. 366. sp. 4; Bp. Consp. p. 234; Sclater, Cont. Orn. 1851, p. 54.

Callispiza thoracica, Cab. Mus. Hein. p. 26.

Chrysothraupis thoracica, Bp. R. Z. 1851, p. 142; Note s. l. Tang. p. 17.

Supra nitide viridis nigro variegata: fronte nigra: regione oculari et vitta pileum anticum transeunte thalassino-cyaneis: gutture et pectore toto aurantio-flavis, plaga in gutture medio cum mento summo nigris: alis caudaque nigris viridi limbatis; tectricibus alarum summis nigris aurantio terminatis: abdomine nitide viridi, hypochondriis cyaneo tinctis: ventre medio et crisso flavicantibus.

♀. *Mari similis, sed coloribus dilutioribus.*

Long. tota 5·5, alæ 2·8, caudæ 2·4.

Hab. South-eastern Brazil (*Natt.*).

Mus. Brit., Paris., &c.

9. Calliste schranki.

Tanagra schrankii, Spix, Av. Bras. ii. p. 38. pl. 51 (♂) et (♀); d'Orb. Voy. p. 270. pl. 24. fig. 1.

Aglaia schrankii, Lafr. & d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 31; Bp. P. Z. S. 1837, p. 122.

Aglaia melanotis, Sw. An. in Men. p. 355 (♀).

Calliste schrankii, Gray, Gen. p. 366. sp. 17; Bp. Consp. p. 235. sp. 18; Sclater, Cont. Orn. 1851, p. 54; P. Z. S. 1854, p. 115.

Callospiza schrankii, Tsch. Wiegm. Arch. 1844, p. 286, et F. P. p. 201.

Chrysothraupis schrankii, Bp. R. Z. 1851, p. 143; Note s. l. Tang. p. 17.

Læte viridis: interscapulii et secundariarum ultimarum pennis nigris, viridi marginatis: alis caudaque nigris cærulescenti-viridi limbatis: fronte lata et capitis lateribus nigris: pileo postico aureo: dorso imo cum pectore et ventre summo mediaeliter flavis: rostro et pedibus nigris.

♀. *Mari similis, sed coloribus minus vividis: capite viridi: uropygio flavicante.*

Long. tota 4·6, alæ 2·7, caudæ 1·7.

Hab. East Peru (*Tsch. & Hawxwell*); prov. Maynas (*Pöppig*); Ecuador, prov. Quixos; Bolivia, Yuracares (*d'Orb.*).

Mus. Brit., Paris.

c. *Ixothraupis.*

10. Calliste punctata.

Tangara viridis indica punctata, Briss. Orn. iii. 19.

Tang. verd tacheté des Indes, Buff. Pl. Enl. 133. fig. 1.

Le Syacou, Buff. H. N. iv. p. 288.

Tanagra punctata, Linn. S. N. i. 316.

Calliste punctata, Gray, Gen. p. 366. sp. 12; Bp. Consp. p. 234. sp. 8; Sclater, Cont. Orn. 1851, p. 55.
Callispiza punctata, Cab. Mus. Hein. p. 26.
Ixothraupis punctata, Bp. R. Z. 1851, p. 143; Note s. l. Tang. p. 18.
Spotted Green Titmouse, Edwards, Glean. vi. pl. 262.
Tangara syacou, Desm. Tan. pl. 8 et 9.

Supra læte viridis: capitis et dorso superioris pennis medialiter nigris viridi marginatis: alis caudaque nigris viridi limbatis: loris nigris: fronte angusta et ciliis oculorum albescentibus: subtus alba, viridi tincta et nigro guttata, lateraliter paulum flavescens: ventre medio albo: hypochondriis viridibus: crisso flavicante: rostro et pedibus nigris.
♀. *Minor et obscurior: guttis corporis inferi pæne obsoletis.*
Long. tota 4·6, alæ 2·5, caudæ 1·6.
Hab. Cayenne (*Buff.*).
Mus. Brit.

11. Calliste guttata.

Spotted Emerald Tanager, Lath. G. H. vi. 19.
Callospiza punctata, Cab. in Schomb. Reise, iii. p. 669.
Callispiza guttata, Cab. Mus. Hein. p. 26.
Calliste guttulata, Bp. Compt. Rend. Ac. Sc. Par. xxxii. p. 76; Sclater, P. Z. S. 1855, p. 157.
Calliste chrysophrys, Sclater, Cont. Orn. 1851, p. 24. pl. 69. fig. 2, et p. 54.
Ixothraupis guttulata, Bp. R. Z. 1851, p. 144; Note s. l. Tang. p. 18.

Supra aurescenti-viridis: capitis totius et dorsi superioris pennis medialiter nigris, viridi marginatis: fronte et regione oculari aureis: alis caudaque nigris, hac viridi, illis autem cærulescenti-viridi latius marginatis: loris nigris: subtus alba, cærulescente tincta et guttis rotundis præcipue in pectore perfusa: his maculis in gula minoribus: ventre medio albescente: lateribus et crisso flavo-virescentibus: rostro et pedibus nigris.
♀. *Paulo minor et coloribus minus claris.*
Hab. British Guiana (*Schomb.*); Venezuela; Trinidad; New Grenada, Bogota; Ecuador (*Bourcier*).

12. Calliste xanthogastra.

Calliste xanthogastra, Sclater, Cont. Orn. 1851, p. 23 & 55; P. Z. S. 1854, p. 115, et 1855, p. 157.
Ixothraupis chrysogaster, Bp. Rev. Zool. 1851, p. 144; Note s. l. Tang. p. 18.

Læte viridis: capitis et corporis inferi ad medium pectus pennis medialiter nigris, viridi late circumcinctis: interscapulii, alarum et caudæ plumis nigris, cærulescenti-viridi late marginatis: ventre medio flavo: lateribus viridibus: tectricibus subalaribus albis: rostro et pedibus nigris.
Long. tota 4·2, alæ 2·5, caudæ 1·5.
Hab. New Grenada, Bogota; Eastern Peru; Ecuador, prov. Quixos.

13. Calliste graminea.

Tang. tacheté de Cayenne, Buff. Pl. Enl. 301. fig. 1.
Le Syacou, Buff. H. N. iv. p. 288 (partim).
Tangara petit Syacou, Less. Trait. d'Orn. p. 462.
Tanagra graminea, Spix, Av. Bras. ii. p. 40. pl. 53. fig. 2 (♀).
Calliste virescens, Sclater, Cont. Orn. 1851, p. 22. pl. 69. fig. 1, et p. 56.
Ixothraupis pusilla, Bp. Rev. Zool. 1851, p. 144; Note s. l. Tang. p. 18.
Calliste graminea, Sclater, Tan. Cat. Sp. p. 11. sp. 17.

Viridis: alis caudaque nigris; harum marginibus externis cum interscapulio toto cærulescentibus: ventre medio vix flavescente.
♀. *Viridis fere unicolor: alis caudaque fusco-nigris, viridi limbatis; ventre flavescente.*
Long. tota 3·9, alæ 2·3, caudæ 1·5.
Hab. Cayenne; Lower Amazon.
Mus. Brit., Bruxell.

14. Calliste rufigularis.

Tanagrella rufigula, Bp. Compt. Rend. Ac. Sc. Par. xxxii. p. 77; Rev. Zool. 1851, p. 130; Note s. l. Tang. p. 4.
Calliste rufigula, Sclater, Cont. Orn. 1851, p. 55.

Supra niger: interscapulii, alarum et caudæ pennis anguste viridi marginatis: dorso imo pure pallido viridi: subtus virescenti-albida: pectoris et laterum pennis nigro guttatis; gula cuprescenti-rufa: abdomine medio albido; crisso ochracescente: tectricibus subalaribus albis: rostro nigro, basi plumbescenti-albida: pedibus nigris.
Long. tota 4·5, alæ 2·7, caudæ 1·7.
Hab. Ecuador, vic. of Quito (*Bourcier*) (*Jameson*).
Mus. Paris.

d. *Chrysothraupis.*

15. Calliste aurulenta.

T. (*Aglaia*) *aurulenta*, Lafr. R. Z. 1843, p. 290, et 1854, p. 207.
Calliste aurulenta, Gray's Gen. App. p. 17; Bp. Consp. p. 235; Sclater, Cont. Orn. 1851, p. 52 (partim); P. Z. S. 1855, p. 157.
Chrysothraupis aurulenta, Bp. R. Z. 1851, p. 142; Note s. l. Tang. p. 16.

Aurea, pileo aurantio tincto: interscapulio nigro variegato: loris et regione auriculari nigerrimis: alis caudaque nigris: alarum tectricibus omnibus et secundariis viridescenti-aureo limbatis; rectricum marginibus externis eodem colore vix tinctis: subtus aureo-flava: rostro et pedibus nigris.
Long. tota 5·0, alæ 2·8, caudæ 1·9.
Hab. New Grenada, Bogota.
Mus. Brit.

16. Calliste sclateri.

Calliste aurulenta, Sclater, Cont. Orn. 1851, p. 52.
Calliste sclateri, Lafr. Rev. Zool. 1854, p. 207; Sclater, P. Z. S. 1855, p. 157.

Supra lætissime aurea, regione oculari citrino-flava : loris et regione auriculari nigerrimis : dorso nigro variegato : alis caudaque nigris : alarum tectricibus omnibus et secundariis viridescenti-aureo limbatis : rectricum mediarum marginibus externis eodem colore vix tinctis : subtus saturate brunnescenti-aurea : rostro et pedibus nigris.

Long. tota 5·5, alæ 3·1, caudæ 2·1.
Hab. New Grenada, Bogota.
Mus. Lafresnayano.

17. Calliste pulchra.

Calospiza pulchra, Tsch. Av. Consp. in Wiegm. Arch. 1844, p. 285; F. P. p. 200. pl. 18. fig. 2; Gray, Gen. App. p. 17; Bp. Consp. p. 235. sp. 32; Lafr. R. Z. 1854, p. 206.

Aureo-flava : interscapulio limonaceo-flavo et nigro variegato : fronte angusta, mento summo, loris et regione auriculari cum alis caudaque nigerrimis : alarum tectricibus et secundariis viridescenti-aureo anguste limbatis : gutture et cervice antica castaneo-aureis : rostro et pedibus nigris.

Long. tota 5·75, alæ 3·3, caudæ 2·4.
Hab. Eastern wood-region of Peru (*Tsch.*); Quixos in Ecuador.
Mus. Neuchatel et Joh. Gould.
This bird may be distinguished from the two preceding by its larger size and chestnut throat.

18. Calliste arthusi.

Tanagra arthus, Less. Ill. Zool. pl. 9; Gray, Gen. p. 21.
Calliste arthusi, Bp. Consp. p. 235. sp. 36; Sclater, Cont. Orn. 1851, p. 53.
Chrysothraupis arthus, Bp. R. Z. 1851, p. 442; Note s. l. Tang. p. 16.

Supra lætissime aurea, rostri ambitu et regione auriculari nigris : interscapulio nigro variegato : alarum tectricibus et secundariis nigris virescenti-aureo limbatis : subtus castanea, gutture aureo : ventre medio pallide flavo.

Long. tota 5·7, alæ 3·0, caudæ 2·3.
Hab. Venezuela; Cariaco (*Dyson*), Caraccas (*Levraud*).
Mus. Brit., Parisiensi.

19. Calliste icterocephala.

Calliste icterocephala, Bp. Compt. Rend. Ac. Sc. Par. xxxii. p. 76; Sclater, Cont. Orn. 1851, p. 53. pl. 70. fig. 1.
Chrysothraupis icterocephala, Bp. Note s. l. Tang. p. 17; R. Z. 1851, p. 445.

Flava : interscapulio et tectricibus alarum summis nigro variegatis :

alis caudaque nigris aurescenti-viridi limbatis : gutture et torque cervicali undique pallide virescenti-argenteis.

Long. tota 5·0, alæ 2·8, caudæ 1·9.

Hab. Ecuador, valley of Punta playa (*Bourcier*).

Mus. Parisiensi.

e. *Euschemon.*

20. Calliste vitriolina.

Callispiza vitriolina, Cab. Mus. Hein. p. 28.

Calliste ruficapilla, Sclater, Cont. Orn. 1851, p. 61 ; P. Z. S. 1855, p. 158.

Calliste vitriolina, Bp. R. Z. 1851, p. 159 ; Note s. l. Tang. p. 13.

Ex griseo nitenti-viridescens : pileo rufo : capitis lateribus nigris : alis caudaque nigris cærulescenti-viridi limbatis : subtus dilutior, ventre albidiore : crisso pallide rufescente.

♀. *Mari similis, sed coloribus dilutioribus et marginibus alarum viridescentibus.*

Long. tota 5·3, alæ 3·0, caudæ 2·2.

Hab. New Grenada, Bogota.

Mus. Brit., &c.

21. Calliste cayana.

Tang. cayanensis viridis, Briss. Orn. iii. 21.

Tanagra cayana, Linn. S. N. i. 315 ; Vieill. Enc. Méth. p. 777.

Fringilla autumnalis, Linn. S. N. i. p. 320 ?

Calliste cayana, Gray, Gen. p. 366. sp. ; Bp. Consp. p. 234. sp. 1 ; R. Z. 1851, p. 140 ; Note s. l. Tang. p. 14.

Calospiza cayana, Schomb. Reise, iii. p. 670.

Callispiza cayana, Cab. Mus. Hein. p. 27.

Calliste chrysonota, Sclater, Cont. Orn. 1850, p. 50. pl. 51, et 1851, p. 62.

Moineau à tête rousse de Cayenne, Buff. Pl. Enl. 201. fig. 2 (*fig. pess.*).

Tang. à tête rousse de Cayenne, Buff. Pl. Enl. 290. fig. 1.

Le Passevert, Buff. H. N. iv. 273 ; Desm. Tan. pl. 10, 11.

The rufous-headed Tanager, Lath. G. H. vi. p. 30.

Flavescenti-ochracea : pileo cuprescenti-rufo : capitis lateribus nigris : alis nigris cærulescenti-viridi limbatis : gutture toto cærulescenti-nigro perfuso.

♀. *Obscurior : marginibus alarum et caudæ viridescentibus.*

Long. tota 4·8, alæ 2·7, caudæ 1·5.

Hab. Cayenne.

Mus. Brit.

22. Calliste cyanolæma.

Calliste cyanolaima, Bp. Note s. l. Tang. p. 14 ; R. Z. 1851, p. 140.

Calliste cyanolæma, Sclater, Tan. Cat. Sp. p. 12. sp. 21.

Nitentissime flavescenti-ochracea : pileo cuprescenti-rufo : capitis

lateribus nigris · alis caudaque nigris viridescenti-cæruleo limbatis : gutture toto cyaneo relucente.

♀. *Obscurior : marginibus alarum et caudæ viridescentibus.*

Long. tota 5·5, alæ 2·8, caudæ 2·1.

Hab. Interior of Venezuela, Rio Negro; Trinidad (?).

Mus. P. L. S.

Obs. Vix a *Calliste cayana* distincta, et crassitie paulo majore et coloribus clarioribus solum dignoscenda.

23. Calliste cucullata.

Aglaia cucullata, Sw. Orn. Dr. pl. 7.

Calliste cucullata, Gray's Gen. p. 366. sp. 9; Bp. Consp. p. 234; Sclater, Cont. Orn. 1851, p. 63; Bp. R. Z. 1851, p. 14; Note s. l. Tang. p. 14.

Supra flavescenti-ochracea, viridescente tincta : pileo nigro-cinnamomeo : infra rufescentior; pectore cærulescente : alis caudaque nigris viridi limbatis : rostro validiore.

Long. tota 5·0, alæ 2·9.

Hab. Venezuela, Angostura.

Mus. Parisiensi, Stricklandico.

This is a scarce bird in collections, but I have no doubt about its being a good species. It is distinguishable from all its affines by its peculiar dark cinnamon-coloured head.

24. Calliste flava.

Tang. brasiliensis flava, Briss. Orn. iii. 39.

Tanagra flava, Gm. i. p. 896; Lath. Ind. Orn. i. p. 431; Max. Beitr. iii. 467.

Lindo bello, Azara, Pax. i. p. 387.

Tanagra formosa, Vieill. N. D. d'H. N. xxxii. p. 407; Enc. Méth. p. 773.

Tanagra chloroptera, Vieill. N. D. d'H. N. xxxii. p. 407.

Aglaia flava, Sw. Zool. Ill. n. s. pl. .

Calliste flava, Gray, Gen. p. 366. sp. 15; Bp. Consp. p. 234; Sclater, Cont. Orn. 1851, p. 61; Bp. R. Z. 1851, p. 140; Note s. l. Tang. p. 14.

Callispiza flava, Cab. Mus. Hein. p. 27.

Yellow Tanager, Lath. G. H. p. 22.

Clare ochraceo-flava : alis caudaque nigris cærulescenti-viridi limbatis : corpore subtus a mento ad ventrem medialiter nigro.

♀. *Ochraceo-flava, obscurior : dorso viridescente tincto : alis caudaque nigris viridi limbatis : gutture et pectore mediali albidis nigricante mixtis.*

Long. tota 5·8, alæ 2·9, caudæ 2·0.

Hab. South-eastern Brazil (*Max.*); Pernambuco (*Sw.*); Paraguay (*Azara*).

Mus. Brit., &c.

25. Calliste pretiosa.

Lindo precioso, Azara, Pax. i. p. 381.

Aglaia cayana, d'Orb. et Lafr. Syn. Av. in Mag. de Zool. 1837, p. 32?

Tanagra cayana, d'Orb. Voy. p. 272?

Calliste cayana, Hartl. Ind. Az. p. 6.

Tanagra gyrola, Max. Beitr. iii. 471 (partim); DuBois, Orn. Gal. pl. 87 (♂).

Callispiza preciosa, Cab. Mus. Hein. p. 27.

Calliste castanonota, Sclater, Cont. Orn. 1851, p. 63.

Calliste pretiosa, Bp. R. Z. 1851, p. 159; Note s. l. Tang. p. 14.

Nitenti-flavescenti-ochracea: capite toto cum cervice postica et dorso summo cuprescenti-rufis: remigibus rectricibusque nigris, cæruleo limbatis: loris nigris: subtus viridescens, abdomine medio cærulescente, ventre imo, crisso et tibiis pallide rufis.

♀. *Viridescens, plumarum marginibus obscurioribus: alis caudaque nigris viridi limbatis: pileo cuprescente: subtus dilutior, crisso rufescente.*

Long. tota 6·3, alæ 3·3, caudæ 2·3.

Hab. Southern Brazil, Rio Grande do Sul (*Plant*); Paraguay (*Azara*); Monte Video (*Selloe*); Curytiba (*Natt.*); Corrientes (*d'Orb.*).

Mus. Derbiano, Heineano, Bruxell., Vindob., Berol.

26. Calliste melanonota.

Tanagra peruviana, Desm. Tan. pl. 11 (♂); Vieill. Enc. Méth. p. 778.

Tanagra gyrola, Max. Beitr. iii. 471 (partim); DuBois, Orn. Gal. pl. 87. p. 134 (♀).

Aglaia melanota, Sw. Orn. Dr. pl. 31 (♂), 43 (♀).

Calliste peruviana, Gray, Gen. p. 366. sp. 8; Bp. Consp. p. 234; R. Z. 1851, p. 140; Note s. l. Tang. p. 14; Sclater, Cont. Orn. 1851, p. 64.

Nitenti-flavescenti-ochracea: capite toto cum cervice postica saturate cupreo-rufis: interscapulio nigerrimo: remigibus rectricibusque nigris cærulescente limbatis: loris nigris: subtus clare viridis, ventre vix cærulescente: ventre imo, crisso et tibiis pallide rufis.

♀. *Supra viridis, interscapulio vix obscuriore: pileo et cervice postica cuprescentibus: loris nigris: subtus viridescens, ventre medio flavescenti-albido, imo cum crisso paululum rufescente.*

Long. tota 5·8, alæ 3·0, caudæ 2·0.

Hab. South-east Brazil (*Max.*).

Mus. Brit., &c.

I have not continued to employ Desmarest's name for this bird, because it is not found in Peru—but in South-eastern Brazil—a very different zoological province.

27. Calliste cyanoptera.

Aglaia cyanoptera, Sw. Orn. Dr. pl. 8.

Tanagra argentea, Lafr. R. Z. 1843, p. 69.

Calliste cyanoptera, Gray, Gen. p. 366. sp. 10; Bp. Consp. p. 234. sp. 15; R. Z. 1851, p. 140; Note s. l. Tang. p. 15; Sclater, Cont. Orn. 1851, p. 64.

Callispiza cyanoptera, Cab. Mus. Hein. p. 27.

Argentescenti-ochracea, viridi micans: capite undique cum gutture alis caudaque nigris: harum marginibus angustis clare cæruleis.

♀. *Viridescens, uropygio et ventre subtus flavescentioribus, capite obscuriore et cærulescente tincto: gutture albido: alis caudaque nigris viridi limbatis.*

Long. tota 5·5, alæ 3·0, caudæ 2·0.

Hab. Venezuela, Caraccas (*Levraud*).

Mus. Paris.

f. *Gyrola*.

28. Calliste gyrola.

Tang. peruviana viridis, Briss. Orn. iii. p. 23.

Tanagra gyrola, Linn. S. N. i. 315; Lath. Ind. Orn. i. 427; Vieill. Enc. Méth. p. 778.

Aglaia chrysoptera, Sw. An. Men. p. 356.

Calliste gyrola, Gray, Gen. p. 366. sp. 5; Bp. Consp. p. 234; Sclater, Cont. Orn. 1851, p. 67.

Callispiza gyrola, Cab. Mus. Hein. p. 28.

Gyrola chrysoptera, Bp. R. Z. 1851, p. 139; Note s. l. Tang. p. 13.

Le Rouverdin, Buff. H. N. iv. 286.

Tang. du Pérou, Buff. Pl. Enl. 133. fig. 2.

Tang. rouverdin, mâle, Desm. Tan. pl. 6.

Red-headed Greenfinch, Edwards, Glean. pl. 23.

Red-headed Tanager, Lath. G. H. vi. 15.

Clare viridis: capite et mento summo castaneis: campterio aurescente: abdomine medio cærulescente: tibiis pallide rufis.

Long. tota 4·5, alæ 2·7, caudæ 1·8.

Hab. Cayenne; Brit. Guiana (*Sw.*).

Mus. Brit.

29. Calliste gyroloides.

Aglaia gyrola, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 32.

Tanagra gyrola, d'Orb. Voy. p. 272.

Aglaia peruviana, Sw. An. in Men. p. 356.

Callospiza gyrola, Tsch. Wiegm. Arch. 1844, p. 286; F. P. p. 202.

Calliste cyanoventris, Gray, Gen. p. 366. sp. 19.

Aglaia gyroloides, Lafr. R. Z. 1847, p. 277.

Calliste gyroloides, Gray, Gen. App. p. 17; Bp. Consp. p. 234; Sclater, Cont. Orn. 1851, p. 67; P. Z. S. 1854, p. 115; 1855, p. 158; Cassin, Rep. U.S. Astron. Exp. ii. p. 182. pl. xix. fig. 1.

Gyrola cyanoventris, Bp. R.Z. 1851, p. 139; Note s. l. Tang. p. 13.

Clare viridis: capite et mento summo castaneis: torque nuchali et campteriis aurescentibus: dorso postico et abdomine toto cæruleis: tibiis pallide rufis.

Long. tota 5·0, alæ 2·9, caudæ 1·8.

Hab. Chiriqui, vic. of David (*Bridges*); New Grenada, Bogota; Ecuador, prov. Quixos; Eastern Peru (*Tsch.*); Bolivia, Yuracares (*d'Orb.*).

Mus. Brit., Paris., &c.

30. Calliste desmaresti.

Tang. rouverdin, femelle, Desm. Tan. pl. 7 (?).

Tanagra gyrola, Sw. Zool. Ill. n. s. pl. 28.

Calliste desmaresti, Gray, Gen. p. 366. sp. 6; Sclater, Cont. Orn. 1851, p. 67; Cassin, Rep. U.S. Astr. Exp. ii. p. 182. pl. xix. fig. 2.

Aglaia viridissima, Lafr. R. Z. 1847, p. 277.

Gyrola viridissima, Bp. R. Z. 1851, p. 139; Note s. l. Tang. p. 13.

Calliste viridissima, Bp. Consp. p. 234.

Clare viridis: capite toto et mento summo castaneis: tibiis pallide rufis.

Long. tota 5·0, alæ 2·7, caudæ 1·7.

Hab. Venezuela; Trinidad.

Mus. Brit., &c.

g. *Euprepiste.*

31. Calliste brasiliensis.

Tang. brasiliensis cærulea, Briss. Orn. iii. p. 9.

Tang. bleu de Brésil, Buff. Pl. Enl. 179. fig. 1.

Tanagra brasiliensis, Linn. S. N. i. p. 316; Vieill. Enc. Méth. p. 780; Max. Beitr. iii. p. 477.

Tang. barbadensis cærulea, Briss. Orn. iii. p. 8?

Tang. bleu de Cayenne, Buff. Pl. Enl. 155. fig. 1; H. N. iv. p. 282?

Tanagra barbadensis, Kuhl, Ind. Pl. Enl. p. 3; Temm. Ind. Pl. Col. p. 31?

Calliste albiventer, Gray, Gen. p. 366?

Calliste brasiliensis, Gray, Gen. p. 366. sp. 11; Bp. Consp. p. 234; Sclater, Cont. Orn. 1851, p. 68.

Callospiza barbadensis, Bp. Compt. Rend. Ac. Sc. Par. xxxii. p. 80.

Callospiza brasiliensis, Bp. R. Z. 1851, p. 468; Note s. l. Tang. p. 19; Cab. Mus. Hein. p. 27.

Nigra: capite antico et laterali cum gutture, pectore et lateribus necnon dorso postico alarum tectricibus et remigum marginibus externis cæruleis: rostri ambitu, torque gutturali interrupto, et maculis in lateribus pectoris et ventris nigris: abdomine medio et tectricibus subalaribus albis.

Long. tota 6·0, alæ 3·3, caudæ 2·2.

Hab. South-eastern Brazil, Rio (*Max.*).

Mus. Brit., &c.

32. Calliste flaviventris.

Tang. cayennensis cærulea, Briss. Orn. iii. p. 6.
Tang. tacheté de Cayenne, Buff. Pl. Enl. 290. fig. 2.
Tang. diable enrhumé, Buff. H. N. iv. 27; Desm. Tang. pl. 2.
Tanagra mexicana, Linn. S. N. i. 315.
Tanagra flaviventris, Vieill. N. D. d'H. N. xxxii. p. 411; Enc. Méth. p. 774.
Calliste mexicana, Gray, Gen. p. 366. sp. 21; Bp. Consp. p. 235.
Callospiza mexicana, Schomb. Reise, iii. 670.
Calliste flaviventris, Sclater, Contr. Orn. 1851, p. 69.
Callispiza flaviventris, Cab. Mus. Hein. p. 27.
Callospiza cayennensis, Bp. R. Z. 1851, p. 169; Note s. l. Tang. p. 20.
Black and Blue Tanager, Edwards, Glean. t. 350; Lath. G. H. vi. 35.

Nigra: capite antico et laterali cum gutture, pectore et lateribus necnon dorso postico et tectricum alarium majorum marginibus externis cæruleis; rostri ambitu, torque gutturali interrupto et maculis in lateribus pectoris et ventris nigris: tectricibus alarum minoribus turcoso-cæruleis: remigum externarum margine angusta cyanea: abdomine medio cum crisso et tectricibus subalaribus albis, sulphureo tinctis.

Long. tota 5·4, alæ 2·7, caudæ 1·8.
Hab. Cayenne; Upper Rio Negro (*Wallace*).
Mus. Brit., &c.

33. Calliste vieilloti, sp. nov.

Tanagra flaviventris, Vieill. Enc. Méth. p. 774 (partim).
Callospiza mexicana, Bp. Compt. Rend. Ac. Sc. Par. xxxii. p. 80; R. Z. 1851, p. 169; Note s. l. Tang. p. 20.

Nigra: capite antico et laterali cum gutture, pectore et lateribus necnon dorso postico et tectricum alarium majorum marginibus externis cæruleis: rostri ambitu, torque gutturali interrupto et maculis in lateribus pectoris et ventris nigris: tectricibus alarum minoribus turcoso-cæruleis: remigum margine externa anguste viridescente: abdomine medio cum crisso et tectricibus alarum inferioribus clare flavis.

♀. *Ventre pallidiore.*

Long. tota 4·5, alæ 2·9, caudæ 1·7.
Hab. Trinidad.
Mus. Paris. et P. L. S.

This Tanager was first well-distinguished from *C. flaviventris* of Cayenne by Prince Bonaparte, who proposed to retain for it the Linnæan name *mexicana*. This I cannot assent to, as the bird has nothing to do with Mexico; and moreover, if that name is used at all, it must be applied to the Cayenne bird, as Linnæus's species was grounded principally on Brisson's *Tang. cayennensis cærulea*.

The *Calliste vieilloti* is common in collections from Trinidad, and

may be readily recognized by its bright yellow belly and under wing-coverts, which in *C. flaviventris* are creamy white tinged with yellow.

34. Calliste boliviana.

Aglaia mexicana, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 32.

Tanagra flaviventris, d'Orb. Voy. p. 270.

Callospiza boliviana, Bp. Compt. Rend. Ac. Sc. Par. xxxii. p. 80; R. Z. 1851, p. 169; Note s. l. Tang. p. 20.

Calliste boliviana, Sclater, Contr. Orn. 1851, p. 69.

Nigra: capite antico et laterali cum gutture pectore et lateribus necnon dorso postico et tectricibus alarum minoribus cum marginibus tectricum majorum cæruleis: rostri ambitu, torque gutturali interrupto et maculis in lateribus pectoris et ventris nigris: remigum margine externa anguste cyanescente: abdomine medio crissoque cum tectricibus subalaribus flavissimis.

Long. tota 5·0, alæ 2·75, caudæ 1·9.

Hab. New Grenada, Bogota; East Peru; Upper Amazon, Ega (*Wallace*); Bolivia, Guarayos and Yuracares (*d'Orb.*).

Mus. Paris., Derbiano.

35. Calliste inornata.

Calliste inornata, Gould, P. Z. S. 1855, p. 158 (note).

Supra nigro-grisea: alis caudaque fusco-nigris: alarum tectricibus minoribus turcoso-cæruleis: subtus pallidior; abdomine toto crissoque et tectricibus subalaribus lactescenti-albis: rostro et pedibus nigris.

Long. tota 4·75, alæ 2·5, caudæ 1·75.

Hab. New Grenada, Bogota.

Mus. Joh. Gould.

This curious little bird, of which Mr. Gould possesses a single specimen, appears to me to represent an immature state of some species of true *Calliste*, probably as yet undescribed.

h. *Procnopis*.

36. Calliste atricærulea.

Procnopis atrocærulea, Tsch. in Wiegm. Arch. 1844, p. 285; F. P. p. 199. pl. 13. fig. 2.

Calliste atrocærulea, Gray, Gen. App. p. 17; Sclater, Contr. Orn. 1851, p. 59; Bp. Consp. p. 235.

Chalcothraupis atrocærulea, Bp. R. Z. 1851, p. 144; Note s. l. Tang. p. 19.

Cærulea: interscapulio nigro: capite toto ex cinereo cærulescente: nuchali macula dilute straminea: alis nigris cæruleo limbatis: gula et pectore cyaneis.

Hab. Eastern Peru (*Tsch.*); Bolivia (*Bridges*).

Mus. Neuchatel, Derbiano.

37. Calliste ruficervix.

Aglaia ruficervix, Prev. Voy. Venus, Ois. pl. 5. fig. 1.
Arremon rufivertex, Gray, Gen. p. 361. sp. 3.
Procnopis atrocærulea et Tanagra ruficervix, Bp. Compt. Rend. 1851, xxxii. p. 77.
Chalcothraupis ruficervix, Bp. R. Z. 1855, p. 144; Note s. l. Tang. p. 18.
Calliste leucotis, Sclater, Contr. Orn. 1851, p. 58.
Calliste ruficervix, Sclater, Contr. Orn. 1851, p. 58; P. Z. S. 1855, p. 158.

Cærulea: dorsi plumis medialiter et intus nigris: alis caudaque nigris cæruleo limbatis: pileo et cervice postica purpureis: vitta lata trans nucham aurescenti-rufa: fronte, mento et loris nigris: ventre medio crissoque ochraceis.
Long. tota 4·5, alæ 2·8, caudæ 1·7.
Hab. New Grenada, Bogota; Ecuador, vic. of Quito (*Bourcier*).
Mus. Brit., Paris.

38. Calliste atricapilla.

Tanagra (*Aglaia*) *atricapilla*, Lafr. R. Z. 1843, p. 290.
Calliste atricapilla, Bp. Consp. p. 235; Sclater, Contr. Orn. 1851, p. 59.
Chalcothraupis atricapilla, Bp. R. Z. 1851, p. 144; Note s. l. Tang. p. 19.
Procnias heinei, Cab. Mus. Hein. p. 31 (jun.); Bp. R. Z. 1851, p. 134; Note s. l. Tang. p. 8.

Cærulescenti-argentea: alis caudaque nigris eodem colore limbatis: pileo toto nigerrimo: gutturis totius et pectoris plumarum basibus nigris, apicibus autem acutis et colore clare viridibus.
♀. *Viridis: pileo obscuriore: gutture mari simili, sed pallidiore.*
Long. tota 4·8, alæ 2·8, caudæ 1·7
Hab. New Grenada, Bogota; Venezuela, near Caraccas (*Dyson*); Popayan (*Mus. Derb.*).
Mus. Brit., Derbiano.

39. Calliste argentea.

Procnopis argentea, Tsch. Wiegm. Arch. 1844, p. 285; F. P. p. 199. pl. 14. fig. 2.
Calliste argentea, Gray, Gen. App. p. 14; Bp. Consp. p. 235; Sclater, Contr. Orn. 1851, p. 60.
Chalcothraupis argentea, Bp. R. Z. 1851, p. 145; Note s. l. Tang. p. 19.

Supra cinerascenti-argenteo-cyanescens, pileo nigro: gutture aurescenti-stramineo: pectore et ventre medio nigris.
Long. tota 5·5.
Hab. Eastern Peru (*Tsch.*).
Mus. Neuchatel et Derbiano.

40. Calliste nigriviridis.

Tanagra nigroviridis, Lafr. R. Z. 1843, p. 69; Mag. de Zool. 1843, pl. 43.

Calliste nigro-viridis, Gray, Gen. p. 366. sp. 23; Bp. Consp. p. 235; Sclater, Contr. Orn. 1851, p. 56; P. Z. S. 1855, p. 158.

Callispiza nigroviridis, Cab. Mus. Hein. p. 27.

T. (*Aglaia*) *nigroviridis*, Less. Descr. p. 348.

Chalcothraupis nigro-viridis, Bp. R. Z. 1851, p. 145; Note s. l. Tang. p. 19.

Nigra: pileo cervice et dorso postico cum corpore toto subtus argentescenti-cyaneis, plumis subtus nigris argentescenti-cyaneo terminatis: fronte, loris, regione oculari et mento nigris: abdomine medio albicante: remigibus rectricibusque nigris cyaneo marginatis: tectricibus alarum minoribus intense cyaneis: majoribus autem argentescenti-cyaneo marginatis.

Long. tota 5·0, alæ 2·9, caudæ 1·8.

Hab. New Grenada, Bogota; Ecuador, prov. Quixos; Western Ecuador, Calacali (*Bourcier*).

Mus. Paris., Brit.

41. Calliste cyanescens, sp. nov.

Nigra: pileo, cervice et dorso postico cum corpore subtus argentescenti-cyaneis; plumis subtus nigris argentescenti-cyaneo terminatis: fronte, loris, regione oculari et mento summo nigris: abdomine medio crissoque albis: alis caudaque nigris cyanescente marginatis, campteriis intensius cyanescentibus.

Long. tota 5·0, alæ 3·0, caudæ 1·9.

Hab. Venezuela, Caraccas (*Levraud*); Colonia di Tovar, alt. 8000 feet (*Dyson*).

Mus. Brit., Paris.

Obs. Affinissima *C. nigriviridi* et crassitie paulo majore, alæ totius marginibus cyanescentibus unicoloribus et colore pectoris cyanescentiore, ventris autem albidiore, vix distinguenda.

I have seen many specimens of this bird, which is the Venezuelan representative of *Calliste nigriviridis*. It is certainly very closely allied to that species, but presents as good distinctive characters as many other birds which are now generally allowed to be independent species.

42. Calliste larvata.

Calliste larvata, DuBus, Esq. Orn. pl. 9; Gray, Gen. App. p. 17; Bp. Consp. p. 236; Sclater, Contr. Orn. 1851, p. 64.

Tatao larvatus, Bp. R. Z. 1851, p. 142; Note s. l. Tang. p. 16.

Capite colloque toto cum gula nitidissime cuprescenti-aureis: rostri ambitu nigro; vitta ultra frontem et capitis lateribus cæruleis, hujus coloris margine posteriore in viridescentem transeunte: interscapulio, alis caudaque cum pectore toto nigris: tectricibus alarum minoribus cæruleis; mediarum autem et majorum marginibus cum

dorso postico cyaneis : remigibus et rectricibus aurescenti viridi limbatis : abdomine medio albo, utrinque cæruleo, lateribus viridescentibus : rostro et pedibus nigris.

♀. *Coloribus minus claris.*

Long. tota 5·0, alæ 2·9, caudæ 1·8.

Hab. Southern Mexico, Tabasco (*Ghiesbreght*) ; Chamalican river, Spanish Honduras (*Dyson*).

Mus. Brit., Derbiano.

43. Calliste franciscæ.

Aglaia fanny (!), Lafr. R. Z. 1847, p. 72.

Calliste fanny, Gray, Gen. App. p. 17; Bp. Consp. p. 236. sp. 38; Des Murs, Icon. Orn. pl. 56. fig. 1.

Calliste franciscæ, Sclater, P. Z. S. 1856, p. 142.

Capite colloque toto cum gula nitidissime virescenti-aureis : rostri ambitu nigro, deinde cæruleo et in viridem transeunte : interscapulio alis caudaque cum pectore toto nigerrimis : dorso postico et tectricibus alarum mediis viridescenti-cyaneis ; remigibus et rectricibus eodem colore anguste limbatis : tectricibus alarum summis cæruleis : abdomine medio crissoque albis, lateribus viridescenti-cæruleis : rostro et pedibus nigris.

Long. tota 5·0, alæ 2·8, caudæ 1·6.

Hab. Veragua (*Delattre*) ; vic. of David, prov. Chiriqui, Panama (*Bridges*).

Mus. Acad. Philadelph. et Joh. Gould.

This beautifully coloured bird, which was first discovered by Delattre in Veragua, has been generally supposed to be the same as the *C. larvata*, and it was only upon a close examination of the specimen lately procured by Mr. Bridges, and comparison of it with individuals of the other species, that I was enabled to recognize its difference. This *Calliste* is slightly smaller than the *larvata*, and has the head of a much lighter golden green, in some lights passing almost into pale green. In the other bird these parts are more of a coppery brown. In this species, also, the lower back and edgings of the middle and greater wing-coverts are of a much greener tinge, and there is more white in the middle of the belly and crissum.

44. Calliste nigricincta.

Aglaia nigro-cincta, Bp. P. Z. S. 1837, p. 121.

Calliste nigro-cincta, Gray, Gen. p. 366. sp. 16; Bp. Consp. p. 235; Sclater, Contr. Orn. 1851, p. 68.

Chalcothraupis nigro-cincta, Bp. R. Z. 1851, p. 145; Note s. l. Tang. p. 19.

Calliste thalassina, Strickl. Ann. N. H. (1844) xiii. p. 419; Gray, Gen. p. 366. sp. 30; Sclater, Contr. Orn. 1851, p. 57; P. Z. S. 1854, p. 115, et 1855, p. 158.

Aglaia wilsoni, Lafr. R. Z. 1847, p. 71.

Calliste wilsoni, Gray, Gen. App. p. 17; Bp. Consp. p. 236. sp. 37; Des Murs, Icon. Orn. pl. 56. fig. 2.

Chrysothraupis thalassina, Bp. R. Z. 1851, p. 143; Note s. l. Tang. p. 17.

Calliste larvata, Cassin, Rep. U.S. Astr. Exp. p. 182. pl. xviii. fig. 2.

Capite et cervice undique cum gula thalassino-cyaneis, regione auriculari cum mento pallide viridibus: loris, interscapulio et pectore toto nigerrimis: dorso postico læte cæruleo: abdomine medio albo, lateribus cærulescentibus: remigibus et rectricibus nigris cærulescenti-viridi marginatis: tectricibus alarum summis læte cæruleis, mediis et majoribus viridibus.

Long. tota 5·0, alæ 2·8, caudæ 1·8.

Hab. New Grenada, Bogota; Ecuador, prov. Quixos; Eastern Peru, Guaunco (*Delattre*); River Ucayali (*Hawxwell*); Marabitanas on the Rio Negro (*Natt.*).

Mus. Brit., Derbiano, Vindobiensi.

45. Calliste cyaneicollis.

Aglaia cyanicollis, Lafr. et d'Orb. Mag. de Zool. 1837, p. 33.

Tanagra cyanicollis, d'Orb. Voy. p. 271. pl. 25. fig. 1.

Callospiza cyanicollis, Tsch. Wiegm. Arch. 1844, p. 286; F. P. p. 202.

Aglaia cæruleocephala, Sw. An. in Men. p. 356.

Calliste cæruleocephala, Gray, Gen. p. 366. sp. 18; Bp. Consp. p. 235. sp. 19.

Calliste cyanicollis, Sclater, Contr. Orn. 1851, p. 115; P. Z. S. 1854, p. 115, et 1855, p. 158; Cassin, Rep. U.S. Astr. Exp. ii. p. 181. pl. xviii. fig. 1.

Capite toto et gutture undique læte cyaneis: gula purpurascente: loris interscapulio et abdomine toto nigerrimis; hoc cæruleo lavato: dorso postico et alarum tectricibus pallide viridibus, tectricibus alarum summis aurescentioribus: remigibus et rectricibus nigris viridi anguste marginatis.

Long. tota 4·7, alæ 2·6, caudæ 1·7.

Hab. New Grenada, Bogota; Ecuador, prov. Quixos (*Gould*); Eastern Peru (*Tsch.*); Bolivia, Yuracares (*d'Orb.*).

Mus. Brit., Paris., &c.

46. Calliste labradorides.

Tanagra (*Aglaia*) *labradorides*, Boiss. R. Z. 1840, p. 67; Less. Descr. p. 347.

Aglaia labradorides, Prevost, Voy. Venus, Ois. pl. 5. fig. 2.

Calliste labradorides, Gray, Gen. p. 366. sp. 25; Bp. Consp. p. 235; Sclater, Contr. Orn. 1851, p. 57; P. Z. S. 1855, p. 158.

Chalcothraupis labradorides, Bp. R. Z. 1851, p. 144; Note s. l. Tang. p. 18.

Nitenti-viridis cæruleo vix tincta, capite aurescentiore: fronte, loris, mento summo, nucha et cervice postica cum scapularibus nigris: alis caudaque nigris cærulescenti-viridi marginatis; tectricibus

alarum summis cæruleis : ventre imo crissoque pallide ochraceis.

Long. tota 4·5, alæ 2·6, caudæ 1·7.

Hab. New Grenada, Bogota.

Mus. Brit., &c.

47. Calliste parzudakii.

Tanagra parzudakii, Lafr. R. Z. 1843, p. 97 ; Mag. de Zool. 1843, Ois. pl. 41.

Calliste parzudakii, Gray, Gen. p. 366. sp. 27 ; Bp. Consp. p. 235. sp. 26 ; Sclater, Contr. Orn. 1851, p. 66 ; P. Z. S. 1854, p. 115, et 1855, p. 158.

Chrysothraupis parzudakii, Bp. R. Z. 1851, p. 143 ; Note s. l. Tang. p. 18.

Nigra : dorso postico cum tectricibus alarum minoribus et tectricum majorum apicibus externis argenteo-cyanescentibus : pileo toto cum nucha et collo laterali flavissimis ; fronte et regione oculari ruberrimis : loris nigris : subtus argenteo-cyanescens ochraceo tincta ; gula nigra ; ventre medio crissoque ochraceis.

Long. tota 5·5, alæ 3·3, caudæ 2·0.

Hab. New Grenada, Bogota ; Ecuador, Quixos.

Mus. Brit.

48. Calliste lunigera.

Calliste lunigera, Sclater, Contr. Orn. 1851, p. 65. pl. 70. fig. 2.

Nigra : dorso postico cum tectricibus alarum minoribus et tectricum majorum secundariarumque marginibus argenteo-viridescentibus : pileo toto et capitis lateribus aurantiacis, macula magna auriculari cum gula nigris : pectore argenteo-viridescente ; abdomine rufescenti-ochraceo.

Long. tota 5·3, alæ 2·8, caudæ 1·8.

Hab. Western Ecuador, vicinity of Quito (*Jameson*).

Mus. Gul. Jardine, Bart. et P. L. S.

49. Calliste chrysotis.

Calliste chrysotis, DuBus, Esq. Orn. pl. 7 ; Gray, Gen. App. p. 17 ; Bp. Consp. p. 236 ; Sclater, Contr. Orn. 1851, p. 66.

Chrysothraupis chrysotis, Bp. R. Z. 1851, p. 142 ; Note s. l. Tang. p. 17.

Supra nigra : dorso postico et interscapulii alarumque pennarum omnium marginibus clare viridibus : pileo nigro : fronte aurescenti-viridi : regione auriculari cuprescenti-aureo : subtus clare viridis ; abdomine medio crissoque castaneis.

Long. tota 5·5, alæ 2·9, caudæ 1·9.

Hab. Eastern Peru (*DuBus*).

Mus. Bruxell., Derbiano.

50. Calliste xanthocephala.

Callospiza xanthocephala, Tsch. Wiegm. Arch. 1844, p. 285 ; F. P. p. 200. pl. 17. fig. 2 (*fig. pess.*) ; Gray, Gen. App. p. 17 ; Bp. Consp. p. 235.

Calliste lamprotis, Sclater, Contr. Orn. 1851, p. 65.

Chrysothraupis xanthocephala, Bp. R. Z. 1851, p. 443 ; Note s. l. Tang. p. 17.

Læte cæruleo-viridis : interscapulii, alarum et caudæ plumis nigris eodem viridi limbatis : fronte, loris, gula summa et cervice postica nigris : pileo toto aurantiaco : capitis lateribus et regione auriculari flavissimis : ventre medio crissoque pallide ochraceis.

Long. tota 5·3, alæ 2·9, caudæ 1·9.

Hab. Eastern Peru (*Tsch.*) ; Bolivia (*Bridges*).

Mus. Brit., Neuchatel.

51. Calliste venusta.

Calliste xanthocephala, Sclater, Contr. Orn. 1851, p. 58 ; P. Z. S. 1854, p. 115.

Calliste venusta, Sclater, P. Z. S. 1854, p. 248, et 1855, p. 158.

Læte cæruleo-viridis : interscapulii, alarum caudæque plumis nigris, eodem viridi marginatis : fronte, loris, gula summa et cervice postica nigris : pileo lateribusque capitis flavis : ventre medio crissoque pallide ochraceis : rostro nigro : pedibus pallidis.

Long. tota 4·5, alæ 2·5, caudæ 1·5.

Hab. New Grenada, Bogota ; prov. Quixos in Ecuador.

Mus. Brit., Berol.

Genus XXXIV. Diva.

Procnopis, Bp. Compt. Rend. xxxii. p. 80 (1851), nec Cab.

Diva, Sclater, Tan. Cat. Sp. p. 16 (1854).

Forma Callistæ, *sed rostro breviore et basi dilatata ; dente finali obsoleto : alæ longæ, remigibus secunda, tertia et quarta longissimis, prima breviore quam quinta : cauda modica quadrata : ptilosis cærulea, unicolor.*

1. Diva vassori.

Tanagra (Euphone?) vassorii, Boiss. R. Z. 1840, p. 4 ; Mag. de Zool. 1841, pl. 23.

Aglaia diva, Less. Echo d. M. S. 1844, p. 57 ; Descr. d. Mam. et Ois. p. 347.

Calliste vassorii, Gray, Gen. p. 366. sp. 26 ; Bp. Consp. p. 235. sp. 25 ; Sclater, Contr. Orn. 1851, p. 60.

Procnopis vassori, Bp. Compt. Rend. xxxii. p. 80 ; R. Z. 1851, p. 134 ; Note s. l. Tang. p. 9.

Diva vassori, Sclater, Tan. Cat. Sp. p. 13 ; P. Z. S. 1855, p. 158.

Lucide cærulea : loris, alis caudaque nigris : tectricibus alarum minoribus et tectricum majorum marginibus cæruleis.

♀ *aut junior. Griseo-cineracea : subtus clarior.*

Long. tota 4·7, alæ 2·8, caudæ 1·7.

Hab. Bogota.

Mus. Brit., &c.

The bird which I formerly described as *Pipridea albiventris* (Contr. Orn. 1852, p. 131. pl. 100. fig. 2), and afterwards made a second species of this form, is, I now think, though somewhat intermediate in characters, more strictly referable to the neighbourhood of the genus *Dacnis* in the family *Cærebidæ*.

Genus XXXV. Pipridea.

Pipraeidea, Sw. Zool. Journ. iii. p. 173 (1827).

Procnopis, Bp. Compt. Rend. xxxii. p. 80, nec Cab.

Rostrum Callistæ, *sed brevius, altius, basi dilatata, rictu plumoso : alæ modicæ, remigibus quatuor primis fere æqualibus sed secunda et tertia paulo longioribus : cauda modica subquadrata : ptilosis cærulea et rufa : sexus dissimiles.*

1. Pipridea melanonota.

Pico di punzon azul y canela, Azar. Pax. i. p. 413.

Tanagra melanonota, Vieill. N. D. d'H. N. xxxii. 407.

Tanagra melanotha, Vieill. Enc. Méth. p. 773.

Tanagra vittata, Temm. Pl. Col. 48 (♂ et ♀).

Pipraeidea cyanea, Sw. Zool. Journ. 1827, p. 173 ; Bp. Consp. p. 231.

Aglaia vittata, Darwin, Voy. Beagle, p. 98.

Calliste vittata, Gray, Gen. p. 366. sp. 24.

Procnopis vittata, Cab. in Wiegm. Arch. 1844, p. 284.

Procnopis melanota, Bp. Compt. Rend. xxxii. p. 80 ; R. Z. 1851, p. 134 ; Note s. l. Tang. p. 8.

Calliste melanonota, Sclater, Contr. Orn. 1851, p. 61.

Pipræidea melanonota, Sclater, Tan. Cat. Sp. p. 13.

Supra cærulea : interscapulio toto valde obscuriore, nigricanti-cæruleo tincto : alis caudaque nigris nigricante cæruleo limbatis : campteriis læte cæruleis : vitta lata frontali per oculos utringue transeunte nigerrima : subtus ochracescenti-cinnamomea.

♀. *Obscurior : interscapulio fusco : alarum caudæque marginibus viridescentibus.*

Long. tota 5·8, alæ 3·1, caudæ 2·0.

Hab. Southern Brazil ; Uruguay, Maldonado (*Darwin*) ; Paraguay (*Azara*).

Mus. Brit., &c.

2. Pipridea venezuelensis, sp. nov.

Supra læte cærulea : interscapulio alis caudaque nigris, cæruleo

tinctis : campteriis læte cæruleis : vitta frontali per oculos utrinque transeunte nigerrima : subtus ochracea.

Long. tota 5·1, alæ 3·1, caudæ 1·9.

Hab. Venezuela, Caraccas (*Levraud*).

Mus. Parisiensi.

Obs. Affinissima *P. melanonotæ*, sed paulo minor et colore cæruleo clariore et rostro breviore distinguenda.

3. Pipridea castaneiventris.

Calliste castaneoventris, Sclater, Contr. Orn. 1851, p. 60.

Pipraidea castaneiventris, Sclater, Tan. Cat. Sp. p. 13.

Supra fusco-cærulea : alis caudaque nigris fusco-cæruleo limbatis : loris et regione oculari atris : infra brunneo-castanea : rostro elongatiore, mandibula inferiore brunnescente, superiore cum pedibus nigris.

Long. tota 6·4, alæ 3·15.

Hab. Bolivia (*Bridges*).

Mus. Derbiano.

Genus XXXVI. Chlorochrysa.

Chlorochrysa, Bp. Compt. Rend. xxxii. p. 76 (1851).

Calliparæa, Bp. R. Z. 1851, p. 129.

Rostrum tenue, elongatum, mandibula superiore paulum incurva, inferiore rectissima : dente finali fere obsoleto : alæ elongatæ, remigibus quatuor primis fere æqualibus et longissimis : cauda brevi quadrata : ptilosis nitentissime viridis : sexus similes.

1. Chlorochrysa calliparæa.

Callospiza calliparæa, Tsch. in Wiegm. Arch. 1844, p. 202 ; F. P. p. 202.

Calliste calliparæa, Gray, Gen. App. p. 17 ; Bp. Consp. p. 235. sp. 30.

Calliste bourcieri, Bp. Compt. Rend. Ac. Sc. Par. xxxii. p. 76.

Calliparæa bourcieri, Bp. R. Z. 1851, p. 129 ; Note s. l. Tang. p. 3.

Chlorochrysa calliparæa, Sclater, Contr. Orn. 1851, p. 99. pl. 73. fig. 1.

Lucide viridis : regione oculari dorso inferiore et ventre cærulescente tinctis : gula nigra : regione auriculari castanea : uropygio croceo.

Long. tota 4·6, alæ 2·8, caudæ 2·0.

Hab. Wood-region of E. Peru (*Tsch.*) ; Valley of Baños, Ecuador (*Bourcier*) ; Anolaima, New Grenada (*Chapoul*).

Mus. Berol., Parisiensi.

2. Chlorochrysa phœnicotis.

Calliste phœnicotis, Bp. Compt. Rend. Ac. Sc. Par. xxxii. p. 76.

Calliparæa phœnicotis, Bp. R. Z. 1851, p. 129 ; Note s. l. Tang. p. 3.

Chlorochrysa phœnicotis, Sclater, Contr. Orn. 1851, p. 100. pl. 73. fig. 2.

Lucide viridis: tectricibus alarum minoribus, tibiis et macula altera suboculari et altera pone oculum utrinque splendenti-olivaceo-brunneis: his secundis maculis corallino-rubro versus nucham terminatis.

♀. *Mari similis sed minor.*

Long. tota 5·0, alæ 3·0, caudæ 1·7.

Hab. Ecuador, Nanegan, north of Quito (*Bourcier*).

Mus. Paris. et Gul. Jardine, Bart.

Genus XXXVII. Tanagrella.

Tanagrella, Sw. Class. B. ii. p. 121.

Hypothlypis, Cab. in Schomb. Reise, iii. p. 667.

Rostrum tenue, elongatum, mandibula inferiore recta, superiore incurva, dente finali indistincto: alæ longæ, remigibus secunda et tertia longissimis, prima quartum æquante et illis vix breviore: cauda longa quadrata: ptilosis nigro-cærulea: sexus similes.

1. Tanagrella velia.

Red-bellied Blue-bird, Edwards' Glean. pl. 22.

Motacilla velia, Linn. S. N. i. p. 336 (partim).

Le Pipit bleu de Surinam, Buff. Pl. Enl. 669. fig. 3.

Le Pitpit varié, Buff. H. N. v. 341.

Tangara varié, Desm. Tan. pl. 2.

Tanagra velia, Vieill. N. D. d'H. N. xxxii. p. 424; Enc. Méth. p. 780.

Tanagra varia, Steph. Zool. xiv. p. 7; Cuv. Règn. An. i. p. 367.

Hypothlypis iridina, Cab. in Schomb. Reise, iii. p. 667?

Tanagra iridina, Hartl. R. Z. 1841, p. 105?

Tanagrella iridina, Gray, Gen. p. 366.

Tanagrella velia, Bp. Consp. p. 236; Sclater, Contr. Orn. 1851, p. 97.

Red-bellied Tanager, Lath. G. H. vi. 34.

Nigra: gula, capitis lateribus, alarum caudæque marginibus et caudæ tectricibus superioribus cæruleis: dorso postico viridescente argenteo nitente: pileo antico viridescente cyaneo, versus rostrum cærulescentiore: loris et narium plumis nigris: subtus cærulea, collo antico nigro: pectore lilacescente: ventre medio et crisso castaneis: tectricibus subalaribus albis: rostro et pedibus nigris.

Long. tota 5·4, alæ 2·9, caudæ 2·0.

Hab. Cayenne; British Guiana (*Schomb.*).

Mus. Brit., &c.

2. Tanagrella elegantissima.

Tanagrella elegantissima, J. et E. Verr. Rev. Zool. 1853, p. 195.

Nigerrima: gula, capitis lateribus et pileo antico cum fronte et loris,

alarum caudæque marginibus et tectricibus caudæ superioribus lætissime cæruleis : dorso postico viridescente argenteo nitente : subtus cærulea, collari interrupto nigro : pectore paululum lilacescente : ventre medio et crisso castaneis : tectricibus alarum inferioribus albis : rostro et pedibus nigris.

Long. tota 5·5, alæ 3·0, caudæ 1·9.

Hab. New Grenada, Bogota ; Rio Xié (*Natterer*) ; Porto Cabello (*Mus. Hein.*).

Mus. Heineano ; Vindob.

This species, of which I have seen many examples in the most recently imported Bogota collections, is very closely allied to the *T. velia* of Cayenne ; but in the present bird the front lores and throat are of the same full blue as the wing-edgings, and there is no tinge of greenish colouring on the head as in its Cayenne representative. The whole colouring is also generally more intense, and the black collar on the throat is narrower and less defined.

3. Tanagrella cyanomelas.

Sylvia surinamensis cærulea, Briss. Orn. iii. p. 536 ?

Motacilla velia, Gm. S. N. i. 991 (partim).

Tanagra cyanomelas, Max. Beitr. iii. 453.

Tanagrella multicolor, Sw. An. in Men. p. 313.

Tanagrella tenuirostris, Sw. Class. ii. p. 121.

Tanagrella velia, Gray, Gen. p. 366. sp. 1.

Tanagrella cyanomelas, Bp. Consp. p. 236 ; Sclater, Contr. Orn. 1851, p. 97.

Nigra : gula, fronte, capitis lateribus, marginibus alarum et caudæ cum tectricibus caudæ superioribus cæruleis : pileo antico supra frontem et dorso postico viridescenti-argenteis : subtus læte cærulescenti-grisea, ventre medio et crisso castaneis : collari interrupto nigro : tectricibus subalaribus albis.

Long. tota 5·7, alæ 3·0, caudæ 2·2.

Hab. South-eastern Brazil (*Max.*).

Mus. Brit., &c.

4. Tanagrella calophrys.

Hypothlypis callophrys, Cab. in Schomb. Reise, iii. 668 (note).

Tanagrella callophrys, Bp. Compt. Rend. 1851, p. 77 ; R. Z. 1851, p. 130; Note s. l. Tang. p. 5 ; Sclater, Contr. Orn. 1851, pl. 74. p. 98.

Supra nigerrima : fronte angusta, capitis lateribus cum marginibus alarum et caudæ et tectricibus caudæ superioribus cæruleis : pileo mediali cum superciliis latis et elongatis et dorso postico viridescenti-argenteis : subtus cærulea, ventre imo et crisso nigris : tectricibus subalaribus nigricanti-cinereis : rostro et pedibus nigris.

Long. tota 5·4, alæ 3·0, caudæ 2·0.

Hab. Ecuador, prov. Quixos (*Bourcier*) ; East Peru, river Ucayali (*Hawxwell*).

Mus. Berol.

Genus XXXVIII. Glossiptila.

Neornis, Hartl. 1846, Nachtr. z. Verz. Brem. Mus., nec Hodgs.

Rostrum tenue, elongatum, incurvum, commissura arcuata, gonyde recta, dente finali nullo : alæ longæ, remige tertia et quarta longissimis et secundam paulo superantibus, prima paulo breviore quam quinta : cauda breviuscula quadrata : sexus dissimiles : ptilosis mascula cærulea, fœminea grisea.

1. Glossiptila ruficollis.

Motacilla campestris, Linn. S. N. i. p. 329 (♀)?
Rufous-throated Tanager, Lath. Syn. ii. pt. 1. p. 241.
Tanagra ruficollis, Gm. S. N. ii. p. 894 ; Edwards, Glean. pl. 122.
Tanagrella ruficollis, Gray, Gen. App. p. 17 ; Bp. Consp. p. 236 ; Gosse, B. of Jam. p. 236 ; Ill. B. Jam. pl. 58.
Tachyphonus rufigularis, Lafr. R. Z. 1846, p. 320.
Pyrrhulagra ruficollis, Bp. Consp. p. 236 (excl. syn.).
Neornis cærulea, Hartl. Nachtr. z. Verz. Mus. Brem. p. 8 (descr. nulla).
Rufous-chinned Finch, var. A, Lath. G. H. vi. 126.

Cærulescenti-plumbea, facie nigricante : plaga magna gutturali castaneo-rufa.
♀. *Capite colloque viridescenti-griseis : dorso olivascenti-brunneo : subtus cinerea, medialiter albescens.*
Long. tota 4·8, alæ 2·8, caudæ 1·8.
Hab. Jamaica (*Gosse*) ; S. Domingo.
Mus. Paris., Brit.

Genus XXXIX. Chlorophonia.

Chlorophonia, Bp. R. Z. 1851, p. 137.
Triglyphidia, Reich. Av. Syst. Nat. pl. 73.

Genus vix ab Euphonia *diversum : rostrum minus altum et basi magis dilatata : alæ longæ : remigibus 4 primis inter se fere æqualibus : cauda brevissima : tarsi breves : ptilosis læte viridis, flavo varia : sexus dissimiles.*

1. Chlorophonia viridis.

Tanagra viridis, Vieill. N. D. d'H. N. xxxii. p. 426 ; Temm. Pl. Col. 36. fig. 3.
Pipra chlorocapilla, Shaw, Zool. xiii. p. 255.
Euphonia viridis, Gray, Gen. p. 367. sp. 10 ; Tsch. in Wiegm. Arch. 1844, p. 284 ; Bp. Consp. p. 233 ; Sclater, Contr. Orn. 1851, p. 88.
Procnias (!) *viridis*, Cab. in Tsch. F. P. p. 197.
Chlorophonia viridis, Bp. R. Z. 1851, p. 137 ; Note s. l. Tang. p. 12.

Clare viridis : ciliis oculorum et dorso toto cæruleis : abdomine flavo.

♀. *Clare viridis; cervice postica et uropygio cæruleis: abdomine flavescenti-viridi.*

Long. tota 4·5, alæ 2·5, caudæ 1·4.

Hab. S.E. Brazil (*Temm.*); S. João del Rey and Ypanema (*Natt.*); Eastern Peru (*Tsch.*).

Mus. Brit., Vindob.

2. Chlorophonia longipennis.

Euphonia longipennis, DuBus, Bull. Ac. Brux. xxii. p. 156 (1855).

Clare viridis: cervice postica et dorso imo cum ciliis oculorum cæruleis, interscapulio eodem colore lavato: abdomine læte flavo.

♀. *Viridis; uropygio cærulescente: abdomine flavescenti-viridi.*

Long. tota 4·5, alæ 2·55, caudæ 1·2.

Hab. New Grenada, Bogota.

Mus. Dubusi, et P. L. S.

3. Chlorophonia frontalis.

Chlorophonia frontalis, Bp. MS.

Euphonia frontalis, Sclater, Contr. Orn. 1851, p. 89.

Clare viridis: cervice postica et uropygio toto cum ciliis oculorum cæruleis: fronte et abdomine toto flavis.

Long. tota 4·5, alæ 2·7, caudæ 1·5.

Hab. Venezuela, Caraccas (*Levraud*).

Mus. Berol., Paris., Heineano.

4. Chlorophonia occipitalis.

Euphonia occipitalis, DuBus, Esq. Orn. pl. 14 (♀); Gray, Gen. App. p. 17; Bp. Consp. p. 233; Sclater, Contr. Orn. 1851, p. 90.

Chlorophonia occipitalis, Bp. R. Z. 1851, p. 138; Note s. l. Tang. p. 12; Cassin, Rep. U.S. Astr. Exp. ii. p. 182. pl. xx. fig. 2 (♂).

Clare viridis: semitorque angusto postico et vertice summa cæruleis: vitta pectorali nigro-castanea: abdomine flavissimo, lateribus virescentibus.

♀. *Viridis, macula verticali et semitorque minus conspicua cæruleis: abdomine flavo, lateribus virescentibus.*

Long. tota 5·5, alæ 2·8.

Hab. S. Mexico (*DuBus*).

Mus. Brit., Parisiensi.

5. Chlorophonia pretrii.

Tanagra (*Euphonia*) *pretrei*, Lafr. R. Z. 1843, p. 97; Mag. de Zool. 1842, Ois. pl. 42.

Euphonia pretrei, Gray, Gen. p. 367. sp. 19; Bp. Consp. p. 233; Sclater, Contr. Orn. 1851, p. 89.

Chlorophonia pretrei, Bp. R. Z. 1851, p. 138; Note s. l. Tang. p. 12.

Euphonia pyrrhophrys, Sclater, Contr. Orn. 1851, p. 89. pl. 75. fig. 2 (♀).

♂. *Clare viridis: pileo cæruleo: fronte angusta et linea super-*

ciliari nigris: fascia uropygiali et abdomine flavissimis: hujus media parte cum crisso castaneis: torque pectorali angusto nigro.
♀. *Viridis: pileo cæruleo: fronte et superciliis castaneis: uropygio et abdomine flavicantibus.*
Long. tota 4·5, alæ 2·7, caudæ 1·6.
Hab. New Grenada, Bogota.
Mus. Brit., &c.

Genus XL. Euphonia.

Euphonia, Desm. H. N. des Tang. (1805).
Cyanophonia, Bp. R. Z. 1851, p. 138.
Pyrrhuphonia, Bp. Compt. Rend. xxi. p. 423 (1850).
Ypophæa, Bp. Ann. d. Sc. Nat. 1855.
"*Acroleptes*, Schiff.," Bp. l. c.
Iliolopha, Bp. l. c.

Rostrum breve, altum, dilatatum, culmine incurvo; gonyde ascendente; commissura ad apicem dentata et plerumque serrata: alæ longæ: remigibus 4 primis inter se fere æqualibus sed secunda et tertia plerumque paulo longioribus: cauda brevi quadrata: sexus dissimiles: ptilosis marium nigra et flava; fœminarum olivacea.

a. *Cyanophonia.*

1. Euphonia musica.

L'Organiste, Buff. H. N. iv. p. 290.
L'Organiste de S. Dominge, Buff. Pl. Enl. 809. fig. 1.
Pipra musica, Gm. S. N. 1004.
Tanagra musica, Vieill. Enc. Méth. p. 787.
Euphonia cæruleocephala, Sw. Class. ii. 286.
Euphonia musica, Gray, Gen. p. 367. sp. 1; Bp. Consp. p. 232; Sclater, Contr. Orn. 1851, p. 82.
Euphone musica, Lembeye, Aves de Cuba, p. 42.

Supra nitenti-nigra: pileo cæruleo: fronte aurea, postice nigro-marginata: uropygio et abdomine toto fulvo-aurantiis, gula nigra.
Long. tota 4·4, alæ 2·5, caudæ 1·5.
Hab. S. Domingo (*Buff.*, *Sallé*); Cuba (*Lembeye*).
Mus. Brit.

2. Euphonia flavifrons.

Tanagra flavifrons, Lath. Ind. Orn. Suppl. p. 47 (♀); Vieill. Enc. Méth. p. 775.
Emberiza flavifrons, Sparm. Mus. Carls. iv. no. 92 (♀).
Euphone organiste, Desm. Tan. pl. 19 ♂, 20 ♀; Vieill. Gal. Ois. Suppl. pl. s. n. (♂ et ♀).
Cyanophonia musica, Bp. R. Z. 1851, p. 138; Note s. l. Tang. p. 12.
Euphonia sclateri, Bp. in Mus. Paris.
Euphonia flavifrons, Sclater, Tan. Cat. Sp. p. 13 et p. 16.

♂. *Supra nitenti-nigra : pileo cæruleo : fronte aurea postice nigro marginata : uropygio et corpore subtus flavo-aurantiis.*

♀. *Olivaceo-viridis ; uropygio et corpore subtus flavescentioribus : gula flavicante : fronte aurea postice angustissime nigro marginata.*

Long. tota 4·2, alæ 2·4, caudæ 1·4.

Hab. Porto Rico (*Maugé*) ; Trinidad ; Cayenne ?

Mus. Parisiensi.

This is the species figured by Desmarest and Vieillot as the true *musica*, and considered by me in my Synopsis of this genus, given in the 'Contributions to Ornithology' for 1851, to be that bird in an immature state. But on an examination of Desmarest's types in the Paris Museum, I agree with Prince Bonaparte (who has done me the honour to call this species *E. sclateri*) that it is apparently distinct.

A specimen of the female of this bird in the Derby Museum at Liverpool bears the label "*Tanagra flavifrons*, Latham;" and as Latham's description and Sparman's figure agree sufficiently well with it, and this specimen is probably the type of Latham's description, I feel bound to employ the term *flavifrons* as the first-given appellation of this *Euphonia*.

3. Euphonia nigricollis.

Pipra cyanocephala, Vieill. N. D. d'H. N. xix. p. 165 (♀) ?

Tanagra nigricollis, Vieill. N. D. d'H. N. xxxii. p. 412; Enc. Méth. p. 782.

Lindo azul y oro, Azar. Pax. i. p. 390 (unde),

Tanagra aureata, Vieill. Enc. Méth. p. 782.

Tanagra chrysogastra, Cuv. Règn. An. i. p. 366.

Euphonia nigricollis, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 30 ; Sclater, Contr. Orn. 1851, p. 83. pl. 75. fig. 1.

Euphonia aureata, d'Orb. Voy. p. 267 ; Gray, Gen. p. 367. sp. 9 ; Bp. Consp. p. 233.

Cyanophonia aureata, Bp. R. Z. 1851, p. 138; Note s. l. Tang. p. 13.

Purpurascenti-nigra : pileo cæruleo : fronte et gula nigris : uropygio et abdomine toto aureo-flavis.

♀. *Olivaceo-viridis, subtus flavescens : pileo cæruleo : fronte castanea.*

Long. tota 4·3, alæ 2·6, caudæ 1·5.

Hab. Trinidad ; Venezuela, Caraccas (*Levraud*) ; New Grenada, Bogota ; Western Ecuador, vic. of Quito (*Jameson*) ; Brazil, Rio (*P. Max.*) ; Paraguay (*Azara*) ; Rincon de Luna et Corrientes (*d'Orb.*).

Mus. Brit., Paris., &c.

4. Euphonia elegantissima.

Pipra elegantissima, Bp. P. Z. S. 1837, p. 112.

Euphonia cœlestis, Less. R. Z. 1839, p. 42.

Pipra galericulata, Giraud, B. Texas, no. 10. pl. 5. fig. 2 (1840).

Euphonia elegantissima, Gray, Gen. App. p. 17; Bp. Consp. p. 232; DuBus, Esq. Orn. pl. 8; Baird, in Stansbury's Exp. to Utah, p. 330; Sclater, Contr. Orn. 1851, p. 83.

Euphonia tibicen, Licht. in Mus. Berol.

Purpurascenti-nigra: pileo cæruleo: fronte saturate castanea postice nigro marginata: gula nigra: abdomine flavescente-fulvo.

♀. *Olivaceo-viridis, subtus flavescentior: pileo cæruleo: fronte castanea, nigrescente postice marginata.*

Long. tota 4·3, alæ 2·6, caudæ 1·6.

Hab. Guatimala (*Bp.*); S. Mexico, Oaxaca (*DuBus*), Xalapa (*Mus. Berol.*), Cordova (*Sallé*); Texas (*Giraud* and *Baird*).

Mus. Brit., Berolin., &c.

b. *Euphonia*.

5. Euphonia chlorotica.

Tang. cayennensis nigro-lutea, Briss. Orn. iii. 34.

Tang. de Cayenne, Buff. Pl. Enl. 114. fig. 1.

Tanagra chlorotica, Linn. S. N. i. 317; Vieill. Enc. Méth. p. 782.

Tanagra violacea, var. β. *chlorotica*, Gm. S. N. i. 890.

Euphone chlorotique, Desm. Tan. pl. 24, 25.

Euphonia chlorotica, Licht. Verz. Doubl. p. 29; Gray, Gen. p. 367. sp. 5; Bp. Consp. p. 232; Sund. Vet. Ac. Sv. 1833, pl. 10. figs. 2 & 3; Sclater, Cont. Orn. 1851, p. 84; Bp. R. Z. 1851, p. 136, et Note s. l. Tang. p. 10.

Golden Tanager, var. α, Lath. G. H. vi. p. 28.

♂. *Atro-nitens; capite, gutture et dorso superiore violaceo-purpurascentibus: pilei dimidio antico usque ad angulum oculi extremum et abdomine toto aureis: macula magna ovali in pogonio interno rectricum duarum utrinque extimarum et alis subtus albis.*

♀. *Olivascens: alis caudaque intus fuscis: subtus flavescens.*

Long. tota 3·4, alæ 2·1, caudæ 1·2.

Hab. Cayenne.

Mus. Brit.

In this *Euphonia* the lores and nasal feathers are black, and the yellow on the head reaches up to a straight line between the farther corners of the eyes.

6. Euphonia serrirostris.

Euphonia serrirostris, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 30; d'Orb. Voy. p. 267. pl. 23. fig. 2; Gray, Gen. p. 367; Bp. Consp. p. 233; Sclater, Contr. Orn. 1851, p. 90 (♀).

Euphonia chlorotica, Tsch. Av. Consp. in Wiegm. Arch. 1844, p. 284, et F. P. p. 197?

Similis E. chloroticæ *ex Cayenna, sed forsan distincta: major: nucha intensius violacea et rostro magis serrato: hujus basi quoque albescente.*

Long. tota 4·4, alæ 2·25, caudæ 1·5.

♀. (E. SERRIROSTRIS, Lafr. et d'Orb. !) *Supra flavo-olivacea: subtus flavescentior: pectore et ventre mediis cinerascentibus.*

Hab. Bolivia, Guarayos (*d'Orb.*); Eastern Peru (*Tsch.*) ?

Mus. Lafresnayano, Brit.

The *Euphonia serrirostris* figured by d'Orbigny seems to be nothing more than the female of a species very closely allied to the *Euphonia chlorotica*. As however I think it possibly distinct from the *E. chlorotica* of Cayenne, MM. Lafresnaye and d'Orbigny's name can be retained for the Bolivian bird, until further examination of a series of specimens can be made—by which means only the question of their identity can be determined.

7. EUPHONIA TRINITATIS.

Euphonia trinitatis, Strickl. Cont. Orn. 1851, p. 72; Sclater, Cont. Orn. 1851, p. 84.

♂. *Atro-nitens sed magis viridescens quam* E. chlorotica: *capite et gutture purpureo tinctis: fronte angusta nigra: pileo supero toto postice rotundato et abdomine aureis: macula magna ovali in pogonio interno rectricum duarum utrinque extimarum et alis subtus albis.*

♀. *Supra olivascens: subtus flava.*

Long. tota 3·9, alæ 2·2, caudæ 1·3.

Hab. Trinidad.

Mus. P. L. S.

I have seen a good many examples of this Trinidad species, which appears correctly separable from the Cayenne bird.

8. EUPHONIA AFFINIS.

Tanagra (*Euphonia*) *affinis*, Less. R. Z. 1842, p. 175.

Euphonia affinis, Gray, Gen. p. 367. sp. 20; Bp. Consp. p. 233.

♂. *Atro-nitens: capite et gutture purpureo tinctis: fronte angusta nigra: pilei dimidio antico usque ad angulum oculorum extremum et abdomine toto limonaceo-flavis: macula magna in pogonio externo rectricum duarum utrinque extimarum et alis subtus albis.*

♀. *Supra olivascens, pileo postico et dorso superiore cinereo tinctis: subtus flavescentior, abdomine medio clariore.*

Long. tota 3·0, alæ 2·1, caudæ 1·3.

Hab. S. Mexico, Orizaba (*Botteri*); Guatimala; Realejo, Central America (*Less.*).

Mus. P. L. S.

In the amount of yellow on the head, and general appearance, this species comes very near the true *chlorotica*. But it may be recognized by the paler tinge of the yellow and the absence of the violaceous colouring upon the back.

9. EUPHONIA MINUTA.

Euphonia olivacea, Desm. Tan. pl. 27; Gray, Gen. p. 367. sp. 2; Bp. Consp. p. 232 (♀) ?

Tanagra olivacea, Vieill. Enc. Méth. p. 782.

Euphonia minuta, Cab. in Schomb. Reise, iii. p. 671 ; Sclater, Tan. Cat. Sp. p. 14 (♀).

Euphonia strictifrons, Strickl. Contr. Orn. 1851, p. 72 ; Sclater, Contr. Orn. 1851, p. 84.

Euphonia pumila, Bp. R. Z. 1851, p. 136 ; Note s. l. Tang. p. 10.

Euphonia leucopyga, Natt. in Mus. Vindob.

Atro-nitens ; dorso viridescentiore, capite et gutture purpurascentioribus : fronte lata et abdomine aureis : crisso, tibiis et rectricum trium utrinque extimarum pogonio interno fere toto cum tectricibus alarum inferioribus albis.

♀. *Supra olivacea : subtus flavescens, abdomine medio grisescente.*

Long. tota 3·4, alæ 1·9, caudæ 1·0.

Hab. Cayenne ; Brit. Guiana (*Schomb.*) ; Barra do Rio Negro (*Natt.*) ; New Grenada, Bogota.

Mus. Brit., Vindob.

This species is very easily distinguished among its close affines by the narrow yellow head-band and white crissum.

I have seen the type of Cabanis' *E. minuta*, and have no doubt it is the female of this bird, the male of which was afterwards named by Prince Bonaparte and Mr. Strickland almost simultaneously.

I have little doubt that Desmarest's *Euphonia olivacea* is also the female of this bird, but the name is hardly sufficiently applicable to warrant its adoption.

10. Euphonia concinna.

Euphonia concinna, Sclater, P. Z. S. 1854, p. 98. pl. 85. fig. 2, et 1855, p. 159 ; Tan. Cat. Sp. App. p. 16.

Euphonia hirundinacea, Bp. R. Z. 1851, p. 156 ; Note s. l. Tang. p. 10?

Supra nigro-violacea : vertice summa flava, fronte et linea supra oculos nigris : gutture violaceo-nigro : abdomine aurantiaco : cauda subtus immaculate nigra.

Long. tota 3·8, alæ 2·2, caudæ 1·4.

Hab. New Grenada, Bogota.

Mus. P. L. S.

11. Euphonia xanthogastra.

Euphonia xanthogastra, Sund. Vet. Ac. Handl. 1833, pl. 10. fig. 1 ; Gray, Gen. p. 367. sp. 22 ; Bp. Consp. p. 233 ; Sclater, Contr. Orn. 1851, p. 85 ; P. Z. S. 1854, p. 115, et 1855, p. 159.

Euphonia brevirostris, Bp. R. Z. 1851, p. 156, et Note s. l. Tang. p. 10.

Nitente-cærulescenti-nigra, cervice postica violacea : gutture nigro : pileo supero toto postice rotundato cum fronte et narium plumis et abdomine aurantiaco-flavis : macula in rectricis unæ utrinque extimæ pogonio interno et tectricibus subalaribus albis.

Long. tota 4·0, alæ 2·4, caudæ 1·3.

Hab. Southern Brazil ; Ecuador, prov. Quixos ; New Grenada, Bogota.

Mus. Brit.

I can find no difference between the Brazilian bird and the Bogota specimens (*E. brevirostris*) sufficient to warrant their separation.

12. Euphonia ruficeps.

Euphonia ruficeps, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 30; d'Orb. Voy. p. 268. pl. 22. fig. 2; Gray, Gen. p. 367. sp. 18; Bp. Consp. p. 232; R. Z. 1851, p. 136; Note s. l. Tang. p. 10; Sclater, Contr. Orn. 1851, p. 85.

Nitenti-cærulescenti-niger, cervice postica intense violacea: gutture nigro: pileo summo cum fronte castaneis: abdomine aureo medialiter aurantiaco: macula in pogonio externo rectricis unæ utrinque extimæ et tectricibus subalaribus albis.

Long. tota 4·0, alæ 2·4, caudæ 1·2.

Hab. Bolivia, Yuracares (*d'Orb.*); Venezuela, Caraccas (*Levraud*).

Mus. Parisiensi, Lafresnayano, Derbiano.

A bird in the collection lately transmitted to the Paris Museum by M. Levraud from Caraccas, differs from the true Bolivian *ruficeps* only in having rather more chestnut colouring on the head, and that of a lighter and more orange-coloured tinge. I should be unwilling to separate it specifically without seeing more specimens.

13. Euphonia fulvicrissa, sp. nov.

Supra nitenti-æneo-nigra, pileo postice rotundato flavo: gutture toto cum cervice versus ventrem in semicirculum terminata æneo-nigris: abdomine aureo, medialiter aurantiaco: crisso fulvo: rectricis unæ utrinque extimæ macula in pogonio externo et tectricibus subalaribus albis; his flavescente tinctis.

Long. tota 3·7, alæ 2·0, caudæ 1·2.

Hab. S. Martha in New Grenada.

I possess a single specimen of this *Euphonia* which was received by MM. Verreaux from their collector at S. Martha. It appears to me to constitute a new species of this genus, distinguished by the way in which the black throat is produced towards the breast and rounded at its termination, and the peculiar colour of the crissum.

14. Euphonia chalybea.

Tanagra chalybea, Mikan, Faun. et Flor. Bras. pl. 3. fig. 1 ♂, 2 ♀.

Euphone ænea, Sund. Vet. Ac. Sv. 1834, p. 309. pl. 11. fig. 4; Less. Descr. d. Mamm. et Ois. p. 348.

Euphonia ænea, Gray, Gen. p. 367. sp. 21; Bp. Consp. p. 233; R. Z. 1851, p. 136; Note s. l. Tang. p. 11.

Euphonia pardalates, Less. Echo d. M. S. 1844.

Euphonia chalybea, Sclater, Contr. Orn. 1851, p. 85.

"*Euphonia pyrrhuloides*, Natt.," Gray, Gen. App. p. 16.

Euphonia chloritica, Licht. in Mus. Berol.

Corpore supero cum gula summa intense æneis: vitta frontali et abdomine toto flavis, rostro crasso.

♀. *Olivacea : subtus grisea, lateribus et ventre imo crissoque flavescenti-olivaceis.*

Long. tota 5·0, alæ 2·6, caudæ 1·6.

Hab. Southern Brazil, Rio Grande do Sul (*Plant*).

Mus. Brit., Paris.

15. Euphonia violacea.

Tang. brasiliensis nigro-lutea, Briss. Orn. iii. p. 31.

Tanagra violacea, Linn. S. N. p. 315 ; Vieill. Enc. Méth. p. 783 ; Max. Beitr. iii. p. 441.

Tang. de Brésil, Buff. Pl. Enl. 114. fig. 2.

Le Teité, Buff. H. N. iv. 295 (partim).

Euphonia violacea, Gray, Gen. p. 267. sp. 3 ; Schomb. Reise, iii. 671; Bp. Consp. p. 232; Sclater, Contr. Orn. 1851, p. 86; Bp. R. Z. 1851, p. 136 ; Note s. l. Tang. p. 10.

Euphone teité, Desm. Tan. pl. 21. 22. 23 (?).

Golden Tanager, Lath. G. H. vi. 27.

Nitenti-cæruleo-nigra ; cervice postica violaceo tincta : fronte tota et pileo antico a mediis oculis cum corpore subtus aureis ; rect. 2 aut 3 extimis in pogonio interno albo maculatis.

♀. *Olivacea, subtus dilutior, medialiter flavescens.*

Long. tota 4·0, alæ 2·3, caudæ 1·3.

Hab. Trinidad ; Cayenne ; Brit. Guiana (*Schomb.*); South-eastern Brazil (*P. Max.*) ; Southern Brazil.

Mus. Brit., &c.

16. Euphonia laniirostris.

Euphonia laniirostris, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1837, p. 30 ; d'Orb. Voy. p. 266. pl. 23. fig. 1 ; Gray, Gen. p. 367. sp. 17; Bp. Consp. p. 223 ; Rev. Zool. 1851, p. 136 ; Note s. l. Tang. p. 10.

Major : nigro-violaceo-nitens : pileo summo postice rotundato et corpore subtus aureo-flavis : rostro maximo, crassissimo.

♀. *Viridescenti-olivacea, uropygio flavescentiore : subtus flavescenti-viridescens.*

Hab. Bolivia, prov. Yungas Guarayos and S. Cruz de la Sierra (*d'Orb.*).

Mus. Parisiensi, Lafresnayano.

17. Euphonia crassirostris, sp. nov.

Euphonia fortirostris, Lafr. in Mus. suo ?

Nitenti-cæruleo-nigra, nucha vix violaceo tincta : pileo summo postice rotundato flavo : linea angusta supra oculos et narium plumis nigris : subtus læte flava : rectricum duarum utrinque extimarum macula longa in pogonio interno et tectricibus subalaribus albis : rostro forti, crasso.

♀. *Olivacea, subtus flava, lateribus olivascentibus.*

Long. tota 4·1, alæ 2·6, caudæ 1·6.

Hab. New Grenada, Bogota.

I had formerly thought this Bogota bird might be the same as the Central American *E. hirundinacea*, but I have lately obtained other specimens, and find that such is not the case. The upper colouring of this bird is not of the peculiar green shade which exists in the true *hirundinacea*, and the yellow head, instead of being confined to the frontal half and terminated by a straight line, extends further back and is posteriorly rounded. The bill of this bird is also thicker, broader and stronger, and shows more approach to the true Bolivian *laniirostris*.

I am not now certain whether it is this species or the *hirundinacea* to which the Baron de la Fresnaye has given the MS. name *fortirostris*.

18. Euphonia hirundinacea.

Euphonia hirundinacea, Bp. P. Z. S. 1837, p. 117; Gray, Gen. p. 367. sp. 4; Bp. Consp. p. 232; Sclater, P. Z. S. 1854, p. 98. pl. 85. fig. 1 (*fig. mala*).

Euphonia laniirostris, Sclater, Contr. Orn. 1851, p. 86.

Viridescenti-æneo-nigra, cervice postica cærulescentiore: pileo a fronte ad initium oculorum et corpore subtus flavis, macula in ventre imo alba: rectricum duarum utrinque extimarum macula oblonga in pogonio interno et tectricibus subalaribus albis.

Long. tota 4·2, alæ 2·5, caudæ 1·3.

Hab. Guatimala (*Bp.* et *Constancia*); S. Mexico, Cordova (*Sallé*).

I had not very good specimens of this bird when I described it in P. Z. S. for 1854, and the figure there given would suit better my *Euphonia crassirostris*. M. Sallé, however, has lately brought some beautifully prepared skins from Southern Mexico, which have enabled me to determine the species more satisfactorily.

I have seen specimens in which the white belly-spot, which is perhaps produced by abrasion of the feathers in the most adult birds, was scarcely apparent.

19. Euphonia melanura.

Euphonia melanura, Sclater, Contr. Orn. 1851, p. 86; P. Z. S. 1855, p. 159.

Nitenti-violaceo-nigra: pileo summo cum fronte et corpore subtus aureis: rectricibus immaculate nigris.

Long. tota 4·0, alæ 2·3, caudæ 1·3.

Hab. Barra do Rio Negro (*Wallace*); New Grenada, Bogota?

The Bogota birds have the bill rather stronger and the yellow on the head more extended than the specimens from the Amazons.

c. *Iliolopha.*

20. Euphonia cayana.

Tang. cayanensis nigra, Briss. Orn. iii. 219.
Tang. de Cayenne, Buff. Pl. Enl. 114. fig. 3.
Tang. négre, Buff. H. N. iv. 297.

Tanagra cayana, Linn. S. N. i. p. 14.
Tanagra cayennensis, Gm. S. N. ii. 894.
Euphonia cayennensis, Gray, Gen. p. 367. sp. 6; Schomb. Reise, iii. 671.
Euphonia cayana, Bp. Consp. p. 233; R. Z. 1851, p. 135; Note s. l. Tang. p. 10; Sclater, Contr. Orn. 1851, p. 88.
Euphone négre, Desm. Tan. pl. 26.

Atro-violaceo-nitens: macula magna utrinque pectorali læte flava.
Long. tota 4·0, alæ 2·5, caudæ 1·3.
Hab. Cayenne; Brit. Guiana (*Schomb.*); Lower Amazon (*Wallace*).

21. Euphonia rufiventris.

Tanagra rufiventris, Vieill. N. D. d'H. N. xxxii. p. 426; Enc. Méth. p. 781; Gal. Ois. Supp. pl. 24.
Euphonia rufiventris, Gray, Gen. p. 367. sp. 12; Bp. Consp. p. 233; R. Z. 1851, p. 135; Note s. l. Tang. p. 10; Sclater, Contr. Orn. 1851, p. 87; Cassin, Rep. U.S. Astr. Exp. ii. p. 182. pl. xx. fig. 1.
Euphonia bicolor, Strickl. Contr. Orn. 1850, p. 48. pl. 49. fig. 2.
"*Tanagra chrysogaster*, Cuv.," Less. Tr. d'Orn. p. 461.

Atro-nitens: abdomine toto rubrescenti-aurantio, lateraliter flavescentiore.
♀. *Olivaceo-viridis; subtus medialiter cinerea, lateraliter flavescenti-olivacea.*
Long. tota 4·5, alæ 2·4, caudæ 1·4.
Hab. Eastern Peru, prov. Maynas (*Pöppig*); r. Ucayali (*Hawxwell*); Rio Negro, Barcellos et S. Carlos (*Natterer*).
Mus. Brit., Derbiano, Vindob. et Lipsiensi.

22. Euphonia pectoralis.

Pipra pectoralis, Lath. Ind. Orn. Supp. p. 57.
Euphonia castaneiventris, Vieill. Gal. Ois. Supp. pl. .
Tanagra rufiventris, Licht. Doubl. p. 30; Max. Beitr. iii. 447.
Tanagra chlorocyanea, Vieill. N. D. d'H. N. xxxii. p. 427; Puch. Arch. Mus. vii. p. 355.
Euphonia pectoralis, Gray, Gen. p. 367. sp. 7; Bp. Consp. p. 233; R. Z. 1851, p. 135; Note s. l. Tang. p. 10; Sclater, Cont. Orn. 1851, p. 87.
Euphonia umbilicalis, Less. Tr. d'Orn. p. (♀); Bp. Consp. p. 233; R. Z. 1851, p. 400, et Note s. l. Tang. p. 11.

Atro-violaceo-nitens: plaga utrinque pectorali flava: ventre toto saturate castaneo: tectricibus subalaribus albis.
♀. *Olivacea: pileo postico griseo: subtus flavo-olivacea: pectore et cervice cinereis: crisso castaneo.*
Long. tota 4·0, alæ 2·5, caudæ 1·5.
Hab. S.E. Brazil (*Max.*); Goyaz (*Cast.* et *Dev.*).
Mus. Brit., Parisiensi.

d. *Pyrrhuphonia.*

23. Euphonia jamaicensis.

Fringilla jamaicensis, Briss. Orn. iii. 166.
Grey Grosbeak, Brown, Illustr. pl. 26.
Fringilla jamaica, Linn. S. N. i. p. 323.
Euphonia jamaica, Gray, Gen. App. p. 17; Gosse, B. Jam. p. 238; Ill. Orn. Jam. pl. 59 ♂ et ♀; Bp. Consp. p. 233; Sclater, Contr. Orn. 1851, p. 91.
Pyrrhuphonia jamaica, Bp. R. Z. 1851, p. 157; Note s. l. Tang. p. 11.
Euphonia cinerea, Lafr. R. Z. 1846, p. 277; Bp. Consp. p. 235; Gray, Gen. App. p. 17.
Banana Finch, Lath. G. H. vi. 125.

Cærulescenti-grisea: subtus dilutior, ventre flavo, crisso albido.
♀. *Mari similis, sed uropygio virescente, ventre non flavo.*
Long. tota 4·3, alæ 2·5, caudæ 1·5.
Hab. Jamaica (*Gosse*).
Mus. Brit.

24. Euphonia plumbea.

Euphonia poliocephala, Natt. in Mus. Vindob.
Euphonia plumbea, DuBus, Bull. Acad. Brux. xxii. p. 156.

Griseo-plumbea, viridi micans: ventre et crisso flavissimis.
♀. *Grisea, olivaceo tincta: gula grisea: ventre flavescentiore: crassitie* E. minutæ.
Hab. Rio Negro (*Natt.*).
Mus. Vindob.
There are specimens of both sexes of this somewhat abnormally coloured *Euphonia* in the Vienna Museum, collected by Natterer on the Rio Negro, and numbered 967 in his collection.

GENERUM TANAGRINORUM

DISTRIBUTIONIS GEOGRAPHICÆ

SCHEMA.

	North America. 1.	Mexico and Central America. 2.	Antilles. 3.	New Grenada (Bogota). 4.	Transandean Ecuador (Quito). 5.	Eastern Peru. 6.	Western Littoral of Peru. 7.	Interior of Bolivia. 8.	Paraguay, Uruguay & S. Brazil. 9.	Littoral of Brazil. 10.	Guiana and Cayenne. 11.	Venezuela and Littoral of New Grenada. 12.	Trinidad. 13.	Total number of Species.
1. Pitylus	...	2	...	1	...	1	...	...	...	2	3	...	...	7
2. Orchesticus	...	...	...	1	...	1	...	1	1	3	1	1	1	3
3. Schistochlamys	...	...	...	...	...	1	...	...	...	1	...	...	...	2
4. Saltator	...	3	2	3	...	2	...	5	6	4	2	2	3	21
5. Psittospiza	...	...	...	1	1	1	...	...	...	...	...	...	...	1
6. Lamprospiza	...	...	...	...	...	...	...	...	...	...	1	...	...	1
7. Cissopis	...	...	...	1	...	1	...	1	1	1	1	...	...	3
8. Oreothraupis	...	...	...	...	1	...	...	...	...	...	...	...	...	1
9. Arremon	...	1	...	2	1	1	...	1	2	3	1	1	...	12
10. Phœnicophilus	...	...	1	...	...	...	...	...	...	...	...	...	...	1
11. Buarremon	...	3	...	6	2	2	...	3	...	...	1	3	...	17
12. Chlorospingus	...	2	...	11	...	...	...	1	...	...	...	1	1	15
13. Pyrrhocoma	...	...	...	...	...	...	...	...	1	...	...	...	...	1
14. Nemosia	...	...	...	2	...	3	...	3	2	4	3	2	1	11
15. Cypsnagra	...	...	...	...	...	...	...	1	...	1	...	...	...	1
16. Tachyphonus	...	...	...	5	...	4	...	1	2	2	3	2	2	10
17. Trichothraupis	...	...	...	...	...	...	...	...	1	1	...	...	...	1
18. Eucometis	...	...	...	...	...	...	...	1	...	...	1	1	...	3
19. Lanio	...	1	...	1	...	...	...	1	...	...	1	...	...	3
20. Phœnicothraupis	...	1	...	1	...	...	...	1	1	1	...	1	1	4
21. Lamprotes	...	...	...	1	...	...	...	...	...	1	...	...	...	2
22. Orthogonys	...	...	...	...	...	...	...	...	...	1	1	...	...	2
23. Pyranga	3	7	2	4	...	2	...	1	1	1	1	2	1	10
24. Ramphocelus	...	4	...	5	...	3	...	1	...	3	1	2	1	16
25. Spindalis	...	...	3	...	...	...	...	...	...	...	...	...	...	3
26. Tanagra	...	2	...	4	1	3	2	4	2	4	3	3	2	13
27. Dubusia	...	...	...	1	1	...	...	...	...	...	...	...	...	2
28. Compsocoma	...	...	...	1	2	1	...	1	...	...	...	...	...	4
29. Buthraupis	...	...	...	2	2	...	...	1	...	...	...	...	...	4
30. Pœcilothraupis	...	...	...	2	1	...	1	1	...	...	...	...	...	3
31. Iridornis	...	...	...	1	1	...	1	...	...	...	...	...	...	3
32. Calliste	...	3	...	17	6	12	...	7	3	9	7	8	3	51
33. Diva	...	...	...	1	...	...	...	...	...	...	...	...	...	1
34. Pipridea	...	...	...	...	...	...	...	1	1	1	...	1	...	3
35. Chlorochrysa	...	...	...	1	2	1	...	...	...	...	...	...	...	2
36. Tanagrella	...	...	...	1	...	1	...	...	...	1	1	1	...	4
37. Glossiptila	...	...	1	...	...	...	...	...	...	...	...	...	...	1
38. Chlorophonia	...	1	...	2	...	1	...	...	...	1	...	1	...	5
39. Euphonia	...	3	3	6	1	4	...	3	1	4	5	3	3	24
40. Stephanophorus	...	...	...	...	...	...	...	...	...	1	...	...	...	1
	3	33	12	84	22	45	4	40	25	50	37	35	19	272

6. On the species of the American genus Parra. By Philip Lutley Sclater, M.A., F.Z.S.

The American birds of the genus *Parra*, together with their representatives in the Tropics of the Old World belonging to the genera *Metopidius*, *Hydralector* and *Hydrophasianus*, constitute a very natural group, allied in many respects to the *Rallidæ*, but remarkable for the extreme elongation of the toes—a formation beautifully adapted for enabling them to walk upon the floating leaves of the numerous water-plants of these countries.

MM. Verreaux of Paris have kindly furnished me from their well-stored magazines with a series of specimens of *Parra*, which enabled me to point out to the Society the distinctions between all the hitherto known species of this genus, and to indicate one certainly new, and a second, which although not so obviously distinct, has some claim to be recognized as an intermediate species.

A. *Species caruncula frontali bilobata et caruncula rictali utrinque præditæ.*

1. Parra jacana.

Parra jacana et variabilis, Linn. et Gm.
Parra nigra et brasiliensis, Gm.
Parra jacana, Max. Beitr. iv. 786.
Parra jassana, Schomb. Reise, iii. 759.
Jacana du Mexique, Buff. Pl. Enl. 322 (adult).
Jacana du Brésil, Buff. Pl. Enl. 846 (juv.).

Capite toto cum cervice supera et corpore infra nigris : dorso, alis caudaque clare castaneis : tectricibus caudæ superioribus purpurascente tinctis : remigibus flavescenti-viridibus, nigro extus partim marginatis : hypochondriis et tectricibus subalaribus intense castaneis.

Hab. South-eastern Brazil (*P. Max.*) ; British Guiana (*Schomb.*) ; Cayenne ; ins. Trinidad.

The examples of this bird which I have seen from Guiana and Cayenne appear to be considerably inferior in size to the Brazilian specimen, but I am not yet certain how far this may be due to sexual differences.

2. Parra intermedia, sp. nov. ?

"*Parra intermedia*, Bp.," J. et E. Verreaux, MS.

Capite toto cum cervice supera et corpore infra nigris : dorso, alis caudaque obscurius castaneis, purpurascente paululum tinctis : hypochondriis et tectricibus subalaribus brunnescenti-castaneis : remigibus flavescenti-viridibus, nigro extus partim marginatis.

Hab. Venezuela (*Verreaux*).

This bird is hardly distinguishable from the *P. jacana*, except by the browner and more purplish tinge of the back, in which respect it seems intermediate between that species and *P. melanopygia*.

I should hardly have ventured to separate it specifically on my own authority; but, as the MS. name has attained circulation, I think it right to point out the apparent differences.

3. Parra melanopygia, sp. nov.

Capite toto cum cervice supera et corpore infra nigris: interscapulio, alis caudaque purpurascenti-brunneis: dorso imo et tectricibus caudæ superioribus nigris: hypochondriis et tectricibus subalaribus nigris: remigibus flavescenti-viridibus, nigro extus partim marginatis.

Hab. S. Martha in New Grenada (*Verreaux*).

MM. Verreaux's specimens of this bird are labelled *P. hypomelæna*, but that name is properly applicable to the next species.

4. Parra hypomelæna.

Parra hypomelæna, Gray & Mitch. Gen. of B. pl. 159.

Nigra: alis fusco-nigris purpurascente tinctis: remigibus flavescenti-viridibus, nigro extus partim marginatis.

Hab. New Grenada, S. Martha (*Verreaux*); Bogota (*Mus. Brit.*); Cartagena (*Mus. Paris.*); Chiriqui, Panama (*Bridges*).

B. *Species caruncula frontali trilobata: carunculis rictalibus nullis.*

5. Parra gymnostoma.

Parra gymnostoma, Wagl. Isis, 1831, p. 517.

Parra cordifera, Less. R. Z. 1842, p. 135; Desmurs, Icon. Orn. pl. 42.

Capite toto cum cervice supera et infra ad medium pectus nigris, æneo micantibus: dorso toto alisque castaneis: uropygio purpurascente: abdomine purpurascenti-brunneo: remigibus flavescenti-viridibus, nigro marginatis.

Hab. Southern Mexico; Mazatlan (*Mus. Brit.*); Acapulco (*A. Lesson*); New Grenada, S. Martha (*Verreaux*); Honduras (*Dyson*).

Wagler's accurate diagnosis of this bird has been generally passed over, and Lesson's more recent appellation is generally employed for this species.

7. Catalogue of the Birds collected by M. Auguste Sallé in Southern Mexico, with Descriptions of New Species. By Philip Lutley Sclater, M.A., F.Z.S., etc.

(Aves, Pl. CXX., CXXI.)

M. Auguste Sallé, one of the most active and successful of the present generation of travelling Naturalists—on his recent return to Europe from Southern Mexico, brought with him a very fine collection of birds obtained principally near the town of Cordova in the State of Vera Cruz, and partially also in the vicinity of the peak of

Orizaba in the State of La Puebla. When in Paris a short time since, I had the pleasure of looking through this collection in company with Prince Charles Lucien Bonaparte; and at his request, and that of M. Sallé, who offered to place a series of the birds in my hands for that purpose, agreed to endeavour to make a complete catalogue of the species. Although I have not been able to devote all the time I could have wished to this object, I have succeeded in ascertaining, without much doubt, the names of the greater part of the known species; while there are fourteen or fifteen birds in the collection which may be considered as probably unknown to science, and for which I have accordingly proposed new specific appellations. It is quite likely that some of these may have been already named by the American Naturalists, who have recently done so much to extend our knowledge of the Fauna of the northern portion of the New World; but I have been unable to find any notice of them in the publications of the Scientific Societies of the United States or other works, as far as they have been received in this country up to the present time.

Although we have a pretty good general knowledge of Mexican Ornithology—many collections having been made in that country—there has been, as far as I am aware, no attempt made to form any detailed account of the birds inhabiting it, except Mr. Swainson's imperfect Synopsis published in the Philosophical Magazine in 1827, and Wagler's paper on Mexican Animals in the Isis for 1831; and the notices of more recently discovered species are scattered at random through the scientific publications of England, France, Germany and America, to the great perplexity of the naturalist. So I may hope that the present list of 233 species found by M. Sallé in Southern Mexico, will be of some use as an Index to the Ornithology of that country as far as it goes, and form a foundation on which a more perfect work on the same subject may some day be raised.

I may remark, that there are examples of many well-known South American forms in the present collection (such as *Nyctidromus*, *Pipra*, *Anabates* and *Formicarius*) which have not hitherto been noticed so far north; the zoology of the hot eastern sea-board, which M. Sallé explored, being, as might have been expected, much more tropical in its character than that of the high table-land of the interior, whence most Mexican collections have hitherto been brought.

The occurrence of the examples of the purely Boreal types *Certhia* and *Parus* so far south (below the parallel of 19′ N. L.), is also, I believe, hitherto unrecorded.

A notice of these collections of birds by Prince Bonaparte will be found in the Comptes Rendus of the French Academy of Natural Sciences for the month of May of this year, and some of the new species are there shortly indicated.

Accipitres.

1. Tinnunculus sparverius (Linn.).

Sallé, no. 8. Cordova.

2. Hypotriorchis femoralis (Temm.).—Pl. Col. 121 et 343.

Sallé, no. 11. Vera Cruz. *Hypotriorchis aurantius*, Heerman, Pr. Ac. Phil. vii. 177. Observed by Dr. Heerman in New Mexico.

3. Asturina magnirostris (Gm.).

Sallé, no. 5.

4. Micrastur concentricus (Less.).

Sallé, no. 7.

5. Geranospiza gracilis (Temm.).

Sallé, no. 9. Cordova.

6. Ictinia plumbea (Gm.).

Sallé, no. 6. Cordova.

7. Buteo insignatus, Cassin, B. Cal. pp. 102 et 198. pl. 31.

Sallé, no. 7.

Both Prince Bonaparte and M. Jules Verreaux (who are well acquainted with *Accipitres*) agree in considering a single specimen obtained by M. Sallé as referable to this curious species. It appears to agree sufficiently with Mr. Cassin's description and figure of the male bird of *B. insignatus*.

8. Syrnium virgatum, Cassin, Pr. Ac. Sc. Phil. 18. iv. p. 124; Journ. Ac. Phil. iv. pl. ii. pl. 3.—*Syrnium squamulatum*, Bp. Consp. p. 53.—*Syrnium zonocercus*, G. R. Gray, List Accipitr. p. 103.—*Macabra squamulata*, Bp. MS.

Sallé, no. 3. Cordova.

9. Athene infuscata (Temm.), Strickl. Orn. Syn. p. 163.

Sallé, no. 4. Cordova. These examples seem to agree with South American specimens.

Caprimulgidæ.

10. Nyctidromus americanus (Linn.), Cassin, Pr. Ac. Sc. Phil. v. 180.—*N. derbianus*, Gould.

Does not seem different from South American examples.

Sallé, no. 10, ♂ et ♀. Cordova.

Hirundinidæ.

11. Cotyle serripennis (Aud.).—*Hirundo serripennis*, Aud. Orn. Biog. iv. p. 593: B. Am. 8vo. i. pl. 51.

Sallé, no. 137, ♂ et ♀. Cordova.

Momotidæ.

12. Momotus lessoni (Less.).—*M. brasiliensis*, Cassin, Pr. Ac. Phil. iv. 89?

Sallé, no. 48. Cordova.

The specimens of this northern representative of *M. brasiliensis* show some variation. M. Sallé's example has a smaller bill, less black on the head, and less rufous tinge on the breast than a Guatimalan bird, which I refer to the same species.

Alcedinidæ.

13. Ceryle americana (Gm.), Cassin, B. Cal. i. p. 255; P. Z. S. 1855, p. 136.

Sallé, no. 68. Cordova.

Trogonidæ.

14. Trogon caligatus, Gould, Mon. Trogon. pl. 7.

Sallé, no. 71, ♂ et ♀. Cordova.

15. Trogon puella, Gould, P. Z. S. 1845, p. 18.—*Trogon xalapensis*, DuBus, Esq. Orn. pl. 5.

Sallé, no. 69. Cordova, ♂ et ♀.

16. Trogon aurantiiventris, Gould, P. Z. S. 1856 (May 13th), p. 107.—*Trogon sallæi*, Bp. Compt. Rend. May 1856.

Sallé, no. 70. Cordova.

Cærebidæ.

17. Cæreba cyanea (Linn.), v. P. Z. S. 1856, p. 140.

Sallé, no. 113. Cordova. Seems to agree quite sufficiently with South American species.

18. Certhiola mexicana, sp. nov.?

Nigricanti-fusca : capite, alis caudaque nigris : superciliis et speculo alari albis : uropygio flavicante : gutture cinereo : abdomine flavo ; crisso albidiore : rectricibus extimis albo terminatis.

Long. tota 3·8, alæ 2·1, caudæ 1·2.

Sallé, no. 114. Some of the various local races of *Certhiola flaveola* certainly show such differences as entitle them to specific separation. The present bird does not appear to be quite the same as any of the nine given by Prince Bonaparte in his 'Notes Orn.' p. 51. It is very closely allied to the Bogota species, which I believe to be the *C. luteola*, Cab., but may be distinguished by its duller back, less brightly-coloured uropygium and belly, longer bill and shorter wings.

19. Diglossa baritula, Wagl. Isis, 1832, p. 281; Gray, Gen. B. pl. 42.

Sallé, no. 116, ♂ et ♀.

Trochilidæ.

I have not myself examined M. Sallé's collection of *Trochilidæ*, but he has kindly furnished me with the names of twenty-five species, which he obtained, as determined by himself and M. Bourcier.

20. Phaethornis adolphi.—*Pygmornis adolphi*, Sallé, MS.
Mr. Gould will shortly publish a figure of this new species.

21. Lampornis prevosti (Bourc. & Muls.), R. Z. 1843, p. 99.

22. Campylopterus pampa (Less.), Ois. Mouch. Suppl. pl. 15; Bp. Consp. p. 71; Gould, Mon. Trochil. x. pl. 11.

23. Campylopterus delattrii (Less.), R. Z. 1839, p. 14; Gould, Mon. Trochil. x. pl. 10.

24. Colibris thalassina (Sw.), Phil. Mag. 1827, p. 441; Bp. Consp. p. 69; Gould, Mon. Trochil. v. pl. 5.

25. Heliomaster constantii (Delattre), Gould, Mon. Trochil. v. pl. 10.

26. Cœligena fulgens (Sw.), Phil. Mag. 1827, p. 341.—*Orn. rivolii*, Less.

27. Myiabeillia typica, Bp.; Gould, Mon. Trochil. viii. pl. 7.

28. Delattria henrici (Less.), Bp. Consp. p. 70; Gould, Mon. Trochil. viii. pl. 14.

29. Delattria rhami (Less.), R. Z. 1838, p. 315.

30. Delattria clemenciæ (Less.), Gould, Mon. Trochil. ix. pl. 10.

31. Cyanomyia quadricolor (Vieill.), Gould, Mon. Trochil. ix. pl. 9.

32. Amazilius arsinoe (Less.), Bp. Consp. p. 77.

33. Amazilius dubusi (Bourc.), 1852, ubi?
Is this species really distinct from *A. riefferi* (Bourc.), R. Z. 1843, p. 103? I cannot see any difference in Mr. Gould's examples of these two species.

34. Amazilius cerviniventris, Gould, P. Z. S. 1856, June 10th.

35. Sporadinus caniveti (Less.), Colibris, Suppl. pl. 37.
Perhaps this may be *S. auriceps*, Gould (Cont. Orn. 1852, p. 137), which appears to be the Mexican representative of *S. caniveti*.

36. Thaumatias candidus, Bourc. Ann. Sc. Lyons, 1846; Bp. Consp. p. 78.

37. Basilinna leucotis (Vieill.). — *Orn. arsenii*, Less. Ois. Mouch. pl. 9, Suppl. pl. 27.

38. Trochilus colubris, Linn.

39. Selasphorus platycercus (Sw.), Phil. Mag. 1827, p. 441. —*O. tricolor*, Less., Gould, Mon. Trochil. iii. pl. 7.

40. Selasphorus heloisæ (Less. & Del.), R. Z. 1839, p. 15; Gould, Mon. Trochil. viii. pl. 2.

41. Calothorax lucifer (Sw.), Phil. Mag. 1827, p. 442; Bp. Consp. p. 85.

42. Calothorax eliza (Less. & Delattre).—*Tr. eliza*, Less. & Del. R. Z. 1839, p. 20.

43. Thaumastura duponti (Less.). — *Tryphaena duponti*, Gould, Mon. Trochil. i. pl. 14.

44. Lophornis helenæ (Delattre), Gould, Mon. Trochil. x. pl. 6.

Certhiidæ.

45. Synallaxis erythrothorax, Sclater, P. Z. S. 1855, p. 75. pl. lxxxvi.

Sallé, no. 109. Cordova. This is the only bird of the genus which I have as yet seen from north of the Isthmus of Panama.

46. Anabates rubiginosus, sp. nov.

Sallé, no. 102. Cordova.

Saturate brunneus; pileo obscuriore: alis extus, uropygio et cauda tota cum pectore saturate rubiginoso-rufis; gula clariore: ventre dorso concolore sed medialiter pallidiore: tectricibus subalaribus clare rubiginosis: rostro forti, crasso, recto, nigricante, basi pallida: pedibus nigricanti-plumbeis.

Long. tota 8·0, alæ 3·7, caudæ 3·3, rostri a rictu 1·2.

This fine *Anabates* is of the same strong form as *A. ferruginolentus* (Max.), but has shorter wings and rather a stiffer tail. I know of no species that resembles it much in colouring.

47. Anabates cervinigularis, sp. nov.

Sallé, no. 104. Cordova.

Supra saturate brunneus; pileo nigro: dorso summo nigricante adumbrato: plumis medialiter pallidioribus: loris, superciliis longis et cervicis lateribus clare rufis: gutture dilutiore, pallide cervino: abdomine flavescenti-brunneo lateraliter obscuriore: alarum pennis nigris extus brunneo limbatis, subtus autem cum tectricibus subalaribus clare rufis: uropygio et crisso cum cauda tota saturate rubiginoso-rufis: rostro validiusculo, recto, corneo, basi autem flavicante: pedibus pallide brunneis.

Long. tota 7·5, alæ 3·6, caudæ 3·0.

This species is not quite so strong in form as the last, and has not so thick a bill. In colouring it somewhat resembles *A. atricapillus*, but is much larger than that bird. The sexes are coloured alike.

48. Anabazenops variegaticeps, sp. nov.

Sallé, no. 204. Cordova. Sexes alike.

Supra brunneus: pilei pennis olivaceis, nigro angustissime circumcinctis et scapis plumarum flavicantibus: superciliis longis rufis: loris et regione auriculari nigris: mento et gutture toto ochracescenti-albidis: abdomine pallide brunneo: cauda clare rubiginoso-rufa: tectricibus subalaribus flavicanti-ochraceis: rostro pallide corneo, basi flavicante: pedibus pallide brunneis.

Long. tota 6·0, alæ 3·3, caudæ 2·7.

This bird closely resembles *Anabazenops rufo-superciliatus* (Lafr.), but may be recognized at once by the darker, browner back, and the variegated head, which in the latter species is of the same greenish brown as the back. In the present bird also there is not that decided mottled plumage on the breast observable in the other species, although there are slight indications of it on the sides of the neck.

49. Xenops mexicanus, sp. nov.

Rufescenti-olivaceus, capite obscuriore, uropygio rufo: loris albidis: stria superciliari angusta ochraceo-flavida: regione auriculari ochraceo-flavida, nigro mixta: penicilla utrinque sub regione auriculari alba: subtus dorso similis sed minus rufescens, mento et gutture medio ochracescenti-albidis: alis nigris: vitta lata per remiges cum secundariarum interiorum marginibus et terminationibus necnon secundariis dorso proximis rufis: cauda rufa: rectricibus duabus utrinque submedialibus omnino et rectricum his proximarum parte basali nigris, duabus mediis et una utrinque extima omnino rufis: rostro nigro, basi inferiore albicante: pedibus nigris.

Long. 4·6, alæ 2·7, caudæ 2·1.

Obs. Affinis *Xenopi genibarbi*, sed crassitie majore et colore subtus olivascentiore necnon gula ochracescenti-albida distinguendus. ♂ et ♀ similes.

Sallé, no. 115. Cordova.

50. Dendrornis flavigastra (Sw.).—*Xiphorhynchus flavigaster*, Sw. Phil. Mag. 1827, p. 440.—*Nasica flavigaster*, Lafr. R. Z. 1850, p. 383; DesMurs, Icon. Orn. pl. 52.

Sallé, no. 97. Cordova.

51. Dendrornis triangularis (Lafr.), R. Z. 1842, p. 134, 1850, p. 418, et Mag. de Zool. 1843, pl. 32.

Sallé, no. 99. Cordova.

52. Picolaptes affinis, Lafr. R. Z. 1850, p. 275?

Sallé, no. 98. Cordova. M. Sallé has brought home a single bird of this difficult group which I refer with some doubt to *P. affinis*, Lafr.

53. Sittasomus sylvioides, Lafr. R. Z. 1849, p. 331, et 1850, p. 590.

Sallé, no. 100. Cordova.

54. Sclerurus mexicanus, sp. nov.

Sallé, no. 101. Cordova.

Brunnescenti-olivaceus, pileo paulo obscuriore; uropygio cum cervice et pectore antice saturate rufis: mento albescentiore: alis nigris brunneo limbatis, rectricibus nigris, marginibus externis brunnescentibus: rostro nigro; basi inferiore albicante: pedibus nigerrimis.

Long. tota 6·5, alæ 3·2, caudæ 2·2.

M. Sallé's collection contains four examples of this interesting bird, which has never previously come under my notice. One marked as a female has the bill rather longer than the others, but does not otherwise differ from them. It may be at once distinguished from the Brazilian *S. caudacutus* (to which it shows great general resemblance) by its smaller size. Hartlaub's *S. fuscus* (R. Z. 1844, p. 370) seems to be larger, and differently coloured.

55. Certhia mexicana, Reich. Handb. d. Sp. Orn. p. 266.

Sallé, no. 106. Ranchos de Suapam.

I have not yet had an opportunity of comparing this bird with specimens of *C. americana*.

56. Scytalopus prostheleucus, sp. nov.

Sallé, no. 112. Cordova.

Supra brunneus, dorso rufescente: superciliis longis albis: lateribus capitis nigris albo variegatis: subtus albus; lateribus cineraceis, ventre imo et crisso rufescentibus: alis fusco-nigris extus rufescenti-brunneo transvittatis: tectricum apicibus albo maculatis: cauda tota nigricante et rufescenti-brunneo tessellata: rostro nigro: pedibus brunneis.

Long. tota 3·8, alæ 2·2, caudæ 1·0.

This Mexican species much resembles in colouring a Bogota bird in my collection, which I somewhat doubtfully refer to *S. griseicollis*, Lafr., but differs from it in having the lower parts cinereous and not white.

57. Troglodytes palustris (Wilson), Am. Orn. pl. xii. fig. 4.

Sallé, nos. 107 et 210. Romatlan.

58. Troglodytes hyemalis, Vieill., Wils. Am. Orn. pl. 8. fig. 6.

Sallé, no. 108. El Jacale.

59. Thryothorus maculipectus, Lafr. R. Z. 1845, p. 338.

Sallé, no. 111. Cordova.

60. Campylorhynchus zonatus (Less.), Cent. Zool. pl. 70.

Sallé, no. 59. Cordova.

Mniotiltinæ.

61. Mniotilta varia (Linn.).
Sallé, no. 128, ♂ et ♀.

62. Helmitheros solitarius (Wilson), Am. Orn. t. 15. fig. 4.
Sallé, no. 125. Cordova.

63. Helmitheros rubricapillus (Wilson), Am. Orn. t. 27. fig. 3.
Sallé, no. 126. Cordova.

64. Helmitheros —— ?
Sallé, no. 123. Cordova, ♂.

Olivaceus: pileo cinereo: capite laterali et gutture toto cum pectore et ventre medio albidis: lateribus flavescenti-olivaceis.
Long. tota 4·2, alæ 2·2, caudæ 1·6.
This bird seems in plumage rather to resemble the female of *Trichas macgillivraii* as figured by Audubon (B. Amer. 8vo. ii. pl. 100. fig. 2), but certainly in my judgement belongs to this genus.

65. Rhimamphus coronatus (Linn.).
Sallé, no. 120. Cordova, av. juv.

66. Rhimamphus pensilis (Gm.).
Sallé, no. 211.

67. Rhimamphus virens (Gm.).
Sallé, no. 118.

68. Rhimamphus olivaceus (Giraud).—*Sylvia olivacea*, Giraud, B. Texas, p. 14. pl. 7. fig. 2.—*Sylvicola tæniata*, DuBus, Bull. Ac. Brux. xiv. p. 104; P. Z. S. 1855, p. 66; Cassin, B. Cal. i. pl. 48. p. 283.
Sallé, no. 191.

69. Myiodioctes mitratus (Lath.), Bp. Consp. p. 315.
Sallé, no. 121. Cordova.

70. Myiodioctes pusillus (Wilson), Bp. Consp. p. 315.
Sallé, no. 122.

71. Euthlypis lacrymosa, Cab. Mus. Hein. p. 19 (note).—*Basileuterus*, sp. 10; Bp. Consp. p. 314.
Sallé, no. 131. Cordova.

72. Basileuterus rufifrons (Sw.).—*Setophaga rufifrons*, Sw. An. in Men. p. 294; Bp. Consp. p. 314.
Sallé, no. 124.

73. Basileuterus brasieri (Giraud).—*Muscicapa Brasierii*, Giraud, B. Texas, pl. 6. fig. 2.—*B. culicivorus*, Cab. Mus. Hein. p. 17; Bp. Consp. p. 313; P. Z. S. 1855, p. 66.

Sallé, no. 127, ♂ et ♀ similes. Cordova.

74. Setophaga ruticilla (Linn.).

Sallé, no. 174.

75. Setophaga picta, Sw. Zool. Ill. n. s. pl. 3; Bp. Consp. p. 312.

Sallé, no. 188.

76. Setophaga miniata (Sw.).—*Muscicapa miniata*, Sw. Phil. Mag. 1827, p. 368.—*Muscicapa vulnerata*, Wagler, Isis, 1831, p. 520.—*Muscicapa derhamii*, Giraud, B. Texas, pl. 3. fig. 2.

Sallé, no. 81.

77. Granatellus Sallæi (Plate CXX.).—"*Setophaga sallæi*, Bp. et Sclater;" Bp. Compt. Rend. 1856, May.

Sallé, no. 129. Cordova.

Cæruleo-plumbea, superciliis vix obscurioribus: litura postoculari alba: genis gulaque plumbescentibus: pectore et abdomine medio cum crisso rosaceo-coccineis: lateribus postice albis: alis caudaque nigricantibus, plumbeo extus marginatis: rostro crasso, paulum incurvo, nigricanti-plumbeo; vibrissis fere nullis: pedibus pallide brunneis.

Long. tota 5·2, alæ 2·4, caudæ 2·3.

This very pretty bird, of which M. Sallé only procured a single specimen, is, I think, upon reconsideration hardly to be placed in the genus *Setophaga*, although so closely resembling many species of that genus in its style of colouring. The bill is quite different from that of *Setophaga*, and is more like that of *Nemosia*, being even thicker than in some species of the latter form, but rather more incurved. The characters given by Prince Bonaparte for his genus *Granatellus* (founded upon a bird figured in an unpublished plate of DuBus's *Esquisses Ornithologiques*) seem to agree better with this bird, and from the description of the only species of that genus (which I have never seen) I cannot help thinking that it may have something to do with the present bird. I therefore place them for the present in the same genus.

78. Cardellina rubra (Sw.).—*Setophaga rubra*, Sw. Phil. Mag. 1827, p. 368; Cassin, B. Cal. pl. 43. p. 265.—*Parus leucotis*, Giraud, B. Texas, pl. 4. fig. 2.

Sallé, no. 119. El Jacale.

79. Trichas marilandica (Linn.), Wils. Am. Orn. pl. 6. fig. 1.—*Trichas personatus*, Sw. Phil. Mag. 1827, p. 433.

Sallé, no. 130.

M & N Hanhart Imp.

GRANATELLUS SALLÆI . *Swinhoe*

80. Trichas delafieldi, Audub. Orn. Biogr. v. p. 307; B. Am. 8vo. ii. p. 81. pl. 103.

Sallé, no. 209.

M. Sallé's specimens seem to agree with Audubon's figures and descriptions of *Trichas delafieldi*.

Erithacinæ.

81. Sialia wilsoni (Sw.), Wils. Am. Orn. pl. 3. fig. 5.

Sallé, no. 85 bis. Cerro del Gallego; Cordova.

82. Sialia mexicana, Sw. North. Zool. ii. p. 202 (note).—*S. occidentalis*, Townsh. Journ. Ac. Phil. vii. p. 188; Aud. B. Am. 8vo. ii. pl. 135.—*S. cæruleicollis*, Vig. Zool. Beechey's Voy. Pacif. pl. 3.

Sallé, no. 85.

Parinæ.

83. Parus meridionalis, sp. nov.

Sallé, no. 167. El Jacale.

Supra cinereus: alis caudaque nigricantibus brunnescenti-cinereo limbatis: pileo toto cum nucha, gutture et cervice antica nigerrimis: genis et capite laterali albis: abdomine cinereo brunnescente tincto; pectore et ventre medio albidis: rostro nigro: pedibus plumbeis.

Long. tota 4·8, alæ 2·65, caudæ 2·3.

This Titmouse is a very close ally of *Parus atricapillus* and *Parus carolinensis*. I am sorry I have not been able to compare it with authentic specimens of those species, but, as far as I can judge from Mr. Cassin's excellent synopsis of American Parinæ given in his 'Birds of California,' it would appear—as by the locality it comes from would seem most probable—to be distinct from either of those species.

From *P. carolinensis* it appears to differ in its greater size, being nearly half an inch longer than the dimensions assigned to that bird by Mr. Cassin. It would hardly seem likely that it is the same as *P. atricapillus*, which is an inhabitant of the more northern states of the Union, and the slightly inferior size and white medial line on the lower parts seem to distinguish it from that species.

Sittinæ.

84. Sitta carolinensis, Latham.

Sallé, no. 199.

Motacillinæ.

85. Henicocichla auricapilla (Gm.), Cab. Mus. Hein. p. 15.

Sallé, no. 59.

86. Anthus ludovicianus (Gm.).

Sallé, no. 200.

87. Anthus ——?

Sallé, no. 201.

Turdinæ.

88. Turdus migratorius, Linn., Sw. Phil. Mag. 1827, p. 368.

Sallé, no. 54. Rotosinapam.

89. Turdus tristis (Sw.). — *Merula tristis*, Sw. Phil. Mag. 1827, p. 369. — *Turdus grayi*, Bp. P. Z. S. 1837, p. 118; Consp. p. 272.—*Turdus helvolus*, Licht. in Mus. Berol.

Sallé, no. 53. Cordova.

90. Turdus mustelinus, Gm., Wils. Am. Orn. pl. 2. fig. 1.

Sallé, no. 58. Cordova.

91. Catharus aurantiirostris (Hartlaub).—*Turdus aurantiirostris*, Hartl. R. Z. 1850, p. 158; Cont. Orn. 1851, pl. 72. p. 80.—*Catharus immaculatus*, Bp. Consp. p. 278.

Sallé, no. 164. Cordova.

I have not had an opportunity of comparing these specimens with Venezuelan examples, but, judging from the published figures and descriptions, I can detect no great difference.

92. Mimus cærulescens (Sw.).—*Orpheus cærulescens*, Sw. Phil. Mag. 1827, p. 369; Temm. Pl. Col. 498.

Sallé, no. 56. Cordova.

93. Mimus carolinensis (Linn.), Wils. Am. Orn. pl. 20. fig. 3.

Sallé, no. 57. Cordova.

94. Mimus longirostris (Lafr.).—*Orpheus longirostris*, Lafr. R. Z. 1838, p. 54; Cab. Mus. Hein. p. 81.

Sallé, no. 93. Cordova.

Formicariidæ.

95. Grallaria guatimalensis, Prevost, Zool. Venus, pl. 2.—*Chamæza guatimalensis*, Bp. Consp. p. 204.

Sallé, no. 52. Cordova.

This fine *Grallaria* is a typical species of the genus, a strict northern representative of *Grallariæ rex* and *imperator*, and by no means to be placed among the *Chamæzæ*.

96. Formicarius moniliger, sp. nov.

Supra brunnescenti-olivaceus, colli lateribus et uropygio rufescentioribus, pileo nigricantiore: macula in loris triangulari alba: gutture toto nigro, infra vitta angusta rufa cincta: abdomine toto nigricanti-griseo, lateribus et crisso olivaceo perfusis: regione oculari nuda: tectricibus subalaribus ochraceis, nigro variegatis: caudæ parte apicali nigra: rostro nigro: pedibus clare brunneis.

Sallé, no. 105, ♂ et ♀ similes. Cordova.

A typical *Formicarius*, a close ally of *F. cayanensis, analis*, &c., but distinguished by its black throat, bordered beneath by a narrow band of rufous; white triangular spot on the lores; and other differences. It is the first of the form found to occur so far north.

97. THAMNOPHILUS DOLIATUS (Linn.).

Sallé, no. 65, ♂ et ♀.

TYRANNIDÆ.

98. TODIROSTRUM CINEREIGULARE, sp. nov.

Olivaceum: alis caudaque nigris, flavicante olivaceo limbatis: orbitis antice nigricantibus: loris albidis: subtus gutture et cervice cinereis aut potius albis cinereo dense striolatis: pectore olivaceo: abdomine toto et tectricibus subalaribus flavis: rostro compressiusculo, crassiusculo; culmine carinato, incurvo; colore nigricante, tomiis pallidis: pedibus pallide brunneis.

Long. tota 3·6, alæ 1·7, caudæ 1·2.

Sallé, no. 89, ♂. Cordova.

This *Todirostrum* differs slightly in the form of the bill from the ordinary members of the genus, that part being rather thicker, and with the culmen elevated and more incurved than in the typical species of the group.

99. MUSCIVORA MEXICANA, sp. nov.

"*Megalophus mexicanus*, Kp.," Bp. MS.

Brunnea: uropygio, cauda tota et corpore subtus flavescenti-ochraceis, gutture albidiore: alis extus ochraceo punctatis et subtus (nisi primariorum apicibus) omnino ochraceis: crista ampla, aureo-flava, cærulescente æneo terminata: rostro productiore quam in M. regia: *pedibus flavidis.*

Long. tota 6·0, alæ 3·3, caudæ 2·8, rostri a rictu 1·3.

Sallé, no. 78. Cordova.

M. Sallé's collection contains a single example of this interesting bird, which however was not procured by himself, and is unfortunately not in very good condition. It is probably the *Megalophus mexicanus* of Dr. Kaup, which I have seen indicated in Prince Bonaparte's MS., but which I believe is merely an unpublished name. From the common *Muscivora regia*, to which it offers a close general resemblance, it may be distinguished by its longer bill, and having the base of the crest of a paler yellower tint, and the tips with less purplish colouring.

The *Muscivora castelnauii* (*Onychorhynchus castelnaui*, Deville, R. Z. 1849, p. 56), the only second member of the genus hitherto known, from Eastern Peru, on the other hand appears to have a shorter bill and more reddish crest than the typical species.

100. PLATYRHYNCHUS CANCROMA (Licht.), Bp. Consp. p. 183.

Sallé, no. 90. Cordova, ♂ et ♀ similes.

I can find no difference between these and S. American specimens.

101. Cyclorhynchus brevirostris, Cab. Orn. Notiz. in Wiegm. Arch. 1847, p. 249.

Sallé, no. 82. Cordova.

This bird is readily distinguished from the Brazilian *C. olivaceus* by its shorter and more rounded beak.

102. Pyrocephalus rubineus (Bodd.).—*Tyrannula coronata*, Sw. Phil. Mag. 1827, p. 367; Cassin, B. Cal. pl. 18. p. 127.

Sallé, no. 94, ♂ et ♀. Cordova.

103. Tyrannula sulphureipygia, sp. nov.

Sallé, no. 84. Cordova.

Olivacea: pilei crista mediali flava: uropygio pallide sulphureo: alis caudaque nigris, secundariis extus brunnescente limbatis: subtus flavicanti-brunnea, gula et ventre medio flavis.

Long. tota 5·2, alæ 2·8, caudæ 2·3.

Obs. Aff. *T. barbatæ* ex America Meridionali, sed statura majore, colore uropygii pallidiore et corporis subtus brunnescentiore distinguenda.

104. Tyrannula ——?

Sallé, no. 88, ♂ et ♀ similes. Cordova.

105. Tyrannula ——?

Sallé, no. 92, ♀. Cordova.

106. Tyrannula ——?

Sallé, no. 83, ♂. Cordova.

107. Tyrannula ——?

Sallé, no. 95.

These little Tyrants are in such a sad state of confusion at present, that it only makes matters worse to attempt to describe new species.

108. Mionectes oleaginus (Licht.), Bp. Consp. p. 187.

Sallé, no. 91. Cordova.

M. Sallé's specimens seem to agree with South American examples.

109. Sayornis nigricans (Sw.).—*Tyrann. nigricans*, Sw. Phil. Mag. 1827, p. 367.

Sallé, no. 86. Cordova.

110. Myiarchus mexicanus (Kp.), P. Z. S. 1851, p. 51?

Sallé, no. 77. Cordova.

111. Elænia texensis (Giraud).—*Musc. texensis*, Giraud, B. Texas, pl. 1.—*Tyr. cayennensis*, Sw. Phil. Mag. 1827, p. 367.

Sallé, no. 76, ♂ et ♀ similes.

Hardly distinct from *Elænia cayennensis*. The back is rather more tinged with green, and there is more white on the front than

in the South American bird. The dimensions are perhaps slightly larger, and the bill longer.

112. Elænia variegata, sp. nov.

Sallé, no. 80. Cordova, ♂ et ♀ similes.

Supra brunnea, olivascente tincta, marginibus plumarum pallidioribus : alis caudaque nigricantibus, illarum tectricibus extus albo marginatis : pileo et capitis lateribus nigris : crista mediali flava : superciliis a fronte circum nucham conjunctis, albis : subtus pallide flava, gutture albo, striga utrinque rictali nigra : pectore nigricante flammulato : rostro et pedibus nigris.

Long. tota 6·2, alæ 3·7, caudæ 2·6.

Obs. Affinis *Elæniæ albicolli* (Vieill.) ex America Meridionali sed crassitie majore : coloribus lætioribus.

113. Elænia ——?

Sallé, no. 93. Cordova, ♀.

114. Milvulus tyrannus (Linn.).

Sallé, no. 79. Plains of Vera Cruz.

115. Tyrannus melancholicus, Vieill.—*M. furcata*, Spix, Av. Bras. ii. p. 15. pl. 19.

Sallé, no. 208.

116. Tyrannus audax (Gm.)?

Sallé, no. 87. Cordova.

M. Sallé's examples of this bird are much more brightly coloured than any S. American specimens which have come under my observation. The belly is also wholly of a pale sulphur-yellow, instead of being only tinged with that colour. When the group is properly worked out, this will probably be found to constitute a sufficiently distinct species.

117. Tyrannus cooperi (Nutt.), Aud. Orn. Biogr. ii. p. 422?

Sallé, no. 207.

118. Pitangus derbianus (Kp.).—*Saurophagus derbianus*, Kp. P. Z. S. 1851, p. 44. pl. 36. — *Saurophagus rufipennis*, Lafr. R. Z. 1851, p. 471?.—*Saurophagus sulphuratus*, Gambel in Journ. Ac. Sc. Phil. i. p. 39?

Sallé, no. 75. Cordova.

Tityrinæ.

119. Tityra mexicana (Less.) : *antea*, p. 141.

Sallé, no. 67.

120. Pachyrhamphus aglaiæ (Lafr.), R. Z. 1839, p. 98.

Sallé, no. 96. Cordova.

♂ adult. *Niger, cristatus, uropygium versus schistacescentior :*

subtus pallide schistaceus, collo antico late roseo : scapularibus intus, et remigum primariarum (nisi duarum exteriorum) basibus internis albis.

♂ immat. *Brunneus nigro mixtus : capite cristato nigro : alis extus rufis : subtus pallidior, collo rosaceo imbuto.*

♀. *Rufescens : alis intus nigris : harum marginibus et cauda tota læte rufis : capite cristato nigro : subtus albescenti-cinnamomeus : tectricibus subalaribus cinnamomeis.*

Long. tota 6·5, alæ 3·5, caudæ 2·6.

I think that some recent Naturalists have acted rather hastily in uniting together the various rose-necked Becards into one species. The present bird appears to me to be sufficiently distinct from *P. pectoralis* of Cayenne, and M. de Lafresnaye has already pointed out its difference from the Bolivian *P. roseicollis*. From my specimens of the former it may be recognized by its lighter colour below, and the broader rose-coloured bar on the throat. Besides, the second abnormally short primary of the adult male has not the large white blotch on the interior web which is observable in the *P. pectoralis*.

121. Pachyrhamphus marginatus (Licht.) ?

Sallé, no. 184.

A single specimen of a bird of the general appearance of the S. American *P. marginatus*, which has been divided into several subspecies by Dr. Kaup (P. Z. S. 1851, p. 48), but showing rather broader white margins to the wings and tail.

Muscicapinæ.

122. Polioptila ——?

Sallé, no. 117. Cordova.

Three specimens all alike (one of which is marked '*male*') seem to agree with the female of the bird figured by Mr. Cassin, Birds of Cal. pl. 27, under the name of *C. mexicana*. The specimen marked '*male*' is possibly therefore not adult, as there are no traces of the black cap.

Vireoninæ.

123. Vireo solitarius (Wilson), Cassin in Pr. Ac. Phil. v. 150.
Sallé, no. 133.

124. Vireosylvia gilva (Vieill.), Cassin in Pr. Ac. Phil. v. 153.
Sallé, no. 123.

125. Vireosylvia flavo-viridis, Cassin, Pr. Ac. Sc. Phil. v.
Sallé, no. 205, p. 152. pl. 11.

126. Icteria velasquezi, Bp. P. Z. S. 1837, p. 117 ; Consp. p. 331 ?
Sallé, no. 204.

J. Wolf, lith.

M. & N. Hanhart, Imp.

PIPRA MENTALIS, *Sclater*.

The Mexican *Icteria* seems distinct from the black-billed *I. viridis* of the United States; but I confess I am wholly unable to decide whether it is the second or third species of Prince Bonaparte's Conspectus. *Are* there really two Mexican species? and what is the Californian *I. longicauda*?

127. Cyclorhis flaviventris, Lafr. R. Z. 1842, p. 330.
Sallé, no. 162.
I have examples of this species from Guatimala.

Piprinæ.

128. Manacus candei (Parzud.), Bp. Consp. p. 171.
Sallé, no. 170. Cordova.
M. Sallé obtained only a single specimen of this beautiful Manakin, which was originally brought from Honduras.

129. Pipra mentalis, sp. nov. (Plate CXXI.)
Sallé, no. 171. Cordova.

Nigra: capite toto cum nucha coccineis: mento summo tibiisque plumosis et tectricibus subalaribus flavis.
♀. *Pallide viridis, subtus paulo dilutior.*
Long. tota 4·0, alæ 2·3, caudæ 1·1.
This Manakin is a beautiful Mexican representative of *P. rubricapilla* and *P. chloromeros*. From the former it may be distinguished by its yellow thighs, from the latter by its yellow chin and under wing-coverts.

Ampelinæ.

130. Ampelis cedrorum (Vieill.), Wagl. Isis, 1831, p. 528.
Sallé, no. 134. Cordova.

131. Ptilogonys cinereus, Sw., Bp. Consp. p. 335.
Sallé, no. 185.

132. Myiadestes unicolor, sp. nov.

Hypothymis cæsia, Licht. in Mus. Berol.?

Schistacea unicolor, subtus pallidior, ventre albicantiore: remigibus nigris, harum autem (nisi trium extimarum) basibus alula spuria partim celatis, cum marginibus ipsarum et secundariarum apicem versus externis brunnescenti-oleagineis; hoc colore intus sub ala albidiore: cauda nigra; rectricibus duabus mediis schistaceis, harum duarum utrinque extimarum parte apicali pallidiore et apicibus ipsis cum margine interna apicem versus albis: rostro et pedibus nigris.
Long. tota 7·5, alæ 3·8, caudæ 3·4.
Sallé, no. 150. Cordova, ♂ et ♀ similes.
This bird is certainly quite distinct from Lafresnaye's *M. obscura*, of which I possess examples from Guatimala. Judging from Audu-

bon's plate and description it likewise would seem different from *P. townshendi*, which has been united to Lafresnaye's species, I believe quite erroneously, by Prince Bonaparte.

My impression is that the Berlin Museum specimens, marked "*Hypothymis cæsia*," are identical with the present bird; but as I have no means of verifying that fact, and the name is merely in MS., I think it safer to give it a new appellation.

Lafresnaye's *M. obscurus* (R. Z. 1839, p. 99), of which I have examples procured near the city of Guatimala by Signor Constancia, may be recognized at once from the present species by its brown back and rufous wing-edgings.

Garrulinæ.

133. Psilorhinus morio (Licht.), Bp. Consp. p. 381.

Sallé, no. 12. Cordova.

M. Sallé has procured a fine series of specimens of this bird, showing every variety in the colouring of the bill from black to yellow.

134. Cyanocorax luxuosus (Less.), DuBus, Esq. Orn. pl. 18; Cassin, B. Cal. pl. 1. p. 1.—*C. peruvianus*, Cassin, Pr. Ac. Phil. iv. p. 89, nec auct.

Sallé, no. 47, ♂ et ♀. Cordova.

135. Cyanocitta floridana (Bartram), Bp. Consp. p. 377.

Sallé, no. 186.

Prince Bonaparte identifies a somewhat immature bird in M. Sallé's collection as belonging to this rare species.

Sturnidæ.

136. Quiscalus macrurus, Sw., Bp. Consp. p. 424.

Sallé, no. 130. Cordova, ♂ et ♀.

Maris long. tota 19·0, alæ 8·9, caudæ 9·0; fœminæ long. tota 14·5, alæ 6·3, caudæ 6·8.

137. Quiscalus ——?

Sallé, no. 29, ♂ et ♀.

Nigro-nitens unicolor, rostro et pedibus nigerrimis.

Long. tota 10·8, alæ 5·2, caudæ 5·2.

138. Molothrus æneus (Wagl.), Cab. Mus. Hein. p. 192, note.

Sallé, no. 28. Cordova, ♂ et ♀.

139. Cacicus montezumæ (Less.), Cont. Zool. pl. 7.—*C. bifasciatus*, Spix?—*Ostinops bifasciatus*, Cab. Mus. Hein. p. 187.

Sallé, no. 26. Cordova, ♂ et ♀.

Castaneus: capite toto cum corpore subtus nigricantibus, hoc colore ventrem versus in castaneum transeunte: tibiis et alis subtus

nigris : cauda flavissima : rectricibus duabus mediis solum nigris : rostro nigro, dimidio apicali ruberrimo.
Long. tota 17·0, alæ 9·3, caudæ 7·0.

♀. *Mari similis, sed minor.*
Long. tota 14·0, alæ 7·6, caudæ 6·0.

140. Cassiculus prevosti (Less.), Bp. Consp. p. 428.
Sallé, no. 27.

141. Sturnella hippocrepis, Wagl., Isis, 1832, p. 281 ; Cassin, Pr. Ac. Phil. iv. p. 90.
Sallé, no. 135, ♀.
This bird is clearly distinguishable from the *S. ludoviciana* by its smaller size and the smaller breast-mark. But the name *hippocrepis* was established upon Cuban specimens. Are they quite the same as this Mexican bird ?

142. Icterus melanocephalus (Wagl.), Cassin, B. Cal. pl. xxi. p. 137.
Sallé, no. 60.

143. Icterus mesomelas (Wagl.), Isis, 1829, p. 755.—*I. atrigularis*, Less. Cent. Zool. pl. 22. p. 73. — *Oriolus musicus*, Cabot. Boston Journ. N. H. iv. 465.
Sallé, no. 61. Cordova.

144. Icterus cucullatus, Sw. Phil. Mag. 1827, p. 436 ; Cassin, B. Cal. pl. 8. p. 42.
Sallé, no. 63. Cordova, ♂ et ♀.

145. Icterus prosthemelas (Strickl.), Cont. Orn. 1850, p. 120. pl. 62.
Sallé, no. 63. Cordova.
This species has the under tail-coverts yellow. I think the bird resembling this, but with these parts black, which Mr. Strickland mentions in his description of *I. prosthemelas*, is probably a distinct species ; but the whole group requires to be thoroughly revised and worked out before additional names are given.

146. Bananivorus affinis (Townshend).—*Xanthornus affinis*, Townsh. Ann. Lyc. N. Y. 1851, p. 113, cum tab.
Sallé, no. 146. Cordova, ♂, ♂ juv. et ♀.

Coccothraustinæ.

147. Hedymeles ludovicianus (Linn.), Wils. Am. Orn. pl. 17. fig. 2.
Sallé, no. 154, ♂ et ♀. Cordova.

148. Goniaphea cærulea (Linn.), Wils. Am. Orn. pl. xxiv. f. 6.
Sallé, no. 155. Cordova.

149. Goniaphea parellina (Bp.).— *Cyanoloxia parellina*, Bp. Consp. p. 502.

Sallé, no. 159. Cordova, ♀.

♂. *Brunnea unicolor: alis caudaque intus fuscis.*

Long. tota 5·0, alæ 2·6, caudæ 2·0.

The bill of this specimen is slightly larger than that of a male *G. parellina* in my collection, but it otherwise agrees with it in dimensions.

150. Goniaphea concreta (DuBus).—*Cyanoloxia concreta*, DuBus, Bull. Ac. Brux. xxii. p. 150 (1855).

Sallé, no. 175. Orizaba.

M. Sallé's collection contains a single specimen of this rare species.

151. Cardinalis virginianus, Bp. Consp. p. 501.

Sallé, no. 152, ♂ juv. Cordova.

152. Spermophila morelleti, Bp. Consp. p. 497?

Sallé, no. 165. Cordova, ♂ juv. et ♀.

♀ juv. *Supra rufescenti-cinereus: pileo summo et capitis lateribus cum alis caudaque nigris: tectricum alarium fascia duplici cum speculo primariarum basali et tectricibus subalaribus albis: subtus pallide rufescenti-ochraceus, gutture albicante.* ♂ junior *aut* ♀ *rufescenti-olivaceus, subtus dilutior, ochracescentior: alis caudaque fuscis, ochraceo bifasciatis.*

My belief is that these are both young stages of a black and white species of *Spermophila*, probably *Sp. morelleti*, of which I have an adult specimen from Honduras. I have an example of the same bird as M. Sallé's, showing more black on the back and traces of the pectoral band, from Orizaba, collected by Botteri.

Mr. Lawrence's *Sp. albigularis* (described in the Annals Lyc. N. Y. v. p. 124) is also probably referable to this same species.

Tanagrinæ.

153. Pitylus poliogaster, DuBus: *antea*, p. 66.

Sallé, no. 151. Cordova.

154. Saltator atriceps, Less. Cent. Zool. pl. 69: *antea*, p. 69.

Sallé, no. 49. Cordova.

155. Saltator magnoides, Lafr.: *antea*, p. 69.

Sallé, no. 50. Cordova.

156. Buarremon brunneinuchus (Lafr.): *antea*, p. 85.

Sallé, no. 66. Cordova.

157. Chlorospingus ophthalmicus (Dubus): *antea*, p. 89.

Sallé, no. 132. Cordova.

158. Lanio aurantius, Lafr.: *antea*, p. 119.
Sallé, no. 158. Orizaba, ♀.

159. Phœnicothraupis rubicoides (Lafr.).—*Saltator rubicus*, Cassin, Pr. Ac. Sc. Phil. iv. 90: *antea*, p. 120.
Sallé, no. 141. Cordova.
M. Sallé's collection contains a fine series of specimens of this bird, showing every stage of transition between the brown plumage of the young and the rosy red of the adult. They appear to be rather variable in size.

160. Pyranga æstiva (Linn.).
Sallé, no. 139. Cordova, ♂ et ♀.

161. Pyranga erythromelæna (Licht.): *antea*, p. 126.
Sallé, no. 143. Cordova.

162. Ramphocelus sanguinolentus (Less.): *antea*, p. 132.
Sallé, no. 138. Cordova.

163. Tanagra abbas, Licht.: *antea*, p. 235.
Sallé, no. 142. Cordova.

164. Tanagra diacomus, Less.: *antea*, p. 233.
Sallé, no. 140. Cordova.

165. Euphonia elegantissima (Bp.). — *Pipra galericulata*, Giraud: *antea*, p. 272.
Sallé, no. 147.

166. Euphonia affinis, Less.: *antea*, p. 274.
Sallé, no. 213. Orizaba.

167. Euphonia hirundinacea, Bp.: *antea*, p. 278.
Sallé, no. 148. Cordova.

168. Euphonia ——?
Sallé, no. 187.
Olivacea æneo tincta: pileo antico flavo: abdomine medio et crisso castaneis flavo mixtis.
Long. tota 3·7, alæ 2·4, caudæ 1·2.
This seems to be a female of an undescribed *Euphonia*.

Fringillinæ.

169. Chrysomitris mexicana (Sw.), Phil. Mag. 1827, p. 435. —*Fringilla texensis*, Giraud, B. Texas, pl. 5. fig. 1.
Sallé, no. 149, ♂. Cordova.

170. CHRYSOMITRIS NOTATA (DuBus), Bp. Consp. p. 516. — *Carduelis magellanica*, Audubon?

Sallé, no. 198, ♂ et ♀. Orizaba.

171. CARPODACUS HÆMORRHOUS (Licht.). — *Carp. frontalis*, Cab. Mus. Hein. p. 166.—*Fring. hæmorrhoa*, Licht. Preis —Verz. 1831, sp. 57; Wagl. Isis, 1831, p. 525. — *Pyrrhula frontalis*, Sw. Phil. Mag. 1827, p. 435. — *Pyrrhulinota hæmorrhoa*, Bp. Compt. Rend. 1856.

Sallé, no. 181, ♂. S. Andres Gorion.

There is not the least doubt about the perfect distinctness of this bird from *Carpodacus rhodocolpus*, Cab. Mus. Hein. p. 166 (*Carp. familiaris*, Mc Call, Pr. Ac. Sc. Phil. vi. p. 61; Cassin, B. Cal. pl. xiii. p. 73), but to which species is Say's name *frontalis* really applicable? It appears to me, and I believe Prince Bonaparte is also of the same opinion, that the latter bird is that which ought to bear Say's name. These two *Carpodaci* may be distinguished by the following diagnoses:—

C. HÆMORRHOUS, *fronte et superciliis latis cum gutture toto coccineis.*

C. RHODOCOLPUS, *paulo minor: capite toto et gutture cum pectore rosaceo-coccineo perfusis.*

A fourth or, if *C. obscurus* is a valid species, a fifth American bird of this genus has recently been described by Baird under the name *C. cassinii* (v. Pr. Ac. Sc. Phil. vi. 119).

EMBERIZINÆ.

172. SPIZA CIRIS (Linn.).

Sallé, no. 145. Cordova, ♂ et ♀.

173. SPIZA CYANEA (Linn.).

Sallé, no. 166. Cordova, ♂ juv. et ♀.

174. VOLATINIA JACARINA (Linn.).

Sallé, no. 163. Cordova.

175. PHONIPARA PUSILLA (Sw.), Sclater, P. Z. S. 1855, p. 159. —*Tiaris pusillus*, Sw. Phil. Mag. 1827, p. 438.—*Tiaris olivaceus*, Cassin in Pr. Ac. Phil. iv. p. 91, et al. auct. nec Linn.

Sallé, no. 172. Cordova.

176. PIPILO MACULATUS, Sw. Phil. Mag. 1827, p. 434.

Sallé, no. 144. Maltrato.

177. PIPILO FUSCUS, Sw. Phil. Mag. 1827, p. 434; Cassin, B. Cal. pl. 17. p. 124?

Sallé, no. 168. San Andres Chalchicomula.

Dr. Baird has recently separated a bird from this species under the name of *P. mesoleucus* (Pr. Ac. Sc. Phil. vii. p. 119). The

present examples do not exactly agree with the characters assigned by him to either of the species, but from its locality there is little doubt of its being the true *P. fuscus* of Swainson.

178. Aimophila rufescens, Sw., Bp. Consp. p. 486.
Sallé, no. 156. Cordova.

179. Aimophila superciliosa, Sw., Bp. Consp. p. 486.
Sallé, no. 158. Cordova.

180. Zonotrichia mystacalis, Hartlaub, R. Z. 1852, p. 3.
Sallé, no. 192.

181. Zonotrichia —— ?
Sallé, no. 194.

182. Passerculus alaudinus, Bp. Notes Orn. p. 18; Compt. Rend. May 1856.
Sallé, no. 169, ♂. Cordova.

183. Passerculus zonarius, Bp. Compt. Rend. 1856, sed descriptio nulla! (=*Peucæa lincolni*, Aud.?)
Sallé, no. 177, ♂ et ♀. Cordova.

Supra fuscus nigro striatus, pileo utrinque rufo, medialiter autem (sicut superciliis) fusco: subtus albus, vitta lata pectorali et hypochondriis cum crisso pallide rufescenti-fuscis, nigro striatis: gutture quoque albo, nigro sparsim striato: loris albidis: rostro pallido: pedibus flavidis.
Long. tota 5·0, alæ 2·3, caudæ 2·2.

184. Passerculus ——?
Sallé, no. 202.

185. Passerculus ——?
Sallé, no. 196.

186. Spizella socialis (Wilson).
Sallé, no. 179. Orizaba.
I have a specimen of this same bird procured near Orizaba by M. Botteri.

187. Coturniculus henslowii, Audub. (teste Bp.).
Sallé, no. 161. Cordova.

188. Coturniculus ——?
Sallé, no. 176. Orizaba.

189. Coturniculus ——?
Sallé, no. 195.
These two birds are both rather obscure in plumage, and are not very good specimens.

190. Junco cinereus (Sw.), Phil. Mag. 1827, p. 435.—*Junco phæonotus*, Wagler, Isis, 1827, p. 526. — *Niphæa rufidorsis*, Licht. Nomencl. p. 43.

Sallé, no. 157. El Jacale.

There is no question, I believe, that this bird is strictly congeneric with *Niphæa hyemalis* and *N. oregona*. And all three species ought to bear the generic name *Junco*, established by Wagler in 1827.

191. Embernagra rufivirgata, Lawrence, Ann. Lyc. N. Y. 1851, v. p. 112. pl. 5. fig. 2.

Sallé, no. 153. Cordova.

192. Geospizopsis melanotis, Bp. Compt. Rend. May 1856, note.

Sallé, no. 193.

This is certainly a remarkable bird, and I hardly know what to make of it. The single specimen obtained is immature, and the wings are unfortunately imperfect. In my opinion, however, it has nothing to do with *Passerculus geospizopsis*, Bp. (which the author now considers the type of this genus under the name *Geospizopsis typus*), that bird being, I believe, nothing more than the female of a species of *Phrygilus* allied to *P. unicolor* (*vide* P. Z. S. 1855, p. 160).

193. Otocorys chrysolæma, Wagl. Isis, 1831, p. 525.

Sallé, no. .

The American species of this genus require a searching revision. I have not access to specimens of the other species except the South American *O. peregrina*.

Psittacidæ.

194. Pionus senilis (Spix), Av. Bras. i. pl. 31. fig. 1.—*Ps. leucorhynchus*, Sw. Phil. Mag. 1827, p. 438.

Sallé, no. 1. Cordova.

Though this bird is figured as Brazilian by Spix, I believe Southern Mexico to be its true habitat, and that it does not range south of the Isthmus of Panama.

195. Psittacula lineolata, Cassin, Pr. Ac. Sc. Phil. vi. p. 372. —"*Myiopsitta tigrina*, Souancé," Bp. Compt. Rend. May 1856.

Sallé, no. 2. Cordova.

This is the only example I have yet seen of this interesting Parrot.

Picidæ.

196. Dryocopus scapularis (Vig.) (*teste Malherbio*).

Sallé, no. 17. Cordova.

197. Dryocopus erythrops (Cuv.), DesMurs, Icon. Orn. pl. 37 (*teste Malherbio*).

Sallé, no. 18. Cordova, ♂.

198. Colaptes mexicanus, Sw. Phil. Mag. 1827, p. 440.

Sallé, no. 19. Suapam, ♀.

199. Melanerpes formicivorus (Sw.), Phil. Mag. 1827, p. 439; Cassin, B. Cal. pl. 2. p. 7.—*M. melanopogon*, Bp. Consp. p. 115.

Sallé, no. 22, ♂ et ♀.

My belief is that Malherbe is quite right in separating this species from the South American *M. flavigularis* (*M. formicivorus*, Bp. Consp. p. 115. sp. 5, nec Licht.). The two species are rightly distinguished by Prince Bonaparte (Consp. p. 115), but his synonymy and localities are both wrong. Both the terms *melanopogon* and *formicivorus* are primarily applicable to this Mexican species, and the other from the northern portion of S. America must be called *flavigularis*, Malherbe. The female of the present bird has the nape red; in the other female this part is black.

200. Centurus santacruzi, Bp. P. Z. S. 1837, p. 116.

Sallé, no. 20. Cordova.

Agrees with Guatimala specimens.

201. Chloronerpes yucatanensis, Cabot, Bost. Journ. N. H. v. p. 92.—*P. æruginosus*, Licht. in Mus. Berol.

Sallé, no. 21, ♂ et ♀. Cordova.

Clare olivaceus: alis extus et caudæ marginibus aurulente brunneis: subtus flavidus, olivaceo transversim dense vittatus: pileo nigricante: capite laterali et gula albidis, hac olivaceo striata.

♂. Stria superciliari et nucha lata cum macula rictali coccineis.

♀. Nucha solum angustiore coccinea.

Long. tota 9·0, alæ 5·0, caudæ 3·4.

This bird is distinguishable at a glance from the southern *C. rubiginosus* (with which it is sometimes united) by its larger size and clear olive-green back. It is commonly known by Lichtenstein's MS. name.

202. Chloronerpes oleagineus, Reichb. Handb. d. Sp. Orn. —*P. oleagineus*, Licht. in Mus. Berol.

Sallé, no. 189, ♀.

Ex olivaceo-brunneus, dorso aurescentiore: capite et cauda nigricantioribus: capitis lateribus albidioribus: alis subtus nigris albo vittatis.

Long. tota 5·5, alæ 3·9, caudæ 2·4.

This Mexican species is very closely allied to, if not identical with, *C. fumigatus* of South America.

203. Picus scalaris, Wagler, Isis, 1829.—*Picus parvus*, Cabot, Journ. Boston N. H. Soc. v. p. 92.

Sallé, no. 25, ♂ et ♀.

The bird figured as *P. scalaris* in the Journ. Ac. Sc. Phil. (vol. i.

pl. 9. p. 55) is, I believe, not this species, but *Picus nuttalli*, Gambel (*Picus wilsoni*, Malherbe, R. Z. 1849, p. 529), distinguishable from the present by its larger size and purer white below.

204. Picus varius, Linn., Wils. Am. Orn. pl. 9. fig. 2.
Sallé, no. 24. Cordova, ♂ juv. aut ♀.

205. Picus jardinii, Malh. R. Z. 1845, p. 374 (teste Bp.).
Sallé, no. 23. El Jacale.

206. Picus cancellatus, Wagl. Isis, 1829, p. 510 (teste Bp.).
Sallé, no. 23 bis. San Andres, Suapam.

Ramphastidæ.

207. Ramphastos carinatus, Sw., Gould, Mon. Ramph. pl. 7, et ed. ii. pl. 2.
Sallé, no. 14. Cordova.

208. Aulacorhamphus prasinus, Gould, Mon. Ramph. ed. ii. pl. 47.
Sallé, no. 13. Cordova.

Cuculidæ.

209. Dromococcyx mexicanus, Bp. Compt. Rend. May 1856.
Sallé, no. 209. Cordova.
I agree with Prince Bonaparte that there is little difference between this and the Brazilian *D. phasianellus*. But M. Sallé's specimen is not quite adult, and, as the bird is not known to occur in intermediate localities, I think the species are likely eventually to turn out distinct.

210. Piaya mexicana (Sw.), Phil. Mag. 1827, p. 440 ?—*Piaya cayana*, Cassin, Pr. Ac. Sc. Phil. iv. p. 91.—*Coccyzus viridirostris*, Hartl. in Naumannia, ii. pt. vi. p. 55. — *Piaya viridirostris*, Bp. Compt. Rend. May 1856.
Sallé, no. 44. Cordova.
Mr. Cassin seems to consider this northern representative of *P. cayana* "precisely similar" to the S. American bird. Prince Bonaparte says it is an excellent species, and applies to it a name of the Prince of Wurtemburg, to which, I believe, no description has been attached, except that it is "*certainly distinct from the* cayana." According to what I consider *P. cayana* (i. e. Cayenne specimens), this species differs in its rather larger size, lighter throat, more cinereous chest and darker belly. The under surface of the tail is blacker (and not more rufous as Mr. Swainson says) than in the S. American bird.
I possess a similar example from Guatimala, and another, barely separable, from Bogota (*P. mehleri*, Bp. ?).

211. Crotophaga sulcirostris, Sw. Phil. Mag. 1827, p. 440; Anim. in Menag. p. 322.

Sallé, no. 46. Cordova.

This bird is badly characterized in Swainson's original description, but well distinguished in the third part of his 'Animals in Menageries.' It may easily be recognized by the longitudinal grooves of the beak.

Columbæ.

212. Chlorœnas flavirostris, Wagl. Isis, 1831, p. 410; Bp. Consp. ii. 52; Lawrence, Ann. Lyc. N. Y. v. p. 115.

Sallé, no. 31. Cordova.

213. Chlorœnas fasciata, Say, Bp. Consp. ii. p. 183. — *Col. monilis*, Vigors in Beechey's Voy. pl. 10.

Sallé, no. 183.

214. Chlorœnas speciosa (Gm.). — *Lepidœnas speciosa*, Bp. Consp. ii. p. 54.

Sallé, no. 32. Cordova.

215. Leptoptila rufaxilla (Rich. & Bern.), Bp. Consp. ii. p. 75.

Sallé, no. 33. Cordova, ♂ et ♀.

These specimens do not perfectly agree with the South American examples of *L. rufaxilla* in the British Museum. The nape is much bluer, the grey descending over the nape and the neck, which has no bronzy colouring. The sides of the head are paler, and shoulders somewhat lighter, and there is rather more white on the tail. The whole size is somewhat larger, and the wings and tail longer.

216. Geotrygon montana (Linn.), Bp. Consp. ii. p. 72.

Sallé, no. 34. Cordova, ♂ et ♀.

217. Peristera cinerea (Temm.), Bp. Consp. ii. p. 75.

Sallé, no. 37, ♂ et ♀. Cordova.

218. Zenaida leucoptera (Linn.).—*C. trudeauii*, Aud.

Sallé, no. 35. Cordova.

219. Zenaidura carolinensis (Linn.), Wils. Am. Orn. v. pl. 43. fig. 1; Bp. Consp. ii. p. 84.

Sallé, no. 36. Cordova.

220. Scardafella inca (Less.), Bp. Consp. ii. p. 85.

Sallé, no. 38. Cordova.

Odontophorinæ.

221. Odontophorus guttatus, Gould, Mon. Odont. pl. xxviii.

Sallé, no. 40. Cordova.

222. Odontophorus thoracicus (Gambel).— *Ortyx thoracicus*, Gambel, Pr. Ac. Phil. (1847). — *Odontophorus lineolatus*, Gould, Mon. Odont. pl. xxxii.

Sallé, no. 41. Cordova.

Mr. Gambel's name for this bird has every claim to preference over Natterer's unpublished MS. title.

223. Ortyx pectoralis, Gould, Mon. Odont. pl. v.

Sallé, no. 43. Cordova.

Penelopinæ.

224. Ortalida poliocephala, Wagl., Cassin, B. Cal. p. 267. pl. 44.

Sallé, no. 42. Cordova.

This seems to be the bird figured by Mr. Cassin as *O. poliocephala*, but is it not more like Wagler's *O. vetula*? Of this latter the describer says, "*cum specie præcedenti* (i. e. *O. vetula*) *simili non confundenda*"! *Vide* Isis, 1830, p. 1112.

Tinamidæ.

225. Nothocercus sallæi, Bp. Compt. Rend. May 1856.

Sallé, no. 225. Cordova.

Ardeidæ.

226. Butorides virescens (Linn.), Bp. Consp. ii. p. 128.

Sallé, no. 16. Cordova.

227. Botaurus lentiginosus (Mont.), Wils. Am. Orn. pl. 65. fig. 3.

Sallé, no. 15. Cordova.

Scolopacidæ.

228. Gallinago wilsoni (Temm.), Wils. Am. Orn. vi. pl. 47. fig. 1; Jard. Wils. Orn. ii. p. 220.

Sallé, no. 72.

229. Totanus solitarius (Wils.), Am. Orn. pl. 58. fig. 3.

Sallé, no. 74. Cordova.

230. Tringoides —— ?

Sallé, no. 212 bis.

An imperfect skin of a bird in immature state.

231. Tringa pectoralis, Say, Bp. Am. Orn. iv. pl. 23. fig. 2.

Sallé, no. 73. Cordova.

232. Tringa pusilla, Wilson, Am. Orn. v. p. 32; Aud. B. Am. 8vo, v. p. 280. pl. 337.
Sallé, no. 212.

233. Querquedula cyanoptera (Vieill.), Cassin, B. Cal. p. 82. pl. 15.

July 22, 1856.

Dr. Gray, F.R.S., in the Chair.

1. On a New Tanager of the Genus Calliste. By Philip Lutley Sclater, M.A., F.Z.S. etc.

Mr. P. L. Sclater exhibited two specimens of a new Tanager of the genus *Calliste* (making a fifty-second species of that form) which he had just received from MM. Jules and Edouard Verreaux of Paris, and characterized it under the name of

Calliste rufigenis.

C. cærulescenti-viridis, interscapulio obscuriore : loris, capitis lateribus et regione auriculari cum mento summo rufis : alarum remigibus fusco-nigris, cuprescenti-viridi limbatis : cauda fusco-nigra virescente marginata : subtus virescentior quam supra, abdomine medio, tibiis et tectricibus subalaribus albescenti-ochraceis : crisso rufescenti-ochraceo : rostro et pedibus nigris.
Long. tota 5·0, alæ 2·7, caudæ 1·7.
Hab. Venezuela (*Verreaux*).
Remark.—This *Calliste* is rather noticeable for showing less decided tints of colouring than is usual in birds of this group. It may, I think, most naturally be placed next to *Calliste labradorides* (Boiss.), but it is readily distinguishable from that species and its congeners by the rufous ear-coverts and want of black colouring on the back.

2. Observations on the Pteropus of Australia. By J. K. E. Fairholme.

The acquisition of a Flying Fox to the Gardens of the Society, induces me to bring before your notice a few observations I have made on the habits of this animal in the country about Moreton Bay, on the east coast of Australia, about lat. 27° south.

The flying fox is well known even in the southern parts of Australia in the summer months; but by far the largest flights are seen in the warmer latitudes. The attention is generally attracted to them (just as daylight disappears) by the heavy flapping sound of their

wings, as they fly in great numbers overhead, all in the same direction. These flights often continue to pass for many hours together on the way to their feeding-places, generally about the banks of rivers, where the tree known as the Flooded-gum grows, on the leaves of which they feed. Though scattered over a large extent of country while feeding at night, they all contrive to assemble again to spend the heat of the day together, and when the flight is large, the scene of congregation is most extraordinary. I am fortunate enough to have known two of these places of assembly—one on a small island in Moreton Bay, covered with dense scrub or jungle; another in the scrub, close to my former residence, about forty miles inland from the Bay. In the latter spot the scrub consists of the usual undergrowth of smaller trees, mixed with *bush ropes*, or lianes, and overtopped by enormous Moreton Bay pine-trees (*Araucaria Cunninghami*). On the nearly horizontal branches of the pines, as well as on the lower trees around, the flying foxes hang in vast numbers. I can never forget my astonishment as I approached this spot for the first time, being taken to it for the purpose of shooting some of the animals for the natives. The space occupied by the flight was, as near as I could judge, about 400 or 500 yards square, and in this, every tree was more or less loaded with them, all hanging with their heads downwards, and uttering a sound difficult to describe, but not unlike that of young rooks when crying for food. All that were not snarling and fighting for places, were steadily fanning themselves with their wings half extended as they hung. On our approach, most of those nearest to us took to flight, only to alight again on the next tree, or to wheel round and round in the air above the spot. On my firing a shot, the din increased, and continued to such an extent, that after I had shot what the blacks required, I was glad to get away from it. Many had young ones clinging to them, and suckling at the breast. This flight met in the same spot for several days, and then disappeared. The flesh of the flying fox is like that of a rabbit in appearance, but is strongly flavoured by the food on which the animal feeds.

On the coast of Moreton Bay the natives live principally on fish, and the arrival of the flying foxes on the little island of St. Helena is hailed by them as a change of diet. The flights only appear in the warmer months of the year, even in lat. 26°, and most likely migrate into the tropical latitudes during the colder months, like many of our Australian birds.

At Moreton Bay there is no difficulty in procuring any number of young flying foxes, as the island on which they congregate is close to the anchorage for ships.

3. First Steps towards a Monograph of the Recent Species of Petaloconchus, a Genus of Vermetidæ. By Philip P. Carpenter.

Genus Petaloconchus, Lea.

H. C. Lea, Trans. Am. Phil. Soc. 1843, vol. ix. p. 229 ; Woodw. Man. Moll. pt. iii. p. 462 ; B.M. Cat. Mazatlan Moll. p. 308.

Animal *ignotum*.

Operculum (speciebus ii.) *parvum, corneum, diaphanum, tenuissimum, parum concavum ; cicatrice centrali ; anfractibus paucis, vix apparentibus.*

Testa *extus* Bivoniæ *similis ; intus transversim rarissime septata ; anfractibus medianis laminis elongatis spiralibus varie dispositis, cameram sæpe pæne secantibus ; plerumque duabus, plica columellari una.*

Hab. Mare Mediterraneum ; Oceanum Atlanticum, Pacificum, Indicum.

Shell of corkscrew growth, glomerate, or single, affixed by one side of the whirls ; earlier and later whirls open ; middle whirls divided by spiral laminæ, often of complex structure, which gradually pass away at each end ; generally two, nearly meeting, with a third rudimentary, forming a columellar plait.

The elimination of the species is a work requiring great care ; as some outside exactly resemble certain species of *Bivonia* ; and as the internal structure varies according to the position in which the shell is broken, a few whorls often altering the character very decidedly. The structure was first observed by Lea in fossil species ; it was not noticed, however, in subsequent works till the publication of the third part of Woodward's Manual. In the mean time, having carefully observed the structure in the Mazatlan species, Dr. Gray kindly allowed me to examine the specimens in the British Museum collection, and Mr. Cuming entrusted to my care the suspected specimens among his invaluable stores. The result of these inquiries is now offered, simply as a provisional introduction to the subject ; in the hope that those who have the means of laying open specimens from top to bottom will do so, and especially that those who have access to them in a living state will inquire what peculiarity in the animal is co-ordinate with so remarkable a structure in the shell.

A. *Laminis ab axi procedentibus.*

1. Petaloconchus macrophragma, n. s. (fig. 1.)

B.M. Mazatlan Cat. no. 359. p. 309.

P. t. parva, dextrali, dense purpureo-fusca ; cylindracea, solute spirali, marginibus spiræ sæpe subparallelis ; plerumque glomerante, interdum solitaria ; basi ad conchas, seu altera ad alteram, constricte adhærente, sæpe erodente ; superficie rugis

irregularibus spiralibus haud extantibus, et rugulis incrementi ornata; intus, anfr. primis et ultimis quoad iv. *apertis; mediis laminatis; lamina superiore multo majore, prius conspicua, a columella extante; primum simplici; dein angulo recto reflexa, extus carinis* i.–iii. *quarum* ii. *acutissimæ; lamina inferiore simplici, a columella extante, alteræ juxta carinam fere attingente; lamina tertia minima, intercalante, inferiori pæne attingente; laminis tenuissimis, albis, diaphanis, lineis incrementi conspicuis; pagina interna maxime nitente, transversim haud septato.*

Diam. spiræ ·23, aperturæ ·07.

Hab. Mazatlan; haud rare Uvanillis, Cumis, Muricibus, &c., adhærentes; *Reigen.* Panama. Mus. Cuming.

In this little species, the structure is the most delicate and complex of any of the species examined. For particulars v. B.M. Cat.

2. Petaloconchus cochlidium, n. s. (fig. 2.)

P. t. irregulariter spirali, glomerata, anfr. plurimis confertis; spiræ marginibus fere parallelis; dense rubro-fusca; rugis spiralibus iii. *in basi aliis, interstitiis cancellatis, profunde interpunctatis; sculptura sæpe obsoleta; intus, laminis duabus ab axi procedentibus, tenuissimis; superiore majore, ad angulam obtusam curvata, carinis duabus validis labrum versus instructa; inferiore minore, alteram versus procedente, interstitio satis magno; lamina tertia parva intus super inferiorem sita.*

Diam. spiræ ·2, aperturæ ·08 poll.

Hab. Australia. Mus. Cuming.

This species is known from *P. macrophragma* by the upper lamina being bent at a more obtuse angle, and by the third lamina being proportionally large, growing out of the second. The shell is of a lighter colour, and of larger growth. Occasionally other small keels and plaits are seen. In one specimen (near the attachment of the locality ticket) occurs the extremely unusual appearance of a septum traversing the laminæ. Sometimes there is a false appearance of septa in shells of this genus, from other *Vermetidæ* growing in the same group, or from adventitious matter.

3. Petaloconchus flavescens, ? n. s. (fig. 3.)

P. t. irregulariter spirali, glomerata, parva; anfractibus maxime confertis, marginibus spiræ subparallelis; rubido-flavescente; rugis spiralibus iii.–iv. *validis, transversis minoribus, confertis, interstitiis parum punctatis; sculptura interdum obsoleta; intus per maximam partem laminata, laminis duabus ab axi procedentibus, tenuissimis; superiore majore, fornicata; inferiore recta, interstitio magno; per anfractus paucos lamina superiore bicarinata, per anfr. pauciores lam. inferiore bifurcata, laminulis subparallelis.*

Diam. spiræ ·14, aperturæ ·06 poll.

Hab. Sicilia. Mus. Cuming.

This shell may have been already described by Phil. as a *Vermetus*,

but as the *Bivoniæ* can hardly be discriminated from the *Petaloconchi* by external characters, it seemed presumptuous to attempt a union. Shell externally closely allied to *B. subcancellata*, Phil., from which it is principally known by the smaller size and stronger sculpture. Internally it most resembles *P. cochlidium*, from which it may be distinguished by the absence of keels on the upper lamina during a large part of the length; and by the general absence of the third plait, which, when it appears, is like another fold of the lower lamina in the same direction.

B. *Laminis a parietibus procedentibus.*

4. Petaloconchus varians?, D'Orb. (fig. 4.)

? An *Vermetus varians*, B.M. Cat. D'Orb. Moll. p. 47. no. 405.

P. t. nigro-fusca, irregulariter spirali; sculptura rugis spiralibus et rugulis transversis, plerumque haud valde expressis, variante; intus anfr. plurimis plicis solum instructa; in medio laminis duabus tenuibus a parietibus superiore et inferiore, parte axin versus, arcuatim procedentibus, æqualibus, haud valde approximatis, rarius extus reflexis; plica columellari centrali parva; pagina interna maxime nitente.

Diam. spiræ ·3, aperturæ ·08 poll.

Hab. St. Vincent's, W. I. (*W. B. Carpenter*); Honduras (*Dyson*); ? Brazils (*D'Orbigny*).

As far as can be judged from a partial examination of D'Orbigny's type specimen, this is his *Vermetus varians*, in which Dr. Gray found two opercula "orbicular, thin, nucleus central;" apparently paucispiral, like that of *Serpulorbis* made nearly flat. At the same time it is not safe to speak of shells of this genus without an examination of the whole length. The laminæ appear to degenerate into plaits during the principal part of their growth, but when developed closely approximate the next species.

5. Petaloconchus renisectus, n. s. (fig. 5.)

P. t. irregulariter spirali, axi lata, nigro-fusca; anfractibus rugis spiralibus et rugulis transversis, sæpe ad intersectiones nodosis, varie ornatis; laminis per anfr. plurimos continuis, duabus, æqualibus, tenuioribus, a parietibus, parte axin versus, procedentibus, arcuatim medium versus continuis, interstitio haud parvo, extus, labrum versus carinatis; camera externa majore, reniformi; plica una centrali, columellari.

Diam. spiræ ·4, aperturæ ·1 poll.

Hab. In Oceano ? Indico. Mus. Cuming.

Variat (*a*) *t. eleganter rugis spiralibus nodosa.*

Variat (*b*) quoque *sculptura pæne obsoleta.*

Hab. In Insulis Philippinarum; legit *H. Cuming.*

The species is described from a large group of very regular growth, of which the accretions warrant its being supposed East Indian. Specimens from the Philippines also appear not separable specifically.

It is known from *P. varians* by the much greater length of the laminæ, and, in its most developed part, by a strong keel on the outer edge of each, not seen in the portion sketched.

5 (*c*). Petaloconchus? renisectus, var. Woodwardii.

P. t. P. renisecto *simili, sed multo minore, confertissima, axi compacta; vertice nucleoso Rissoideo; operculo parvo, dimidio aperturæ æquante, corneo, tenuissimo, extus parum concavo, paucispirali, cicatrice centrali.*

Diam. spiræ ·15, aperturæ ·06.

Hab. ——? Sp. glom. in Mus. Cuming.

This specimen has the habit of a distinct species: nevertheless as the inner structure appears exactly the same, and as the shells are most compactly crowded, it appears probable that the small size is due to the circumstances of habitat. It will be observed that the operculum presents a type of structure very distinct from that of *Bivonia glomerata* and its congeners, as well as from *Vermetus*, and much more nearly related to *Siphonium*. As it agrees with that of *P. varians*, it is fair to conclude that the other species are not unlike. The opercula were so very frail, that after digestion in weak alkali to remove the animal matter, it was not found practicable to preserve them. This accounts for their absence from the other species.

6. Petaloconchus nerinæoides, n. s. (fig. 6.)

P. t. P. renisecto *simili; sed rubro-fusca, rugulis spiralibus pluribus; intus solida; laminis ut in* P. renisecto *sitis, sed validis, labrum versus sæpe biangulatis; camera externa minore.*

Diam. spiræ ·3, aperturæ ·1 poll.

Hab. Australia. Mus. Cuming.

Although the plan of structure is the same as in *P. reniformis*, yet the remarkable strength of the laminæ, smallness of the outer chamber, and difference of colour, appear to justify at least a temporary separation. In Mr. Cuming's group, the creatures have stretched their tubes so long that even the straight part is often found laminated; and transverse septa are seen at the other end. In some parts the body only occupies about a third of the section of the shell.

7. Petaloconchus cereus, n. s. (fig. 7.)

P. t. haud parva, irregulariter spirali, cerea, solida, albida, aurantio tincta; anfractibus planatis, ad sedem angulatis, nodosis; laminis parietalibus tenuibus, curtis, in medio sitis, subperpendicularibus, parum arcuatis, interstitio haud parvo; camera externa majore; plica una parva columellari, in medio sita.

Diam. spiræ ·56, aperturæ ·18 poll.

Hab. In Insulis Philipinarum; legit *H. Cuming.* Sp. unic. in Museo suo.

This is the largest species as yet found, and very remarkable for its waxen aspect.

8. Petaloconchus octosectus, n. s. (fig. 8.)

P. t. irregulariter spirali; albida, seu flavido tincta; rugulis spiralibus et transversis vix sculpta; basi haud planata, haud nodosa; laminis ut in P. cereo *sitis, sed camera externa minore.*

Diam. spiræ ·38, aperturæ ·15 poll.

Hab. ? S. Africa. Mus. Cuming.

The section of this species (as of the last) resembles a figure 8. It differs from *P. cereus* in the absence of the remarkable structure at the base, and in the comparatively small size of the outer chamber.

9. Petaloconchus, sp. ind.

Hab. Tahiti. Mus. Cuming.

This specimen is sufficiently perfect to prove its genus; but not to describe as a species.

P. P. Carpenter.

July 11th, 1856.

Sections of Petaloconchi *generally at greatest development.*

1. *macrophragma.* 2. *cochlidium.* 3. *flavescens.*

4. *varians.* 5. *renisectus.* 6. *nerinæoides.*

7. *cereus.* 8. *octosectus.*

The above are taken from sketches drawn by the eye only under the microscope. Where large groups had to be held in strange positions, it was not found practicable to use the camera, nor did I feel at liberty to break specimens not my own to obtain a favourable section. The figure of No. 5 contains the finest, of No. 6 the coarsest growth: each occasionally approaches the other. The difference between No. 7 and No. 8 is rather exaggerated in the latter.—P. P. C.

4. Descriptions of Twenty-seven New Species of Land-Shells, collected by M. Sallé in the State of Vera Cruz, Mexico. By Dr. L. Pfeiffer.

(Mollusca, Pl. XXXV.)

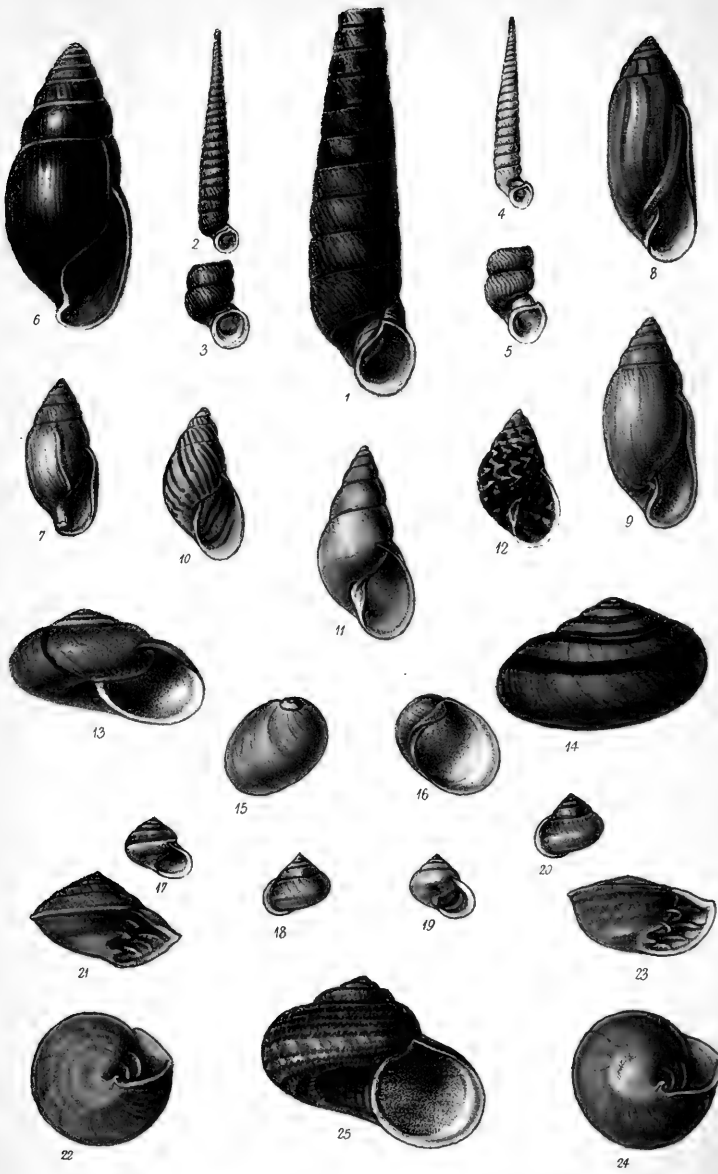
1. Helix Cordovana, Pfr. *H. testa umbilicata, depressa, tenui, undique subgranulata et breviter pilosa, cornea, superne fasciis 2 angustis, rufis cincta; spira plana; sutura profunda, canaliculata; anfr.* $4\frac{1}{2}$ *turgidis, sensim accrescentibus, ultimo supra peripheriam obsolete sulcato, antice descendente, subtus rotundato; umbilico* $\frac{1}{4}$ *diametri subæquante; apertura perobliqua, lunato-circulari; perist. tenui, marginibus conniventibus, supero expanso, basali reflexiusculo.*
Diam. maj. $12\frac{1}{3}$, min. $10\frac{1}{3}$, alt. 5 mill.
Hab. Cordova.

2. Helix Veracruzensis, Pfr. *H. testa umbilicata, depressa, tenerrima, striatula, pellucida, nitidissima, pallide rubello-cornea; spira parum elevata, vertice subtili; sutura subcrenulato-marginata; anfr. 5 vix convexiusculis, ultimo lato, non descendente, depresso-rotundato; umbilico pervio,* $\frac{1}{6}$ *diametri vix æquante; apertura obliqua, lunato-ovali; perist. recto, acuto, marginibus subconniventibus, columellari arcuato-declivi, vix reflexiusculo.*
Diam. maj. $12\frac{1}{2}$, min. $10\frac{1}{2}$, alt. 5 mill.
Hab. Cordova.

3. Bulimus sulphureus, Pfr. (Pl. XXXV. f. 11.) *B. testa anguste umbilicata, ovato-conica, tenuiuscula, striatula, striis spiralibus confertissimis decussata, nitida, pallide sulphurea; spira conica, apice acuta, concolore; anfr.* $6\frac{1}{2}$ *convexiusculis, ultimo spira breviore, basi rotundato; columella subrecedente; apertura obliqua, ovali; perist. simplice, tenui, margine dextro breviter expanso, superne sinuato, columellari triangulatim dilatato, reflexo.*
Long. 29, diam. 12 mill.
Hab. Cordova.

4. Bulimus coriaceus, Pfr. *B. testa anguste perforata, ovato-conica, solidula, sub lente obsoletissime decussato-granulata, fusco-cornea, haud nitente; anfr. 6 convexiusculis, summis nigro-fuscis, sequentibus castaneo-fasciatis, ultimo spira breviore, obsolete angulato, basi subattenuato; columella arcuata; apertura parum obliqua, elliptico-ovali; perist. simplice, recto, margine columellari albido, nitido, fornicatim reflexo.*
Long. 18, diam. 9 mill.
Hab. Cordova.

5. Bulimus Martensi, Pfr. *B. testa subperforata, turrito-oblonga, tenui, striatula et distanter chordato-costata, diaphana, albido-hyalina; spira turrita, obtusula; anfr. 6 convexis, ulti-*



G B Sowerby lith.

W West Imp.

mo $\frac{2}{5}$ longitudinis vix æquante, rotundato; columella medio subdentato-plicata; apertura parum obliqua, elliptico-ovali; perist. simplice, recto, margine columellari late reflexo, sublibero.
Long. $9\frac{1}{3}$, diam. $4\frac{1}{2}$ mill.
Hab. Cordova.

6. Bulimus costato-striatus, Pfr. *B. testa imperforata, turrita, tenui, conferte striata et costulis irregularibus munita, diaphana, cereo-hyalina; spira regulariter attenuata, acutiuscula; anfr. 7 convexiusculis, ultimo $\frac{2}{7}$ longitudinis formante, basi rotundato; columella substriata, filari; apertura vix obliqua, oblonga; perist. simplice, recto, marginibus subparallelis, columellari simplice.*
Long. $7\frac{1}{2}$, diam. $2\frac{1}{2}$ mill.
Hab. Cordova.

7. Bulimus Drouëti, Pfr. (Pl. XXXV. f. 12.) *B. testa subobtecte perforata, ovato-conica, tenui, ruguloso-striata (striis spiralibus obsoletissime decussata), pallide straminea, strigis et fasciis latis spadiceis interruptis ornata; spira conica, acutiuscula; anfr. 6 convexiusculis, ultimo spiram vix superante, antice subvaricoso; columella substricta, compressa; apertura obliqua, ovali; perist. tenui, expansiusculo, margine columellari dilatato, abrupte reflexo.*
Long. 24, diam. $10\frac{1}{2}$ mill.
Hab. Cordova.

8. Bulimus aurifluus, Pfr. (Pl. XXXV. f. 10.) *B. testa perforata, ovato-conica tenui, sub lente minutissime decussata, nitida, albida, strigis angustis flexuosis fulvo-aureis ornata; spira convexiusculo-conica, acuta; anfr. $5\frac{1}{2}$ convexiusculis, ultimo spiram paulo superante, juxta perforationem angustam subattenuato, unicolore lutescente; columella intrante, leviter arcuata; apertura vix obliqua, oblonga; perist. tenui, breviter expanso, margine columellari compresso, superne dilatato, reflexo.*
Long. 22, diam. 10 mill.
Hab. Cordova.

9. Simpulopsis Salleana, Pfr. (Pl. XXXV. f. 15, 16.) *S. testa subsemiovata, solidula, striatula, lineisque spiralibus impressis obsoletis notata, nitida, corneo-straminea; spira parvula, obtusa; anfr. vix $2\frac{1}{2}$, ultimo magno, inflato; columella arcuata, subacuta; apertura perobliqua, lunato-rotundata, intus margaritacea; perist. simplice, marginibus callo tenuissimo junctis, dextro expansiusculo, antrorsum dilatato.*
Diam. maj. 15, min. 12, alt. $7\frac{1}{2}$ mill.
Hab. Cordova.

10. Simpulopsis Cordovana, Pfr. *S. testa subsemiglobosa, tenuissima, levissime striatula, pellucida, nitidissima, virenti-*

cornea; spira minuta, vix prominula; sutura canaliculata; anfr. 2½, ultimo inflato; columella tenui, papyraceo-marginatâ; apertura perobliqua, fere circulari; perist. simplice, recto, margine dextro superne antrorsum dilatato.
Diam. maj. 15, min. 11⅔, alt. 7 mill.
Hab. Cordova.

11. Spiraxis Shuttleworthi, Pfr. (Pl. XXXV. f. 8.) *Sp. testa oblongo-glandiformi, tenuiuscula, lævigata, lineis impressis irregularibus notata, lucida, corneo-flavescente, strigis variciformibus virenti-fulvis notata; spira conica, obtusula; sutura levi, sublacera; anfr. 7, superis vix convexiusculis, ultimo antice descendente, ⅔ longitudinis fere æquante, basi subattenuato; lamina columellari leviter torta, subincrassata, basi vix truncatula; apertura anguste semiovali, superne longe acuminata, intus margaritacea; perist. simplice, marginibus callo tenui junctis, dextro medio dilatato.*
Long. 33, diam. 13½ mill.
Hab. Cordova.

12. Spiraxis turgidula, Pfr. (Pl. XXXV. f. 9.) *Sp. testa ovato-conica, tenuiuscula, striatula, nitida, pallide flavescente, strigis variciformibus, subimpressis, pellucidis notata; spira conica, obtusiuscula; sutura crenulata; anfr. 8 infra suturam turgidulis, ultimo ⅘ longitudinis subæquante; lamina columellari crassa, alba, leviter torta, basi truncata; apertura subverticali, sinuoso-semiovali, intus albido-margaritacea; perist. simplice, margine dextro medio antrorsum dilatato.*
Long. 31, diam. 12½ mill.
Hab. Cordova.

13. Spiraxis auriculacea, Pfr. *Sp. testa fusiformi-oblonga, tenera, lævigata, pellucida, nitida, rubello-cornea; spira elongato-conica, obtusula; sutura marginata; anfr. 7 convexiusculis, ultimo spira vix longiore, infra medium dilatato; lamina columellari parum torta, alba, filari, minime truncata; apertura sinuato-semiovali, intus leviter margaritacea; perist. simplice, margine dextro medio fere angulatim producto.*
Long. 16, diam. 6 mill.
Hab. Cordova.

14. Achatina (Varicella) Orizabæ, Pfr. (Pl. XXXV. f. 6.) *A. testa oblongo-conica, solidula, longitudinaliter striata, nitida, olivaceo-fusca, varicibus subprominulis pallidis irregulariter munita; spira elongato-conica, apice obtusula; sutura levissime marginata; anfr. 7½ convexiusculis, ultimo spira breviore, deorsum læviore; columella subcallosa, arcuata, oblique truncata; apertura verticali, sinuato-ovali; perist. recto, margine dextro obtuso, vix flexuoso, pallide limbato.*
Long. 42, diam. 18 mill.
Hab. In Vulcano Orizaba.

15. Achatina (Varicella) speciosa, Pfr. (Pl. XXXV. f. 7.) *A. testa conico-ovata, solidula, longitudinaliter conferte plicata, nitida, carnea, varicibus sulciformibus, albidis, subflexuosis, irregulariter distantibus munita; spira conica, apice acutiuscula; sutura eleganter nodulato-crenata; anfr.* 8 *vix convexiusculis, ultimo spiram paulo superante, prope suturam turgidulo, deorsum sublævigato; columella arcuata, late truncata; apertura verticali, sinuato-semiovali; perist. recto, margine dextro flexuoso.*
Long. 29, diam. 13½ mill.
Hab. Cordova.

16. Achatina (Varicella) Cordovana, Pfr. *A. tes taturrito-oblonga, solidula, longitudinaliter plicata, nitida, alabastrina; spira elongato-conica, apice obtusa; sutura marginata, conferte nodulata; anfr.* 7½ *parum convexis, ultimo spira paulo breviore, varicibus nonnullis impressis, obsoletis munito, basi vix attenuato; columella substricta, transverse truncata; apertura subverticali, sinuato-semiovali; perist. simplice, margine dextro medio fere angulatim producto, subinflexo.*
Long. 20, diam. 6 mill.
Hab. Cordova.

17. Achatina margaritacea, Pfr. *A. testa oblonga, tenui, sublævigata, sub lente levissime et irregulariter plicatula, pellucida, nitida, lutescenti-hyalina; spira brevi, conica, acutiuscula; sutura subcanaliculata, marginata; anfr.* 5½ *convexiusculis, ultimo* ⅔ *longitudinis superante, basi vix attenuato; columella leviter arcuata, abrupte truncata; apertura verticali, acuminato-semiovali; perist. simplice, margine dextro leviter antrorsum arcuato.*
Long. 9⅓, diam. 3⅓ mill.
Hab. Cordova.

18. Achatina ambigua, Pfr. *A. testa imperforata, ovato-conica, solida, lævigata, opaca, albida; spira conica, obtusula; anfr. 7 convexis, ultimo spira paulo breviore, basi rotundato; columella verticali, subintorta, subtruncata; apertura verticali, trapezio-ovali; perist. recto, margine dextro subrepando, columellæ parallelo.*
Long. 22, diam. 10 mill.
Hab. Cordova.

19. Cylindrella Boucardi (Sallé, MSS.), Pfr. (Pl. XXXV. f. 1.) *C. testa arcuato-rimata, clavato-cylindracea, truncata, tenuiuscula, costulis capillaribus, confertis, subarcuatis munita, in interstitiis sub lente transverso-striata, corneo-fulva; sutura levi, vix marginata; anfr. superst.* 9–11 *vix convexis, ultimo antice soluto, oblique descendente, dorso angulato, infra medium obtuse carinato; apertura angulato-oblonga, plica*

valida, torta columellæ coarctata; perist. albo, breviter expanso.
Long. 52–56, diam. 13 mill.
Hab. Cordova.

20. Cylindrella apiostoma, Pfr. (Pl. XXXV. f. 4, 5.) *C. testa subrimata, subulata, subarcuatim striatula, diaphana, albido-cornea; spira regulariter attenuata, apice integra, acutiuscula; anfr.* 22–24 *convexiusculis, ultimo breviter protracto, dorso angulato, antice distinctius striato; apertura subverticali, oblique piriformi; perist. albo, undique reflexiusculo, margine dextro superne subsinuoso.*
Long. 17, diam. $2\frac{1}{3}$ mill.
Hab. Cordova.

21. Cylindrella polygyra, Pfr. (Pl. XXXV. f. 2, 3.) *C. testa profunde rimata, subulata, gracili, costulis filaribus, confertis, leviter arcuatis sculpta, opaca, cornea; spira regulariter attenuata, apice integra, acutiuscula; anfr.* 24–27 *convexis, ultimo breviter soluto, dorso et basi subcompresso; apertura vix obliqua, subcirculari, in fundo subtriangulari; perist. undique expanso et reflexiusculo.*
Long. $17\frac{1}{2}$–$21\frac{1}{2}$, diam. $2\frac{1}{2}$ mill.
Hab. Cordova.

22. Proserpina (Ceres) Salleana, Cuming. (Pl. XXXV. f. 21, 22.) *Pr. testa imperforata, conoidea, solidula, superne striis incrementi et granulis minutis exasperata, lutea vel rosea, epidermide opaca, albida, decidua, partim obducta; spira convexo-conoidea, mucronata; anfr.* 8 *vix convexiusculis, ultimo non descendente, medio compresse et acute carinato, basi convexo, lævigato, callo nitido, luteo magis minusve obducto; apertura perobliqua, subtriangulari, lamellis* 6 *coarctata; parietalibus* 2, *columellari* 1 *subtorta,* 3 *in pariete basali, mediana maxima; perist. luteo, subincrassato, obtuso.*
Diam. maj. 23, min. 21, alt. fere 12 mill.
Hab. Cordova.

23. Helicina Heloisæ, Sallé, MSS. (Pl. XXXV. f. 17.) *H. testa turbinato-globosa, solidula, levissime striatula, striis spiralibus sub lente obsolete decussata, nitida, subunicolore lutea vel cingulo purpurascente, sursum diluto ornata; spira convexo-conoidea, acuminata; sutura pallida; anfr.* 6 *convexis, ultimo peripheria vix subangulato, basi planiusculo, callo nitido, circumscripto munito; columella arcuata, filari; apertura diagonali, subsemicirculari; perist. tenuiusculo, expanso, margine dextro leviter flexuoso.*
Operc. ?—Diam. maj. $9\frac{2}{3}$–11, min. $8\frac{1}{2}$–$9\frac{1}{2}$, alt. 7–8 mill.
Hab. Cordova.

24. Helicina notata, Sallé, MSS. (Pl. XXXV. f. 18, 19, 20.) *H. testa globoso-turbinata, solidula, striata et liris subdistantibus, levibus circumdata, carnea vel straminea; spira convexiusculo-conica, acuta; anfr. 5½ vix convexiusculis, ultimo spiram subæquante, convexiore; columella brevi, basi tuberculata, callum crassum, circumscriptum retrorsum emittente; apertura fere diagonali, subsemicirculari; perist. calloso, incrassato, albo, angulatim patente. — Operc. tenue, margine externo purpureo.*

Diam. maj. 8⅓, min. 7, alt. 7 mill.

Hab. Cordova.

25. Helicina Cordilleræ, Sallé, MSS. *H. testa depresse globoso-conica, solida, striatula, opaca, albida, fascia 1 rubra supra peripheriam, nonnullisque pallidioribus, obsoletis cincta; spira conoidea, sursum fusco-carnea, apice acuta; anfr. 5½ vix convexiusculis, ultimo depresse rotundato; columella extus vix impressa, callosa, basi in nodulum terminata, callum emittente crassiusculum, circumscriptum; apertura diagonali, triangulari-semiovali; perist. calloso-incrassato, angulatim patente, margine basali in tuberculum columellæ transeunte.—Operc. corneum, castaneum.*

Diam. maj. 12⅓, min. 10⅔, alt. 8 mill.

β. *Paulo major, unicolor fusco-carnea, impressione columellari distinctiore.*

Hab. In monte Orizaba, 12,000′ supra Oceanum.

26. Cyclostoma (Cyclophorus) Boucardi, Sallé, MSS. (Pl. XXXV. f. 25.) *C. testa latiuscule umbilicata, conoideo-depressa, solida, impressionibus malleatis undique tuberculato-rugosa et liris obsoletis distantibus munita, epidermide fulva, saturatius fasciata vestita; spira breviter conoidea, obtusa; anfr. 5 modice convexis, celeriter accrescentibus, ultimo rotundato, antice interdum breviter soluto; apertura parum obliqua, subangulato-ovali, intus margaritacea; perist. simplice, recto, continuo, superne obsolete angulato, margine columellari leviter arcuato.—Operc. tenuissimum, fulvum, planum.*

Diam. maj. 36, min. 30, alt. 18–19 mill.

Hab. Cordova.

27. Cyclostoma (Chondropoma) Cordovanum, Pfr. *Ch. testa rimato-perforata, turrita, integra, tenui, longitudinaliter confertim plicata, haud nitente, pallide fulva, fasciis interruptis castaneis ornata; spira regulariter turrita, sursum plerumque violacea, apice submamillari nitida, cornea; anfr. 7–7½ perconvexis, ultimo non soluto; apertura verticali, ovali; perist. duplice; interno albo, breviter porrecto, externo subdilatato,*

horizontaliter patente, concentrice striato, castaneo maculato, superne producto, ad anfr. penultimum subexciso.—Operc. albidum.

Long. 13–15½, diam. 6–7⅓ mill.

Hab. Cordova.

DESCRIPTION OF PLATE XXXV.

Fig. 1. Cylindrella Boucardi, *Pfr.*
2, 3. —— polygyra, *Pfr.*
4, 5. —— apiostoma, *Pfr.*
6. Achatina (Varicella) Orizabæ, *Pfr.*
7. —— (Varicella) speciosa, *Pfr.*
8. Spiraxis Shuttleworthi, *Pfr.*
9. —— turgidula, *Pfr.*
10. Bulimus aurifluus, *Pfr.*
11. —— sulphureus, *Pfr.*
12. —— Drouëti, *Pfr.*
13, 14. Helix caduca and var., *Pfr.*
15, 16. Simpulopsis Salleana, *Pfr.*
17. Helicina Heloisæ, *Sallé.*
18, 19, 20. —— notata and var., *Pfr.*
21, 22. Proserpina (Ceres) Salleana, *Cuming.*
23, 24. —— eolina, *Duclos* (for comparison).
25. Cyclophorus Boucardi, *Sallé.*

5. Descriptions of Fifty-eight New Species of Helicea from the Collection of H. Cuming, Esq. By Dr. L. Pfeiffer.

1. Vitrina Flemingi, Pfr. *V. testa subdepressa, peripheria auriformis; solidula, superne plicato-striata striisque spiralibus sub lente notata, æneo-micante, olivaceo-fulva; spira parum elata; sutura anguste albomarginata; anfr. 4½ convexiusculis, ultimo magno, infra medium obsoletissime angulato, basi lævigato, nitidiore; apertura diagonali, lunato-ovali, intus margaritacea; perist. simplice, margine dextro subrepando, columellari arcuato, superne triangulatim reflexo, adnato.*

Diam. maj. 33, min. 24, alt. 17–18 mill.

Hab. Scinde, India (*Dr. Alex. Fleming*).

2. Vitrina Planti, Pfr. *V. testa depressa, ambitu subauriformi, tenuissima, lævigata, nitidissima, pellucida, albido-hyalina; spira parvula, plana; sutura vix impressa, submarginata; anfr. vix 3 planiusculis, ultimo magno, superne vix convexiore, ad suturam striatulo, subtus inflato, membranaceo-marginato; apertura magna, diagonali, lunato-ovali; perist. simplice, margine dextro antrorsum arcuato, columellari tenuissima.*

Diam. maj. 12, min. 8, alt. 6 mill.

Hab. Natal (*Mr. Plant*).

3. Vitrina Borneensis, Pfr. *V. testa depresso-globosa, tenuissima, striatula, striis spiralibus nonnullis impressis notata, pellu-*

cida, pallide cornea; spira brevissime conoidea, albida; sutura submarginata; anfr. 4 *celeriter accrescentibus, superis vix convexis, ultimo subdepresso-rotundato, basi oblique ruguloso; apertura obliqua, lunato-rotundata; perist. simplice, levissime inflexo, margine columellari brevi, strictiusculo, filari.*
Diam. maj. 15, min. 11⅔, alt. 9 mill.
Hab. Borneo.

4. Vitrina Celebensis, Pfr. *V. testa helicoidea, solidula, striatula, nitida, coffeacea; spira breviter conoidea, obtusula; sutura pallide marginata; anfr.* 4 *convexiusculis, sensim accrescentibus, ultimo basi parum convexo, pallido; apertura diagonali, lunato-rotundata; perist. simplice, recto, marginibus subconvergentibus, columellari arcuato, subcalloso.*
Diam. maj. 11½, min. 9, alt. 7 mill.
Hab. Celebes (*Mrs. Ida Pfeiffer*).

5. Vitrina Idæ, Pfr. *V. testa depresso-globosa, ambitu subovali, tenui, arcuato-striatula, nitida, pellucida, lutescenti-cornea; spira vix elevata; sutura levi; anfr.* 4 *convexiusculis, ultimo magno, inflato, basi non impresso; apertura diagonali, rotundato-lunari; perist. simplice, marginibus conniventibus, regulariter arcuatis, columellari brevissime recedente, subcalloso.*
Diam. maj. 14, min. 11, alt. 7⅔ mill.
Hab. Celebes (*Mrs. Ida Pfeiffer*).

6. Vitrina? Comorensis, Pfr. *V. testa subglobosa, tenui, rugoso-striata, vix nitidula, diaphana, virenti-cornea, punctis et strigis luteis variegata; spira convexa, obtusa; anfr.* 3 *convexis, rapide accrescentibus, ultimo inflato; apertura fere diagonali, lunato-ovali, intus margaritacea, albo variegata; perist. simplice, recto, marginibus convergentibus, regulariter arcuatis, columellari filari.*
Diam. maj. 21½, min. 16½, alt. 13–14 mill.
Hab. Mayotte, Comoro Islands (*Mr. Cloué*).
Shape very similar to that of *Helix aperta*, Born.

7. Vitrina Darnaudi, Pfr. *V. testa semiovata, pertenui, sub lente irregulariter striatula punctisque impressis notata, oleoso-micante, pallide virenti-cornea; spira convexa, obtusa; sutura anguste marginata; anfr. vix* 3 *convexis, rapide accrescentibus, ultimo magno; apertura subdiagonali, sublunato-ovali, intus leviter margaritacea; perist. simplice, brevissime inflexo, marginibus approximatis, dextro antrorsum dilatato, columellari arcuato, anguste membranaceo-marginato.*
Diam. maj. 16, min. 12, alt. 7½ mill.
Hab. Sennaar, Interior of Africa (*Mr. Darnaud*).

8. Vitrina Sennaariensis, Pfr. *V. testa depressa, tenui, oblique rugosa, nitidula, pellucida, corneo-virente, plerumque luteo*

nigro obducta ; spira subturbinata, mucronata ; anfr. 3 *convexis, sensim accrescentibus, ultimo depresso, peripheria obsolete angulato ; apertura perobliqua, lunato-circulari ; perist. tenui, subinflexo, marginibus convergentibus, columellari vix dilatato.*
Diam. maj. $6\frac{2}{3}$, min. $5\frac{1}{3}$, alt. 3 mill.
Hab. Sennaar, Interior of Africa (*Mr. Darnaud*).

9. Vitrina leucospira, Pfr. *V. testa depresse subglobosa, ambitu ovali, tenuissima, striatula, pellucida, nitida, lutescenti-hyalina ; spira parum convexa, alba ; sutura vix submarginata ; anfr.* 4 *convexiusculis, penultimo sensim pellucido-radiato, ultimo rotundato ; apertura obliqua, lunato-subcirculari ; perist. tenui, marginibus conniventibus, subinflexis, dextro antrorsum valde arcuato, columellari substricto, brevi, filari.*
Diam. maj. $13\frac{1}{2}$, min. $11\frac{1}{3}$, alt. $8\frac{1}{2}$ mill.
Hab. Australia.

10. Succinea Planti, Pfr. *S. testa conico-ovata, tenuiuscula, rugulosa, diaphana, sordide cornea ; spira brevi, subpapillata ; anfr. vix* $2\frac{1}{2}$, *penultimo convexo, ultimo* $\frac{2}{3}$ *longitudinis superante, medio turgido ; columella substricte recedente, superne levissime calloso-plicata ; apertura fere diagonali, ubique incumbente, acuminato-ovali ; perist. simplice, margine dextro regulariter arcuato.*
Long. 5, diam. $3\frac{1}{2}$, alt. $2\frac{2}{3}$ mill.
Hab. Cape Natal (*Mr. Plant*).

11. Succinea asperula, Pfr. *S. testa ovato-conica, tenuiuscula, striis rugosis subasperata, diaphana, corneo-rubella ; spira turbinata, acuta ; anfr.* $3\frac{1}{2}$ *convexis, ultimo ventroso,* $\frac{2}{3}$ *longitudinis formante ; columella leviter arcuata, compressa, albida ; apertura oblique, undique incumbente, subregulariter ovali, intus margaritacea ; perist. simplice, marginibus subsymmetricis.*
Long. $10\frac{2}{3}$, diam. $6\frac{1}{3}$, alt. 5 mill.
Hab. Flagstaff Hill, St. Helena.

12. Helix Kermandeci, Pfr. *H. testa imperforata, turbinata, tenui, superne subdistanter striata, hyalina ; spira convexiusculo-turbinata, subacuminata ; anfr.* $5\frac{1}{2}$–6 *convexis, lente accrescentibus, ultimo subangulato, antice rotundato ; apertura vix obliqua, lunari ; perist. simplice, recto, marginibus distantibus, columellari superne subreflexo, adnato.*
Diam. maj. $3\frac{2}{3}$, min. $3\frac{1}{3}$, alt. $2\frac{1}{2}$ mill.
Hab. Sunday Island, Kermandec Group (*Lieut. Chimmo, R.N.*).

13. Helix Ophiria, Pfr. *H. testa subperforata, depresse turbinato-globosa, tenuissima, membranacea, radiato-rugata et lineis spiralibus minutissimis sub lente sculpta, pellucida, virenti-cornea ; spira subconoidea, superne alba ; anfr.* 5 *convexiusculis, sensim accrescentibus, ultimo peripheria subangulato, antice rotundato, basi inflato ; apertura fere diagonali, rotundato-lunari ; perist.*

simplice, marginibus dextro et basali subinflexis, columellari fere verticali, superne subreflexo.
Diam. maj. 20, min. 17, alt. 11½ mill.
Hab. Mount Ophir, Malacca (*Dr. Traill*).
Vitrina heliciformis, Pfr. 1854, is an imperfect form of this species.

14. Helix Shiplayi, Pfr. *H. testa perforata, subturbinata, solidula; superne arcuato-plicata striisque spiralibus eleganter granulata, isabellina; spira convexiusculo-conica, obtusula; sutura subcanaliculata; anfr.* 6 *convexis, lente accrescentibus, ultimo peripheria carina acuta, compressa, antice evanescente munito, basi convexo, læviore; apertura diagonali, subangulato-lunari, intus margaritacea; perist. simplice, obtusulo, margine columellari fere verticali, superne triangulatim reflexo.*
Diam. maj. 20, min. 18, alt. 11½ mill.
Hab. Neilgherries, India (*Mr. Conway Shiplay*).

15. Helix acalles, Pfr. *H. testa vix perforata, turbinata, tenui, oblique rugosa, diaphana, pallide cornea; spira conoidea, acutiuscula; anfr.* 5½ *convexiusculis, sensim accrescentibus, ultimo peripheria carinato, antice non descendente, basi convexiore; apertura obliqua, subangulato-lunari; perist. simplice, recto, margine columellari superne anguste reflexo.*
Diam. maj. 13, min. 11, alt. 7⅓ mill.
Hab. Neilgherries, India (*Mr. Conway Shiplay*).

16. Helix Calabarica, Pfr. *H. testa perforata, turbinato-lentiformi, tenui, lævigata, superne liris* 6 *argutis, filiformibus cincta, diaphana, cornea; spira conoidea, acutiuscula; anfr.* 6 *convexiusculis, sensim accrescentibus, ultimo non descendente, acute carinato, basi convexo; apertura parum obliqua, angulato-lunari; perist. simplice, recto, marginibus vix convergentibus, columellari arcuato, superne vix reflexo.*
Diam. maj. 9½, min. 8⅓, alt. 4½ mill.
Hab. Old Calabar, Guinea.

17. Helix Darnaudi, Pfr. *H. testa perforata, depresse conoideo-globosa, tenui, rugoso-striata, cornea, fasciis opacis albidis notata; spira conoidea; anfr. fere* 5 *vix convexiusculis, sensim accrescentibus, ultimo non descendente, rotundato; apertura vix obliqua, rotundato-lunari; perist. simplice, recto, marginibus subconvergentibus, columellari superne dilatato, patente.*
Diam. maj. 8, min. 7, alt. 5 mill.
Hab. Sennaar, Interior of Africa (*Mr. Darnaud*).

18. Helix arguta, Pfr. *H. testa subclause perforata, depressa, tenui, superne argute et confertim arcuato-striata, corneo-fusca; spira parum elevata, obtusa; sutura subcrenulata; anfr.* 4⅓ *celeriter accrescentibus, superis vix convexiusculis, ultimo peripheria carina fusiformi cincto, antice non descendente, basi læviore, luteovirente, medio excavato; apertura diagonali, ampla, lunato-ro-*

tundata, intus margaritacea; perist. simplice, recto, marginibus conniventibus, columellari superne in laminam brevem callosam reflexo.

Diam. maj. 36, min. 29, alt. 18 mill.

Hab. Tenga Hills, Java (*C. Shiplay, Esq.*).

19. Helix Chimmoi, Pfr. *H. testa umbilicata, convexo-depressa, tenuiuscula, confertim plicato-striata, cornea, rufo irregulariter maculata; spira parum elevata; anfr. 5 convexis, sensim accrescentibus, ultimo non descendente, subdepresso-rotundato; umbilico conico, $\frac{1}{3}$ diametri subæquante; apertura parum obliqua, rotundato-lunari; perist. simplice, recto, marginibus convergentibus.*

Diam. maj. $3\frac{2}{3}$, min. 3, alt. $1\frac{1}{2}$ mill.

Hab. Sunday Island, Kermandec Group (*Lieut. Chimmo, R.N.*).

20. Helix conferta, Pfr. *H. testa umbilicata, conoidea, solida, striis incrementi irregularibus et confertissimis spiralibus decussatula, sericea, fulvida; spira conoidea, obtusa; sutura pallide marginata; anfr. vix 5 convexiusculis, sensim accrescentibus, ultimo peripheria angulato, ad suturam turgidulo, basi convexo, juxta umbilicum angustum compresso; apertura perobliqua, subtetragono-lunari; perist. obtuso, margine supero recto, basali incrassato, reflexiusculo, columellari declivi, subdentato, superne triangulatim reflexo.*

Diam. maj. $34\frac{1}{2}$, min. 30, alt. 20 mill.

Hab. ——?

21. Helix Damahoyi, Pfr. *H. testa imperforata, globoso-depressa, tenuiuscula, oblique striata, parum nitente, saturate fusca, fasciis latis nigris, unica lutea mediana et superpositis nonnullis hydrophanis albidis ornata; spira vix elevata, obtusa; anfr. 4 convexiusculis, rapide accrescentibus, ultimo inflato, oblique malleato-plicato; columella declivi, compressa, dilatata, alba; apertura obliqua, truncato-ovali, intus albida; perist. albo, late expanso et reflexiusculo.*

Diam. maj. 47, min. 37, alt. 28 mill.

Hab. Philippine Islands (*Mr. Damahoy*).

22. Helix Meobambensis, Pfr. *H. testa obtecte umbilicata, conoideo-depressa, solida, subdistanter rugoso-striata, undique minute granulata, cinnamomea; spira conoideo-convexa, obtusa; anfr. 5 planiusculis, lente accrescentibus, ultimo antice descendente, peripheria subcarinato, utrinque convexiore; apertura perobliqua, tetragono-lunari; perist. albo, reflexo, marginibus callo junctis, columellari dilatato, adnato, stricto, ad dextram unidentato.*

Diam. maj. 32, min. 26, alt. 15 mill.

Hab. Meobamba, Peru (*Mr. Porte*).

23. Helix ammiralis, Pfr. *H. testa umbilicata, turbinato-de-*

pressa, solidula, undique subruditer striata, fulva vel lutescente, plerumque fascia unica peripherica nigro-castanea ornata; spira regulariter conoidea; anfr. $6\frac{1}{2}$ *vix convexiusculis, lente accrescentibus, ultimo antice vix descendente, peripheria carinato, basi convexo, circa umbilicum angustum, castaneum subcompresso; apertura obliqua, lunari; perist. hepatico, breviter expanso, margine columellari superne fornicatim reflexo.*
Diam. maj. 36, min. 33, alt. 20 mill.
Hab. China (*Admiral Cecille*).

24. Helix mucida, Pfr. *H. testa umbilicata, turbinato-depressa, tenuiuscula, striatula, saturate rufa, quasi mucore obducta; spira conoidea, obtusula; anfr. 5 convexis, sensim accrescentibus, ultimo rotundato, antice descendente, circa umbilicum infundibuliformem subangulato; apertura fere diagonali, rotundato-lunari, intus nitida, carnea; perist. breviter expanso, marginibus vix convergentibus, columellari superne triangulatim dilatato, patente.*
Diam. maj. 20, min. $16\frac{2}{3}$, alt. 11 mill.
Hab. Percy's Island (*Lieut. Chimmo, R.N.*).

25. Helix Gueinzii, Pfr. *H. testa umbilicata, depressa, carinata, tenui, plicis subdistantibus retrorsum descendentibus sculpta, pellucida, pallide cornea, seriebus macularum rufarum ornata; spira vix elevata; anfr. 5 sensim accrescentibus, prope suturam turgidis, ultimo superne subacute carinato, antice non descendente, subtus perinflato, circa umbilicum* ($\frac{1}{6}$ *diametri occupantem*) *conicum lævigato, subangulato; apertura vix obliqua, subangulato-lunari; perist. tenui, undique breviter expanso, margine columellari superne dilatato, patente.*
Diam. maj. 20, min. 16, alt. 9 mill.
Hab. Meobamba, Peru (*Mr. Gueinzius*).

26. Helix basidentata, Pfr. *H. testa umbilicata, conoideo-subsemiglobosa, solida, oblique striata, alba, fasciis 2 castaneis et 1 angustiore aurantiaca prope suturam ornata; spira convexo-conoidea, obtusa; anfr. 5 convexis, sensim accrescentibus, ultimo carinato, antice perdeflexo, basi planiusculo; umbilico angusto, pervio; apertura horizontali, elliptica; perist. continuo, undique reflexo, margine basali medio dente 1 valido, obtuso armato.*
Diam. maj. 26, min. 20, alt. 11 mill.
Hab. Philippine Islands.

27. Bulimus phæostylus, Pfr. *B. testa imperforata, oblongo-ovata, tenui, oblique confertim striata, pallide fulvescenti-carnea, fasciis 3 nigricantibus (1 suturali, 1 infraperipherica, tertia columellari) ornata; spira convexo-conica, apice obtusula, nigro-violacea; anfr. 5 modice convexis, sensim accrescentibus, ultimo spira paulo breviore; columella compressa, plana, fusca, basi*

subtruncata; apertura obliqua, truncato-oblonga; perist. castaneo, anguste reflexo.
Long. 37, diam. 24 mill.
Hab. Philippine Islands.

28. Bulimus inæqualis, Pfr. *B. testa anguste umbilicata, oblique fusiformi, tenuiuscula, lævigata, nitida, alba unicolore vel strigis latis ramosis violaceo-nigricantibus picta; spira gracili, conica, acuta; anfr. 6 vix convexiusculis, ultimo spira longiore, antice subascendente, latere aperturali planulato, basi subattenuato; apertura subverticali, elongato-auriformi, intus violaceo-limbata; columella violacea, superne oblique plicata; perist. albo, late expanso, margine columellari plano, patente, superne flexuoso.*
Long. 43, diam. 13 mill.
Hab. Banks of the Maranhon.

29. Bulimus Gueinzii, Pfr. *B. testa profunde rimata, oblongo-conica, tenui, sublævigata, nitida, albida, strigis angustis fuscis, basin versus undulatis, ornata; spira conica, acutiuscula; anfr. 6 convexiusculis, ultimo spira vix breviore, basi subattenuato, ad rimam violaceo; columella compressa, subtorta, violacea; apertura vix obliqua, truncato-oblonga, intus lilacina; perist. tenui, margine dextro superne valde curvato, late expanso, columellari patente.*
Long. 23, diam. 10 mill.
Hab. Meobamba, Peru (*Mr. Gueinzius*).

30. Bulimus clarus, Pfr. *B. testa rimato-umbilicata, ovato-oblonga, tenui, lævigata, nitida, diaphana, sub epidermide fugace fulvescente-albida; spira elongata, convexo-conica, obtusula; anfr. 5½ modice convexis, ultimo $\frac{2}{7}$ longitudinis subæquante, basi rotundato; columella leviter arcuata; apertura obliqua, truncato-ovali; perist. tenui, marginibus conniventibus, dextro breviter expanso, columellari dilatato, patente.*
Long. 16, diam. 7$\frac{2}{5}$ mill.
Hab. Meobamba, Peru (*Mr. Gueinzius*).

31. Bulimus lactifluus, Pfr. *B. testa breviter rimato-perforata, fusiformi-turrita, tenuiuscula, sublævigata, cornea, strigis lacteis subserratis notata; spira turrita, apice acutiuscula, sæpe nigro-cornea; anfr. 10–11 convexiusculis, ultimo $\frac{2}{7}$ longitudinis subæquante, basi attenuato, compresso; columella leviter arcuata; apertura vix obliqua, ovali-oblonga; perist. tenui, margine dextro anguste expanso, columellari a basi dilatato, fornicatim reflexo.*
Long. 16$\frac{1}{3}$–17, diam. 4$\frac{2}{3}$ mill.
Hab. Chili.

32. Bulimus Floridanus, Pfr. *B. testa anguste perforata, ovato-turrita, sublævigata, griseo-hyalina, strigis et maculis opacis, albis notata; spira elongato-conica, acutiuscula; anfr. 6½ convexiusculis, superis interrupte fusco-fasciatis, ultimo $\frac{3}{7}$ longi-*

tudinis subæquante, infra medium subangulato, basi attenuato; columella subtorta, recedente; apertura parum obliqua, ovali; perist. tenui, margine dextro anguste expanso, columellari dilatato, reflexo, fere adnato.
Long. $15\frac{2}{3}$–17, diam. $7\frac{1}{2}$ mill.
Hab. Florida.

33. Bulimus distans, Pfr. *B. testa compresse umbilicata, ovato-conica, tenuiuscula, costis subarcuatis, chordæformibus subdistantibus sculpta, subdiaphana, albida; spira elevato-conica, obtusula; anfr. 7 convexis, ultimo $\frac{3}{7}$ longitudinis subæquante, basi rotundato; columella profunde subtorta; apertura parum obliqua, acuminato-subovali; perist. tenui, marginibus convergentibus, dextro breviter expanso, columellari dilatato, patente.*
Long. $22\frac{1}{2}$, diam. $10\frac{1}{2}$ mill.
Hab. Isle of Karah, Gulf of Persia.

34. Bulimus æstivus, Pfr. *B. testa umbilicata, oblongo-turrita, solidula, irregulariter striata, albida; spira elongata, convexiusculo-conica, acutiuscula; anfr. 6 modice convexis, ultimo $\frac{3}{7}$ longitudinis subæquante, basi vix attenuato; columella subrecedente; apertura parum obliqua, acuminato-ovali; perist. tenui, margine dextro anguste expanso, columellari dilatato, fornicatim reflexo.*
Long. 17, diam. $7\frac{1}{3}$ mill.
Hab. Meobamba, Peru (*Mr. Gueinzius*).

35. Bulimus Charbonnieri, Pfr. *B. testa profunde rimata, ovato-conica, tenuiuscula, confertim costulato-striata, diaphana, corneo-albida; spira elevato-conica, obtusa; anfr. 6 convexiusculis, ultimo spira paulo breviore, juxta umbilicum rimæformem subcompresso; columella substricta; apertura parum obliqua, elliptico-ovali; perist. tenui, marginibus approximatis, dextro perarcuato, breviter expanso, columellari sursum dilatato, patente.*
Long. 15, diam. 8 mill.
Hab. Isle of Karah, Gulf of Persia.

36. Bulimus Tibetanus, Pfr. *B. testa profunde rimata, ovato-oblonga, pupæformi, solidula, striatula, albidą, strigis et maculis corneis irregulariter notata; spira subcylindrica, sensim in conum obtusulum attenuata; anfr. 8–$8\frac{1}{2}$ vix convexiusculis, ad suturam plicatulis, ultimo $\frac{1}{3}$ longitudinis subæquante, antice ascendente, basi compresso; columella subplicata; apertura verticali, sinuato-ovali; perist. albolabiato, expanso, marginibus callo subjunctis, columellari reflexiusculo.*
Long. 32, diam. 11 mill.
Hab. Tibet.

37. Bulimus Cochinchinensis, Pfr. *B. testa imperforata, fusiformi-ovata, solida, lævigata, nitida, pallide sulphurea vel albida; spira convexiusculo-turrita, apice obtusula; sutura levi, pallida; anfr. 6–7, superis planiusculis, sequentibus convexiori-*

bus, ultimo $\frac{2}{5}$ longitudinis subæquante, basi attenuato, subcompresso; columella funiformi, leviter torta; apertura parum obliqua, elliptico-ovali; perist. subincrassato, margine dextro breviter expanso, columellari dilatato, adnato.

Long. 39, diam. 17 mill.

Hab. Cochin China.

38. Bulimus chion, Pfr. *B. testa perforata, oblonga, solida, striatula, alba; spira elongata, in conum acutiusculum terminata; anfr.* 7–8 *modice convexis, ultimo $\frac{1}{3}$ longitudinis paulo superante, antice subascendente, basi rotundato; apertura verticali, ovato-lunari; perist. calloso, marginibus callo junctis, columellari brevi, substricto, dilatato, patente.*

Long. 12, diam. $5\frac{1}{2}$ mill.

Hab. India; Punjaub, Kurrachee, mouth of the Indus (*Mr. Conway Shiplay*).

39. Bulimus Kanaiensis, Pfr. *B. testa subperforata, conico-ovata, solidula, striatula et irregulariter malleato-impressa, alba; spira conica, sursum interdum grisea, apice obtusa; anfr.* 5 *convexis, ultimo spiram vix superante, oblique descendente, basi rotundata; columella vix arcuata; apertura obliqua, truncato-ovali; perist. simplice, recto, margine columellari dilatato, reflexo, subappresso.*

Long. 14, diam. 8 mill.

Hab. Kanai, Sandwich Islands.

40. Bulimus Lorraini, Pfr. *B. testa subperforata, ovato-conica, tenui, rugata, subepidermide fulvida, glutinosa, alba; spira convexiusculo-conica, obtusula; anfr.* 4 *convexis, ultimo spiram paulo superante, basi parum attenuato; columella compressa, leviter arcuato; apertura obliqua, acuminato-ovali, intus margaritaceo-albida; perist. simplice, recto, margine columellari anguste reflexo, subadnato.*

Long. 20, diam. 9 mill.

Hab. Isle of Penang (*Mr. Lorrain*).

41. Bulimus Woodwardi, Pfr. *B. testa perforata, ovato-turrita, solidula, striata et submalleata, nitidula, fulvido-alba; spira elongato-conica, acutiuscula; anfr.* 8 *convexiusculis, ultimo spira paulo breviore, basi subattenuato; columella recedente; apertura obliqua, ovali-oblonga; perist. simplice, recto, margine dextro leviter arcuato, columellari sursum dilatato, fornicatim reflexo, perforationem angustam semitegente.*

Long. 31, diam. $13\frac{1}{2}$ mill.

Hab. Andes of Peru.

42. Bulimus Castelneaui, Pfr. *B. testa subperforata, fusiformi-turrita, tenuiuscula, striatula (sub lente decussatula), nitida, griseo-albida, punctis raris pellucidis conspersa; spira elongato-conica, apice acuta, cornea; anfr.* $7\frac{1}{2}$ *convexiusculis, ultimo $\frac{2}{5}$ lon-*

gitudinis subæquante, basi attenuato ; columella substricta ; apertura obliqua, oblonga, intus carnea ; perist. simplice, recto, margine columellari sursum dilatato, fornicato-reflexo.
Long. 20, diam. 8½ mill.
Hab. Rio Pampas, Bolivia (*Mr. Castelneau*).

43. Bulimus nigroapicatus, Pfr. *B. testa perforata, ovato-conica, tenuiuscula, striata, nitida, albida, fasciis nigricantibus crebris, superioribus moniliformibus, ornata ; spira conica, apice acutiuscula, nigra ; anfr. 5½ parum convexis, ultimo spira paulo longiore, ventroso ; columella levissime arcuata ; apertura obliqua, elliptico-ovali ; perist. simplice, recto, margine columellari superne late reflexo, subappresso.*
Long. 22, diam. 11½ mill.
Hab. Rio Pampas, Bolivia (*Mr. Castelneau*).

44. Bulimus stenacme, Pfr. *B. testa umbilicata, ovato-turrita, solidula, ruguloso-striata, albida, strigis angustis pallide corneis variegata ; spira elongata, apicem versus acutiusculum attenuata ; anfr. 7 convexiusculis, ultimo ⅖ longitudinis subæquante, juxta umbilicum angustum subcompresso ; apertura obliqua, oblongo-ovali, intus fusco-carnea ; perist. simplice, recto, margine columellari superne dilatato, fornicatim reflexo.*
Long. 20½, diam. 9 mill.
Hab. Bolivia.

45. Bulimus monachus, Pfr. *B. testa anguste perforata, oblongo-turrita, tenui, striatula, diaphana, sordide cornea ; spira convexo-turrita, apice acutiuscula ; anfr. 7½ vix convexiusculis, ultimo ⅔ longitudinis subæquante, basi parum attenuato, rotundato ; columella recedente ; apertura obliqua, oblongo-ovali ; perist. simplice, recto, margine columellari sursum dilatato, reflexo.*
Long. 31, diam. 11½ mill.
Hab. Meobamba, Peru (*Mr. Gueinzius*).

46. Partula purpurascens, Pfr. *P. testa perforata, ovato-conica, solida, oblique striata striisque spiralibus confertis distincte decussata, nitida, purpurascenti-fusca ; spira convexo-conica, acuta ; sutura levi ; anfr. 5½ vix convexiusculis, ultimo spiram subæquante, peripheria subangulato, basi rotundato ; columella leviter arcuata ; apertura parum obliqua, truncato-oblonga ; perist. fusco-violaceo, undique patente et reflexiusculo.*
Long. 22, diam. 14 mill.
Hab. —— ?

47. Partula callifera, Pfr. *P. testa umbilicata, ovato-conica, solida, sublævigata (sub lente punctulato-striata), albida ; spira convexiusculo-conica, obtusula ; sutura levi ; anfr. 5 convexiusculis, ultimo spira paulo longiore, inflato ; columella subverticali, superne tuberculifera, intus plicata ; apertura vix obliqua, sinuato-oblonga, dente profundo parietali coarctata ; perist. incrassato,*

dilatato, marginibus callo junctis, dextro supra medium callo oblongo intus munito.
Long. 19, diam. 11 mill.
Hab. ——?

48. Partula lævigata, Pfr. *P. testa profunde rimata, ovato-conica, solida, lævigata (sub lente vix striatula), nitida, lutescente; spira conica, obtusula; sutura mediocri; anfr. 5 convexiusculis, ultimo spiram subæquante, prope suturam tumidiore, basi rotundato; columella supra medium introrsum nodoso-plicata; apertura vix obliqua, oblonga, tuberculo profundo anfractus penultimi coarctato; perist. crasso, albo, undique patente, margine columellari superne dilatato, adnato.*
Long. 20, diam. 10 mill.
Hab. ——?

49. Partula lilacina, Pfr. *P. testa subobtecte perforata, ovato-conica, solida, sub lente spiraliter striata, nitidula, lilacina; spira conica, acuta; sutura levi; anfr. 5½ vix convexiusculis, ultimo spiram subæquante, rotundato; columella superne tuberculo subcircumscripto munita; apertura obliqua, truncato-oblonga; perist. incrassato, albido, breviter expanso, margine columellari fere adnato.*
Long. 17½, diam. 10 mill.
Hab. Marquesas Islands.

50. Achatinella (Achatinellastrum) ovum, Pfr. *A. testa sinistrorsa, imperforata, globoso-conica, solida, rugulosostriata, nitidula, albida; spira concaviusculo-conica, apice acuta; sutura profunde marginata; anfr. 5½, superis planis, sequentibus convexis, ultimo inflato, spira vix breviore; plica columellari crassa, tuberculiformi, pallide lilacea; apertura diagonali, sinuato-semicirculari; perist. recto, nigro-fusco, limbato, intus crenato-labiato.*
Long. 19½, diam. 13 mill.
Hab. Oahu, Sandwich Islands (*Dr. Newcomb*).

51. Achatinella (Laminella) farcimen, Pfr. *A. testa sinistrorsa, subperforata, oblongo-conica, solidula, rugulosa, sub epidermide nigricante albida; spira superne in conum acutum nudum terminata; anfr. 7, superis planis, 2 ultimis perconvexis, ultimo ⅓ longitudinis paulo superante, medio subangulato; plica columellari compressa, obliqua; apertura obliqua, semiovali, intus alba; perist. simplice, recto, margine columellari subpatente.*
Long. 19, diam. 9 mill.
Hab. Mani, Sandwich Islands (*Dr. Newcomb*).

52. Achatinella (Labiella) callosa, Pfr. *A. testa imperforata, dextrorsa, fusiformi-oblonga, solida, leviter striatula, sub epidermide tenui fulvida alba; spira elongata, ventroso-conica,*

apice obtusula; sutura sublacera; anfr. 8 *planiusculis, ultimo* $\frac{1}{3}$ *longitudinis paulo superante, basi attenuato; plica columellari acute dentiformi, alba; apertura vix obliqua, acuminato-elliptica; perist. calloso, obtuso, margine dextro intus obsolete dentato.*
Long. 16, diam. 6 mill.
Hab. Oahu, Sandwich Islands (*Dr. Newcomb*).

53. Achatina (Varicella) Guadeloupensis, Pfr. *A. testa oblongo-turrita, tenui, lævigata, nitidissima, pellucida, virenti-cornea, varicibus arcuatis, vix prominulis, castaneo-marginatis passim munita; spira regulariter attenuata, apice obtusa; anfr.* 7 *convexiusculis, ultimo* $\frac{1}{3}$ *longitudinis subæquante, basi attenuato; columella perarcuata, basi anguste truncata; apertura vix obliqua, acuminato-ovali; perist. tenui, margine dextro antrorsum dilatato, rufo-limbato.*
Long. 14, diam. $4\frac{1}{3}$ mill.
Hab. In insula Guadeloupe (*Mr. Caillet*).

54. Spiraxis Sandwichensis, Pfr. *Sp. testa subperforata, oblongo-turrita, solidula, cerea; spira turrita, obtusula; anfr.* $7\frac{1}{2}$ *planiusculis, infra suturam plicatis, ultimo* $\frac{1}{3}$ *longitudinis paulo superante; columella compressa, torta; apertura vix obliqua, ovali; perist. simplice, marginibus callo tenui junctis, dextro antrorsum subdilatato, columellari subreflexo.*
Long. 9, diam. 3 mill.
Hab. Sandwich Islands (*Dr. Newcomb*).

55. Spiraxis obsoleta, Pfr. *Sp. testa subperforata, oblongo-turrita, tenui, levissime striatula, pellucida, nitida, pallide cornea; spira convexiusculo-turrita, obtusa; sutura marginata; anfr.* $6\frac{1}{2}$ *convexiusculis, ultimo* $\frac{2}{5}$ *longitudinis formante; columella acuta, medio leviter torta; apertura vix obliqua, elliptico-ovali; perist. simplice, margine columellari brevissime reflexo, subadnato.*
Long. 8, diam. 3 mill.
Hab. Sandwich Islands (*Dr. Newcomb*).

56. Tornatellina Gouldi, Pfr. *T. testa ovato-conica, tenui, sublævigata, pellucida, cornea; spira elongato-conica, apice obtusula; anfr.* $5\frac{1}{2}$ *convexis, ultimo* $\frac{2}{5}$ *longitudinis subæquante, rotundato; apertura obliqua, erecto-lunari, lamella valida intrante parietali et plica crassa triangulari columellæ coarctata; perist. recto, tenui.*
Long. 4, diam. $2\frac{1}{2}$ mill.
Hab. ——?

57. Tornatellina Newcombi, Pfr. *T. testa perforata, ovato-turrita, tenui, sublævigata, parum nitida, diaphana, pallide cornea; spira subrectilineari, conica, obtusula; anfr.* 7 *subplanis, ultimo* $\frac{1}{3}$ *longitudinis vix formante, basi convexo; apertura obliqua, ro-*

tundato-lunari, lamella mediocri parietali et plicis 2 parallelis columellæ coarctata; perist. simplice, recto.
Long. 4, diam. $2\frac{1}{3}$ mill.
Hab. Sandwich Islands (*Dr. Newcomb*).

58. Tornatellina perforata, Pfr. *T. testa perforata, ovato-turrita, arcuato-striata, tenui, albido-hyalina; spira elongata, apice acuta; anfr. 7 convexis, ad suturam distanter plicatulis, ultimo $\frac{1}{3}$ longitudinis paulo superante; lamella parietali minuta; apertura vix obliqua, sinuato-ovali, acuminata; columella lamina torta munita; perist. tenui, margine dextro recto, superne antrorsum arcuato, basali expanso, columellari fornicatim reflexo, patente.*
Long. 18, diam. $7\frac{1}{2}$ mill.
Hab. Venezuela.

6. Descriptions of Sixteen New Species of Pneumonopoma, from the Collection of H. Cuming, Esq. By Dr. L. Pfeiffer.

A. Opisophthalma.

1. Diplommatina Cantori, Pfr. *D. testa subrimata, sinistrorsa, ovato-oblonga, tenuiuscula, confertim et oblique plicata, albida; spira ovata, in conum acutiusculum terminata; anfr. 6 convexiusculis, ultimo ascendente, $\frac{1}{3}$ longitudinis vix superante; apertura subverticali, circulari; perist. subsimplice, continuo, superne adnato, cæterum breviter expanso.*
Long. 2, diam. 1 mill.
Hab. Lord Howe's Island, New Hebrides (*Mr. Macgillivray*).

2. Truncatella Ceylanica, Pfr. *Tr. testa subrimata, attenuato-cylindracea, striatula, pellucida, nitida, corneo-rufa vel flavescente; anfr. superst. 4, supremis 2 rotundatis, reliquis planioribus, omnibus ad suturam plicato-crenatis, ultimo basi non compresso; apertura verticali, ampla, angulato-subovali; perist. continuo, margine dextro tenui, expansiusculo, columellari leviter arcuato, appresso.*
Long. 6, diam. 2 mill.
Hab. Ceylon.

3. Truncatella teres, Pfr. *Tr. testa vix subrimata, cylindrica, tenuiuscula, longitudinaliter magis minusve distincte costulata, pellucida, nitida, rufo-cornea; sutura marginata, valide plicato-crenata; anfr. superst. 4 subæqualibus, convexiusculis, ultimo basi breviter cristato, calloso, albido; apertura verticali, late ovali, superne angulata, ad dextram dilatata; perist. simplice, continuo, margine dextro expansiusculo, columellari adnato.*
Long. 6, diam. 2 mill.
Hab. Isle of Mauritius, and Trinity Bay, Australia.

4. Truncatella Barbadensis, Pfr. *Tr. testa subrimata, cylindracea, sursum vix attenuata, solidula, costulis confertis, obtusis, subrectis regulariter sculpta, sericina, rufo-cornea; sutura profunda; anfr. superst. 4½ perconvexis, lente accrescentibus, ultimo basi crista albida, antice peristoma cingente munito; apertura verticali, ovali, superne subrotundata, basi subeffusa; perist. continuo, margine dextro expanso et reflexiusculo, perarcuato, columellari subadnato.*
Long. 6⅓, diam. 2 mill.
Hab. Island of Barbadoes, West Indies.

B. Ectophthalma.

5. Cyclostoma (Cyclotus) daucinum, Pfr. *C. testa umbilicata, depressa, solidula, subangulata, daucina vel albida; spira parum elevata; sutura simplice; anfr. 4½ convexis, sensim accrescentibus, superioribus spiraliter striatis, ultimo rugoso, carina mediocri, antice evanescente munito; umbilico conico, ¼ diametri paulo superante; apertura parum obliqua, subcirculari; perist. simplice, recto, ad anfr. penultimum breviter interrupto. Operc. anguste et obsolete spiratum.*
Diam. maj. 12, min. 10, alt. 6 mill.
Hab. Salomon's Islands.

6. Cyclostoma (Opisthoporus) Cochinchinense, Pfr. *C. testa late umbilicata, discoidea, solida, vix striatula, sub epidermide fulvida alba, radiis pellucidis notata; spira subplana, medio vix elevata; anfr. 5 convexis, ultimo terete, antice soluto, pone aperturam spiraculo versus anfr. penultimum curvato munito; apertura circulari; perist. subsimplice, vix expansiusculo, superne levissime inciso. Operc. ?*
Diam. maj. 20, min. 16, alt. 7 mill.
Hab. Cochin China.

7. Cyclostoma (Opisthoporus) euryomphalum, Pfr. *C. testa late umbilicata, depressa, subdiscoidea, solidula, striatula, lutescente, strigis angulosis castaneis, superne latis, subtus lineariibus, picta; spira plana, vertice nigro vix prominulo; anfr. 4½, prope suturam canaliculatam subangulatis, ultimo antice vix descendente, 4 mill. pone aperturam spiraculo brevi retroflexo munito; umbilico dimidium diametri fere occupante; apertura diagonali, subcirculari; perist. duplice, interno breviter expanso, ad anfr. penultimum subinciso, externo superne alatim dilatato, latere dextro patente, sinistro obsoleto. Operc. calcareum, angustispirum.*
Diam. maj. 15, min. 12, alt. 4 mill.
Hab. Borneo.

8. Cyclostoma (Cyclophorus) Shiplayi, Pfr. *C. testa umbilicata, depressa, tenuiuscula, membranaceo-striata, fulva, cas-*

taneo oblique strigata; spira vix elevata; anfr. 4 *convexis, ultimo terete; umbilico* $\frac{1}{3}$ *diametri occupante; apertura obliqua, subcirculari; perist. simplice, recto, ad anfractum contiguum vix interrupto. Operc.?*
Diam. maj. 7, min. 6, alt. 3 mill.
Hab. Neilgherries, India (*Mr. Conway Shiplay*).

9. Cyclostoma (Leptopoma) signatum, Pfr. *C. testa perforata, globoso-turbinata, tenui, sub lente decussatula et lineis filaribus, subelevatis, subdistantibus cincta, diaphana, lutescenti-cornea, strigis confertis rufis fulgurata; spira turbinata, acutiuscula; anfr.* 5 *convexis, ultimo spiram subæquante,* 5-*lirato; apertura diagonali, subcirculari; perist. subincrassato, patente, marginibus fere contiguis, columellari angustiore. Operc.?*
Diam. maj. 11, min. $8\frac{2}{3}$, alt. $8\frac{2}{3}$ mill.
Hab. Borneo.

10. Cyclostoma (Leptopoma) duplicatum, Pfr. *C. testa anguste umbilicata, globoso-turbinata, solidula, undique confertim spiraliter striata lirisque filiformibus distantibus cincta, fulva, strigis fulguratis rufis ornata; spira elevata, acutiuscula; anfr.* 5 *convexis, ultimo superne turgido, infra medium carina levi munito; apertura obliqua, subangulato-circulari; perist. subcontinuo, albo, duplice, interno vix porrecto, externo expanso et reflexiusculo, latere sinistro quasi abscisso. Operc.?*
Diam. maj. 10, min. 8, alt. 7 mill.
Hab. ——?

11. Cyclostoma (Cyclostomus) Boivini, Pfr. *C. testa obtecte perforata, globoso-turbinata, tenuiuscula, spiraliter obsolete lirata; griseo et fulvido variegata, spadiceo multifasciata; spira turbinata; anfr. fere* 6 *turgidis, celeriter accrescentibus, ultimo ventroso, peripheria carina* 1 *compressa, albida munito, circa umbilicum confertim spiraliter lirato; apertura subverticali, oblongo-rotundata, intus nigricanti-sanguinea; perist. tenui, ad anfr. penultimum subemarginato, superne producto, margine dextro et basali late patente, columellari angusto, supra umbilicum dilatato, adnato. Operc.?*
Diam. maj. 29, min. 23, alt. 25 mill.
Hab. Nos-bé, Madagascar (*Mr. Boivin*).

12. Cyclostoma (Cyclostomus) microchasma, Pfr. *C. testa umbilicata, depresse turbinato-globosa, tenuiuscula, spiraliter confertim lirata, striis incrementi vix decussatula, albido-lutescente; spira turbinata, obtusula; anfr.* $4\frac{1}{2}$ *convexis, ultimo terete, infra peripheriam fascia latiuscula castanea ornato; umbilico conico,* $\frac{1}{5}$ *diametri fere occupante; apertura parum obliqua, parvula, fere circulari; perist. tenui, vix expansius-*

culo, marginibus fere contiguis, ad anfr. penultimum callo brevi junctis. Operc.?
Diam. maj. 18, min. 15½, alt. 12 mill.
Hab. Madagascar.

13. Cyclostoma (Cyclostomus) sarcodes, Pfr. *C. testa umbilicata, turbinata, solidula, liris obtusis subconfertis striisque illas transgredientibus creberrimis sculpta, carnea, fusco-violaceo uni- vel plurifasciata; spira turbinata, acutiuscula; anfr. 5 convexis, ultimo circa umbilicum angustum, subpervium liris angustioribus, prominentioribus munito; apertura fere verticali, ovali-rotundata; perist. anguste expanso, breviter adnato, superne subangulato. Operc.?*
Diam. maj. 17, min. 14, alt. 14 mill.
Hab. Madagascar.

14. Cataulus Cumingi, Pfr. *C. testa vix rimata, turrito-fusiformi, solidula, subgranulato-striata, daucino-fusca; spira convexo-turrita, apice acutiuscula; sutura submarginata; anfr. 8 vix convexiusculis, penultimo convexiore, ultimo attenuato, basi axin vix excedente; carina umbilicali compressa, albida, angulatim patula; periomphalo mediocri, turgido, distinctius striato; apertura subcirculari; perist. albo, continuo, incrassato, fornicatim patente, superne anguste adnato, cæterum dilatato, basi longe producto, canali infundibuliformi perforato.*
Long. 20⅔, diam. medio 7 mill.
Hab. Ceylon (*Mr. Thwaites*).

15. Helicina Idæ, Pfr. *H. testa conoideo-depressa, tenuiuscula, striata, lineis spiralibus impressis distantibus sculpta, nitida, lutea vel carnea; spira conoidea, acutiuscula; anfr. 5 planiusculis, ultimo peripheria subangulato, basi convexiore; callo basali tenui, concolore; columella brevi, antrorsum subdentata; apertura diagonali, subsemicirculari; perist. acuto, breviter expanso, intus labiato. Operc.?*
Diam. maj. 8, min. 6½, alt. 4½ mill.
Hab. Ceram (*Mrs. Ida Pfeiffer*).

16. Helicina virens, Pfr. *H. testa conoidea, solida, striatula et sub lente minute spiraliter striata, carinata, nitida, albido-virente; spira convexo-conoidea, apice acuta; sutura marginata, carina interdum prominente; anfr. 6 vix convexiusculis, summis interdum rufo-fasciatis, ultimo antice vix descendente, peripheria acute albocarinato, basi parum convexo; apertura diagonali, subtriangulari-semiovali; columella brevi, superne leviter impressa, callum emittente circumscriptum, luteum, subgranulatum; perist. acuto, albo, expanso. Operc. tenue, castaneum.*
Diam. maj. 11⅓, min. 10, alt. 8 mill.
Hab. ——?

7. Descriptions of Four New Species of Kelliadæ in the Collection of Hugh Cuming, Esq.

By Sylvanus Hanley.

1. Montacuta Coquimbensis. *M. testa ovata vel obovata, inæquilaterali, antice obtusissime angulata, postice longiore et late rotundata; tenui, subpellucida, maxime compressa, infra epidermidem lutescentem albida (intus albo-submargaritacea), concentrice et argutissime rugulosa; margine ventrali integro, convexo; margine dorsali utrinque, prope nates acutissimas, subretuso vel subrecto, antice subdeclivi, postice vix declivi, lunula angustissima planulata impressa; fossula ligamentali apicali late trigona inter dentes duos laterales (altera in valvula subobsoletos) breves divergentes prominentesque occlusa.*

Lat. $\frac{1}{3}$ poll.

Hab. Coquimbo, in fine sand, 6 fathoms (*H. C.*).

The cartilage-pit is attached to the umbo, and edged below with a curved rim. The lateral scars are large, and well marked; the pallial line is perceptibly simple. It is a somewhat aberrant species.

2. Kellia tellinoides. *K. testa rotundato-ovali, rarius subrhombea, subæquilaterali, solidiuscula, haud pellucida, nitida, candida, lævi, subventricosa; margine ventrali intus simplice, postice arcuato, antice subrecto, ascendente; margine dorsali utrinque subrecto et vix declivi; umbonibus prominulis; natibus acutis; superficie interna submargaritacea; impressionibus muscularibus magnis (præsertim antica); linea palliari simplice; in utroque valvula dentibus lateralibus duobus, validis, subæquidistantibus et dente unico apicali antico.*

Lat. $\frac{2}{5}$ poll.

Hab. Baclayon, Isle of Bohol, Philippines, under stones.

The shape, as in most of the *Kelliadæ*, is wont to vary. It is obtusely rounded behind, and in front is either very bluntly peaked, or obliquely subtruncated at the ventral corner.

3. Pythina mactroides. *P. testa transversim subtrigona, æquilaterali vel subæquilaterali, utrinque rotundata, magis minusve solida, compresso-convexa, extus albido-lutescente, intus alba, nitida, lævi (sub lente minutissime punctulata); margine ventrali integro, subrecto, in medio subretuso; margine dorsali utrinque subrecto et subæqualiter declivi; natibus acutis, prominentibus, haud recurvis; cardine utriusque valvulæ dentibus lateralibus duobus, solidis, subtrigonis, approximatis, in v. sinistra cum cardinali unico obliquo, acuto, angusto, et in v. dextra cum tuberculo dentiformi ad basim d. lateralis antici superimposito.*

Lat. $\frac{3}{1\frac{1}{2}}$ poll.

Hab. Cape of Good Hope.

The muscular impressions are well developed, and the simplicity of the pallial line clearly perceptible. Allied to *Bornia corbuloides* of Philippi.

J.Wolf lith.

M & N. Hanhart, Imp.

SCIURUS MACROTIS. *Gray.*

4. Pythina nuculoides. *P. testa ovata, obtuse subcuneiformi, valde inæquilaterali, postice duplo longiore et rotundato-subattenuata, antice rotundato-subtruncata; solidiuscula, convexa, lævi, extus intusque albida, nitida; margine ventrali crenato, convexo, postice acclivi; margine dorsali antice abrupte declivi et (vix subconvexo) postice convexo et modice declivi; natibus subacutis; superficie interna sulcis obsoletis inferne ornata: cardine valvulæ dextræ dente laterali flexo, solido, brevi, prominente, approximato, postice subtruncato, et dente apicali valido, trigono, prominente, unico; valvulæ sinistræ dente laterali longiore, solidiusculo, postice truncato, et cardinalibus duobus, quorum apicalis oblique prominet, minorque contiguus est sublaminaris.*

Long. $\frac{1}{3}$, lat. $\frac{2}{5}$ poll.

Hab. Huacna, Society Islands, under stones on reefs (*Cuming*).

The shape resembles that of *Nucula nucleus*. The narrow cartilage is attached to the front of the lateral tooth; the hinge-margin exhibits a minute shagreen-like crenulation; the muscular impressions are strongly marked, and the pallial line perceptibly simple. Récluz's description of his *Erycina donacina* would apply to this shell, were it not for the dentition.

November 11, 1856.

Dr. Gray, F.R.S., in the Chair.

The following papers were read:—

1. On a New Species of Squirrel (Sciurus macrotis) from Borneo. By J. E. Gray, Ph.D., F.R.S. etc.

(Mammalia, Pl. XLVI.)

Among the specimens of animals which the British Museum has lately received from Mr. Wallace from Sarawak, is a large, well-marked species of Squirrel, particular for having very large, longish pencilled ears like the European species, with a broad white streak on the upper part of each side, and a very broad full tail, grisled, with large white tips to the hairs.

Sciurus macrotis. (Pl. XLVI.)

Ears large, with large pencil of elongate hairs. Dark chestnut-brown, very minutely grisled with pale tips to the hairs. Rump, outside of thighs and base of tail redder; point of thighs bright bay; feet blackish; upper part of the side with a broad pale streak; cheeks and inner side of legs paler; chin, throat, and beneath white; tail very broad, with very long white-tipped hairs.

Length 13, tail 11=24 inches.

Hab. Sarawak (*Mr. Wallace*).

2. Observations on a Living African Lepidosiren in the Crystal Palace. By J. E. Gray, Ph.D., F.R.S. Accompanied by a Note from Mr. A. D. Bartlett.

(Reptilia, Pl. XI.)

This animal has been exhibited for some months at the Crystal Palace, appears to be in good health, and has increased in size.

Mr. W. Hawkins, in the 'Illustrated News' (Supp. 20 Sept. 1856), which gives a very good figure of the animal from life, observes:—

"The three living specimens of this animal were brought to England from the Gambia, enclosed in balls of hard clay, where they had been for eight months without showing any signs of life, until those balls of hard clay were immersed in water, which caused the clay to crack and break up, discovering dark-coloured egg-like forms, which also presently burst, liberating their inmates, which briskly swam or rather dashed through the water, showing unmistakeable signs of life by feeding voraciously upon very large worms, small frogs and pieces of meat that were presented them."

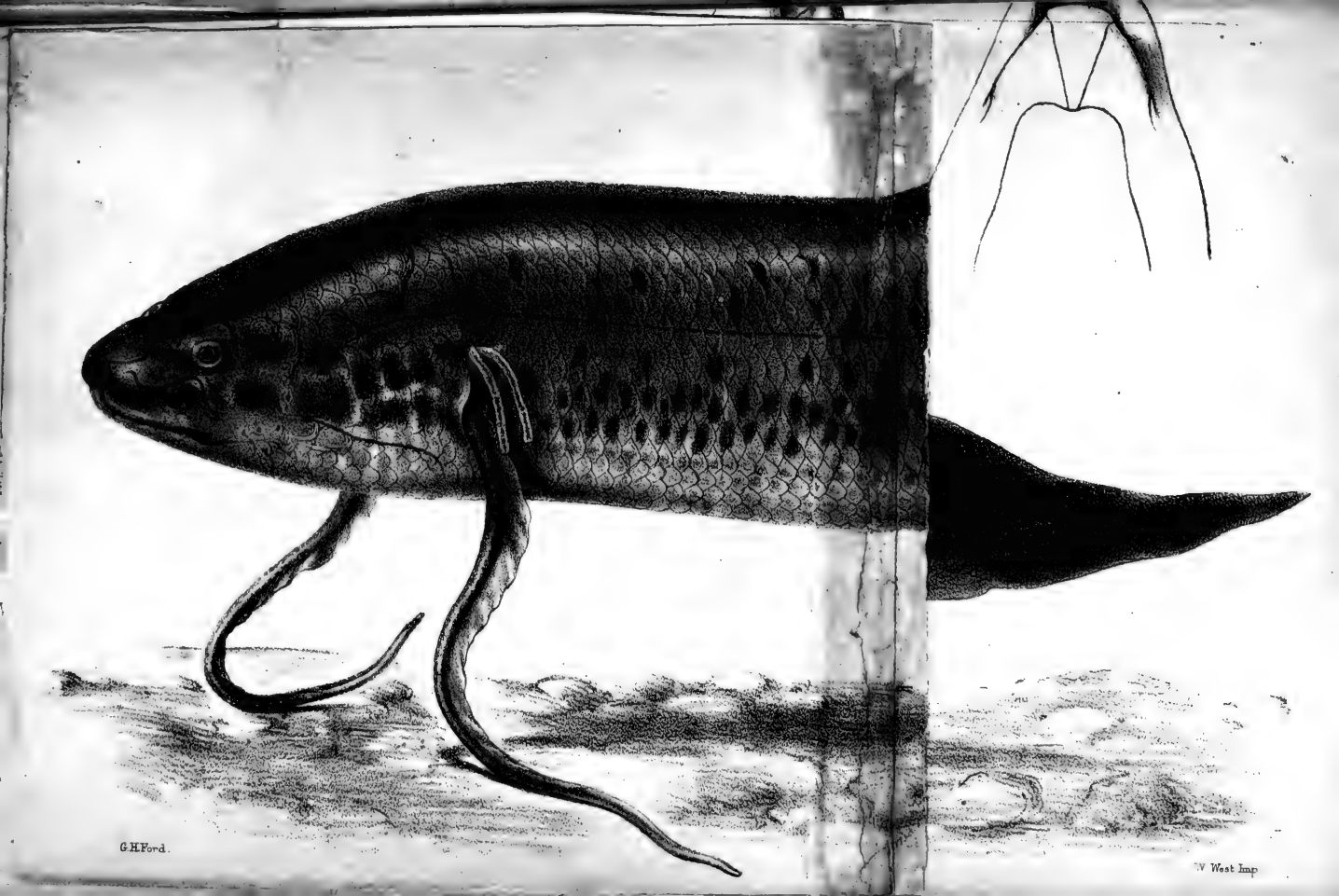
The *Lepidosiren* uses its tail to propel itself forward and upward towards the surface of the water. The subulate limbs are very much elongated; the front ones are furnished with a narrow membranaceous margin of nearly equal width the whole length of the hinder edge; the hinder one has a narrow membrane on the middle of the outer side; they are exceedingly mobile and flexible, and are used by the animal to direct its motions, and are more like feet than fins, especially when they are within reach of some fixed body which the animal can use as a fulcrum.

There are two processes on each side over the base of the anterior members, which have been regarded as gills by some authors*; they are coloured like the rest of the body, and I could not discover, even when examined by a hand-magnifier of one inch focal length, that they were pervaded by any peculiar vascular structure, or furnished with any cirri or other processes usually found on the external gills of *Batrachia*. They scarcely moved during the time that I was examining the specimen, except when the animal was swimming, when they were used like the larger members, apparently to assist in directing its motions, and they evidently form part of the anterior members. They are placed rather close together somewhat above the base of the elongated finned filament. These limbs are used to support the animal some height above the surface of the gravel when it is at rest.

Indeed, all the motions of the animal much more resemble those of a *Triton* or *Lissotriton* than of an eel-shaped fish.

The upper and lower surfaces of the head are furnished with lines of mucous pores placed in a symmetrical manner on the two sides, similar to the pores observable on the head and chin of different kinds of fish, and of *Tritons* and *Lissotritons*: and there is a distinct

* See Peters, Ann. and Mag. Nat. Hist. xvi. 348.


G.H.Ford.
West Imp

continuous line of pores, like the lateral line of fish and *Tritons*, which is continued on the tail some distance behind the base of the hinder members, but becoming less distinct at the hinder part of the series.

The eyes are of moderate size, scarcely raised above the surface, round, without any eyelids; the pupil is black, small, circular, less than one-third the diameter of the globe, with a narrow golden iris.

The Mud Fish is generally to be observed swimming about under the water, or resting at the bottom of the tank, supporting itself by its members, an inch and a half or two inches above the surface of the gravel, with its nose generally in the corner, bent down and partly hidden in the gravel.

The mouth is firmly closed by the overhanging upper lip, except in front, where there is a small oblong, transverse, horizontal opening on the outer edge of the lips, admitting the water to the small open external nostrils, which are on the middle of the under side of the upper lip. This opening does not extend to the hinder part of the lips, which are closed behind it, so that water cannot enter the mouth in that direction except through the nostrils.

In this quiescent state the lateral gill-opening is generally closed, but sometimes it is slightly elevated, and a small current appears to be emitted now and then from it, as if a small quantity of water were taken in by the nostrils and emitted by the gill-flap; but this action is not continuous nor very distinctly visible.

While remaining under the water the animal sometimes opens the mouth to its full extent, leaving it open for some time, dilating the throat by the action of the os hyoides; when fully dilated it closes its mouth, opens the gill-aperture, and contracting the throat emits a strong current of water through the lateral gill-aperture.

It occasionally but at uncertain periods rises perpendicularly to the top of the water, until the front part of the head and the whole mouth are exposed above the water; it then opens its mouth, which it retains open for a time, dilates its throat, as if taking in all the air it can contain, closes the mouth, descends under the surface and contracts its throat, as if it were forcing the air into the lungs (sometimes during this action one or two very small bubbles of air are emitted at the gill-aperture), and then the animal takes up its old position near the bottom of the vase.

I once saw the animal ascend and so take in air almost immediately after it had been passing a fresh supply of water to its gills. When I have been observing it, it appeared to take in air more frequently than water *. It often rises with its body perpendicular, as

* Mr. W. Hawkins in the 'Illustrated News' observes:—"It is seen habitually to rise to the surface of the water for a larger supply of atmospheric air, thrusting its open mouth above the surface."

Dr. Holbrook appears to have observed the same habit in the *Necturus maculosus* (which is probably the larva of the Hell-bender or *Protonopsis horrida*). He states that that animal in confinement "ascends to the surface (of the water), taking in a mouthful of air, and sinks again with it to the bottom."—Amer. Herpet. i. 113.

if it were going to take in free air, but descends again without reaching the surface of the water.

The organs of respiration of this animal are twofold:—

1. Well-organized gills on the inner edge of the branchial arches, as in fishes, and a regular gill-cover with a small oblong aperture in front of the base of the anterior members (see Owen, Trans. Linn. Soc. xviii. t. 25. f. 3, t. 26. f. 1).

2. Two well-developed cellular lungs of nearly equal size (see Owen, Trans. Linn. Soc. xviii. t. 25. f. 3, t. 26. f. 1, 2).

3. The nostrils are close together, situated on the under side of the inner lip, with their internal opening on the side of the mouth between the lips and the outer edge of the large inner series of teeth; the passage is short, as a probe is easily passed from the one opening to the other, and the inner nostrils are very evident in the living animal when it opens its mouth to take in air.

M. Bischoff observed these interior nostrils also in the *Curamuru* or *Lepidosiren paradoxa* of the Brazils.

The animal is, therefore, provided with well-developed organs for both aërial and aquatic respiration, and its manner of breathing is perfectly conformable to this organization: it is consequently the most perfectly amphibious animal, equally adapted for living on land or in water, that has come under my observation.

The character which best separates the Batrachian—as the Toad, Frog and Salamander—from the Fish, is, that in both the larva and perfect state they are provided with an external and internal nostril, and it is through this nostril that these animals take in or emit the air which they respire; while in fish, the water which they respire is taken in by the mouth, and after passing over the gills is emitted by the lateral aperture of the gill-flap; the nostril being only a sac, without any communication with the cavity of the mouth.

When a Batrachian respires, the mouth is kept closed, the throat being used like a pair of bellows to force the air into the lungs; and if the mouth is kept open, the animal dies for want of the power of respiring. In fish, on the contrary, the mouth is always more or less open, the fish either constantly gulping in the water, then closing the mouth or lips, and emitting it by the lateral opening; or the mouth is partially open, and the animal uses its tongue and the hinder internal edge of the lip as a kind of valve, by which the cavity of the mouth is closed and the water is forced to pass through the gills.

The *Lepidosirens* appear to take in water by the nostrils, and at the same time to respire both air as Batrachians and water as fish.

The generality of the Amphibia, as the Toads, Frogs, and Efts or Salamanders, are organized for aquatic respiration in their young and lower state, and for aërial respiration in their adult condition; but this animal has both kinds of organs in a state fit for perfect use at the same time, and the animal evidently uses them simultaneously.

It appears to me that the Mud-fish is much more nearly related to the Amphibia than to any fish that I am acquainted with; at the same time it evidently forms a particular group in that class.

Dr. Daniel, who has lived for several years on the Gambia and on Macarthy's Islands, informs me that the *Lepidosiren*, like the Mud Eel or true *Siren*, is only found in the rice-fields, which are for more than half the year under water, and that they are only procured by the natives towards the end of the dry season, when they are dug out of the nearly-dried mud. They are eaten fried, and like Eels have a rich oily flavour.

The habit of living in the mud is common to several Amphibia; thus the Mud-eel, or *Siren lacertina*, which has lungs and external gills, lives chiefly in mud, being dug out when the ditches of the rice-fields in Carolina are cleared. The Hell-bender or Mud-devil (*Protonopsis horrida*) and the Congo Snake (*Amphiuma*), which have internal gills and lungs and a small lateral gill-opening, live sunk in the mud often to the depth of 2 or 3 feet, especially in winter; and they and the *Siren lacertina* will live for some time out of water,

Shape & structure of these blood
muscles (of Lepidosiren annectens)
the same as those of the naked
vertebra except large between
blood corpuscles of the fishes and
the Indian [illegible] a smooth & the fullness
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of a two-pointed lizard: they project themselves forward on their bony arms by the elastic spring of the tail exserted sideways; their progress is nearly as fast as a man will leisurely walk."—Zool. Journ. iv. 243.

"The Indians say that these fishes carry water within them for a supply on their journey. There appears to be some truth in this statement, for I have observed that the bodies of the Hassar do not get dry like those of other fishes when taken out of the water; and if the moisture be absorbed, or they are wiped dry with a cloth, they have such a power of secretion that they become instantly moist again; indeed it is scarcely possible to dry the surface while the fish is living."—*Loc. cit.* 243.

Dr. Hancock further observes, that a fish which he thinks is *Loricaria pleistomus* "is not only furnished with the common appendages for swimming, but also with four strong bony supporters, one attached to each of the pectoral and belly fins (*i. e.* constituting the first ray of each), by which the animal creeps on the bottom of the river, and

if it were going to take in free air, but descends again without reaching the surface of the water.

The organs of respiration of this animal are twofold:—

1. Well-organized gills on the inner edge of the branchial arches, as in fishes, and a regular gill-cover with a small oblong aperture in front of the base of the anterior members (see Owen, Trans. Linn. Soc. xviii. t. 25. f. 3, t. 26. f. 1).

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Aquatic animals much more frequently bury themselves in the mud than is generally supposed. The common English Frogs and the large Efts bury themselves in the mud during the greater part of the winter, and this also is the case with *Dytisci* and other aquatic insects.

But some fish also, which have only gills adapted for aquatic respiration, have the same habit. Dr. Hancock observes, "When the water is leaving the pools in which they commonly reside, the Yarrow (a species of *Esox*, Linn.), as well as the round-headed Hassar (*Callichthys littoralis*), bury themselves in the mud, while all other fishes perish for want of their natural element, or are picked up by rapacious birds. The flat-headed Hassar (*Doras costata*), on the contrary, simultaneously quits the place and marches overland in search of water, travelling for a whole night, as is asserted by the Indians, in search of their object. I have ascertained by trial that they will live many hours out of water even when exposed to the sun's rays. Their motion over land is described to be somewhat like that of a two-polled lizard: they project themselves forward on their bony arms by the elastic spring of the tail exserted sideways; their progress is nearly as fast as a man will leisurely walk."—Zool. Journ. iv. 243.

"The Indians say that these fishes carry water within them for a supply on their journey. There appears to be some truth in this statement, for I have observed that the bodies of the Hassar do not get dry like those of other fishes when taken out of the water; and if the moisture be absorbed, or they are wiped dry with a cloth, they have such a power of secretion that they become instantly moist again; indeed it is scarcely possible to dry the surface while the fish is living."—*Loc. cit.* 243.

Dr. Hancock further observes, that a fish which he thinks is *Loricaria pleistomus* "is not only furnished with the common appendages for swimming, but also with four strong bony supporters, one attached to each of the pectoral and belly fins (*i. e.* constituting the first ray of each), by which the animal creeps on the bottom of the river, and

perhaps where there is little or no water, also being as it seems partly amphibious."—*Loc. cit.* 243.

From this account, it appears that the habits of these fish bear very little relation to those of the Mud-fish.

It is well known that many freshwater Mollusca which respire free air, and I believe some of those which are furnished with pectiniform gills for aquatic respiration, as *Paludinæ* and *Valvatæ*, in the warmer climates, such as India, where the waters of the streams or ponds are dried up, bury themselves in the mud to a considerable depth like the Mud-fish, and like them remain in a torpid state until the return of the rainy season.

Sir William Jardine has described the kind of cocoon in the clay in which the Mud-fish are brought to this country; but I am informed by Mr. Bartlett that the cavity is always furnished with a small aperture opposite to where the nose of the animal is placed.

In referring this animal to the class of Fishes, authors have laid great stress on the fact of its being provided with a lateral line. Thus M. Duméril, in the last essay on the subject, notices the line, "which is ramified on the sides of the head as in *Chimera*," overlooking the fact that the *Triton cristatus*, the common Eft, has similar lines on both the sides and head. He compares the gill-rays and branchial aperture to that of *Mormyrus* and *Cobitis*, but they are equally like those of *Protonopsis*; and he compares the nostrils to those of the Lamprey, overlooking the fact that the animal is provided with nostrils communicating with the cavity of the mouth. See Erp. Générale, ix. 213.

I have been informed that this genus is found in other parts of Africa, as Senegal, where it is called *Tobal*, and the White Nile, from whence M. Armaud sent specimens to the Paris Museum in 1843; and Dr. Peters found a species in Quillemanes, which Peters and J. Müller have called *Rhinocryptes amphibia*.

In reply to a note I had addressed to him, I have received the following interesting communication from Mr. Bartlett, who at the same time informed me that he intended to have communicated it to the next meeting of the Society:—

"Crystal Palace, Sydenham,
November 17th, 1856.

"Dear Sir,—In reply to your note respecting the living Mud-fish, I beg to say that in the month of June last I received from Western Africa a case containing four specimens of this animal; each specimen was imbedded in a block of *dry hard muddy clay*, about the size of a quartern loaf; these blocks of clay were each sown up in a piece of canvas to prevent the clay crumbling or falling to pieces. According to the instructions I received from Capt. Chamberlayne (the gentleman who sent them), I placed them in a tank of fresh water at the temperature of 83 degrees; in doing this a portion of the clay crumbled off one of them and partly exposed the case in which the animal was contained; I was watching the operation when suddenly the *case or cocoon* rose to the surface of the water. I at first

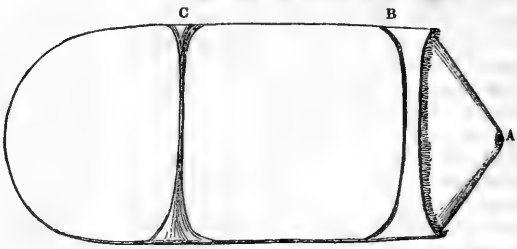
thought the animal contained in it must be dead, but I shortly afterwards observed a slight motion: apparently the animal was endeavouring to extricate itself, and this it soon afterwards accomplished by breaking through the side of its tough covering; it swam about immediately, and by diving into the mud and clay, which by this time had become softened, rendered it difficult to make further observations; I removed the case or cocoon, which still floated, and which I now send for your examination. On the following morning I found that two more of the animals had made their appearance; their cases however were not to be seen—they evidently remained imbedded in the soft clay. In the course of the next day the fourth animal suddenly floated to the surface enveloped in its case; as it showed no signs of life I removed it, and found the animal had been dead some time, as it was much decomposed. At the time these animals first made their appearance they were very thin, and about 9 inches long; they began to feed immediately upon *earth-worms, small frogs, fish,* &c., occasionally taking raw flesh. I saw them sometimes attack each other, and one of them (I imagine in endeavouring to escape) leaped out of the tank into the large basin in the Crystal Palace in which the tank was standing (this specimen is still at large among the water-lilies, &c.). The remaining two lived together for some time, apparently on good terms; but in the month of August the one now remaining in the tank seized its companion and devoured nearly half of it, leaving only the head and about half the length of its body. In feeding, this creature masticates the food much, frequently putting it forward almost quite out of its mouth and then gradually chewing it back again, and often (when fed upon raw flesh), after having so chewed it for some time, it will throw it out altogether. The growth of these animals is most extraordinary: in June, as I have before stated, they were about 9 inches long; in three months they attained their present size, which cannot be less than 18 inches in length. It rises frequently perpendicularly to the surface to breathe, and at other times it supports itself on its fin-like appendages, and with the aid of its tail raises its body from the ground, the fins being bent or curved backwards. The movement of this animal is generally very slow, and would give one an idea that it was very sluggish; this however I have good reason to know is not the case, as in attempting to capture the one at liberty in the large basin it darted away with the rapidity of an arrow. I have reason also to believe the animal finds its food as much by *scent as sight*. With reference to the cocoon which I herewith send for your examination, the end covering the nose of the animal is rather pointed, and has an aperture about the size of a pin's head, which I have no doubt enables the animal to breathe through during its state of torpor. The animal when in its case is coiled nearly twice round, and I observed in each of the blocks of clay a small hole about the size of a mouse-hole, which was quite smooth on the inside, as though the animal had crept through it.

"I am, dear Sir,

"Faithfully yours,

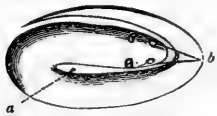
"A. D. Bartlett."

Cocoon of the Mud-fish (Lepidosiren annectens).



A. Breathing-hole at nose.
B. A thin partition.
C. An attaching band that passes through the space where the animal bends, as in *a*, fig. D.

Fig. D.



D. A sketch of the animal in the cocoon.
a. The position of the band C. *b*. The head, nose and eyes.

3. Note sur le Messager ou Serpentaire du Cap de Bonne-Espérance (Serpentarius reptilivorus, Daud.). Par M. Jules Verreaux.

Tous les naturalistes modernes s'accordent aujourd'hui à regarder l'oiseau dont il est question comme un vrai rapace, et ils ont d'autant plus raison, qu'il en a tous les caractères; seulement c'est un de ces types représentant dans cette famille la même place qu'occupe le *Cariama cristata*, Cuv., dans celle des Gralles.

Cette question étant complètement élucidée, nous allons donner sur cette espèce des détails de mœurs plus exacts que ceux donnés par devanciers, ayant été favorisés, mieux qu'eux, non seulement par un séjour de plus de vingt ans, mais encore par les voyages consécutifs que nous avons entrepris dans l'intérieur des terres, là où peu de naturalistes avant nous avaient été à même de pénétrer.

Reconnaissant comme tout le monde que les Cathartes et les Vautours sont des oiseaux de la plus grande utilité, nous avions pensé il y a bien des années que le Serpentaire était aussi un de ces oiseaux qui, après eux, était destiné à rendre d'immenses services à l'humanité.

Nous commencerons donc par dire que bien que cette espèce de l'Afrique Australe soit répandue sur presque tous les points de cette

partie du monde, elle n'est nulle part aussi abondante que sur la côte est en partant de la ville du Cap.

On ne la trouve que par paire, et l'on peut dire qu'à partir de quelques lieues de la ville, il n'est guère d'habitation qui ne possède son couple, qui parait même faire partie intégrante de la propriété dont il ne dépasse pas les limites s'il n'est pas dérangé ; du reste, les lois et les colons leur accordent toute leur protection, ils ne sont nullement inquiétés ; cela tient aux services qu'ils rendent en détruisant chaque année une immense quantité de reptiles de toutes espèces qui font la base de leur nourriture, et surtout des serpents excessivement venimeux.

Comme la nature est prévoyante dans tout ce qu'elle fait, elle a donné à chaque être ses moyens de conservation. Aussi le Serpentaire a-t-il été modelé sur un moule approprié à son genre de vie ; c'est donc à cet effet que les jambes et les tarses étant très-allongés, son œil perçant peut découvrir à une très-grande distance la proie qui, ne se doutant guère de son apparition, est souvent étendue sur le sable ou sur les plantes grasses qui tapissent le sol.

La forme élégante et majestueuse de cet oiseau devient en ce moment surtout plus gracieuse encore ; c'est là qu'il développe toute sa ruse afin de surprendre le reptile qu'il veut attaquer ; aussi n'approche-t-il qu'avec la plus grande circonspection, les plumes du col et du derrière de la tête dressées en avant annoncent le moment de la lutte : se ruant d'un bond sur l'animal, il le frappe du pied avec tant de force, que souvent il le terrasse du premier coup.

Cependant, s'il n'a pas réussi, et que le serpent furieux se dresse en épanouissant la peau de son cou comme cela arrive pour les espèces les plus dangereuses, l'oiseau forcé de rétrograder, fait un bond en arrière en attendant qu'il puisse saisir le moment opportun de recommencer.

Dressé en partie sur lui-même le serpent furieux fait mouvoir sa langue avec la dextérité de l'éclair, et pousse des sifflemens aigus qui retentissent au loin et semble tenir en respect son ennemi ; mais celui-ci dont le courage redouble à mesure que les difficultés augmentent, entr'ouvre les ailes, et revenant sur le reptile lui assène de nouveau de ces coups de pied terribles, dont personne ne peut se faire une idée, et qui ne tardent pas à le mettre hors de combat. Cependant, nous avons vu quelquefois de ces serpents s'élancer sur le Serpentaire, mais soit en ouvrant les ailes dont les premières rémiges seulement servent en quelque sorte de bouclier, soit en sautant en arrière, ou sur les côtés, il est certain d'éviter par ce manége la morsure de son antagoniste, qui, épuisé de fatigue, retombe toujours à plat sur le sol,—moment que choisit l'oiseau pour redoubler ses coups de massue qui, en lui mutilant la colonne vertébrale, achèvent de lui retirer toutes ses forces.

C'est alors que le Serpentaire victorieux s'élançant comme une flèche et posant le pied sur le cou du serpent, juste derrière la tête, commence à l'avaler, chose qu'il pratique en prenant la queue d'abord ; et comme cette opération n'est pas de longue durée, même pour des reptiles de 5 à 6 pieds de longueur, sur plus de quatre

pouces de diamètre, dès qu'il arrive à la tête, il ne manque jamais d'en briser le crâne par plusieurs coups de bec qui le mutilent complètement.—L'opération faite, l'oiseau reprend sa course lentement jusqu'au lieu de son domicile, où il reste des heures entières repu, la tête rentrée dans les épaules.—Comme la majeure partie des oiseaux de proie, le Serpentaire rejette, sinon les plumes ou les poils, du moins les écailles des reptiles qu'il avale, et cela par pelottes comme les autres. Il est étonnant de voir la prodigieuse dilatation de la bouche de cet oiseau, car nous avons été témoin qu'il pouvait avaler des reptiles de plus de 6 pouces de circonférence.—Bien que le couple ne se quitte jamais, ils ne se secondent pas mutuellement pour terrasser une proie, et chacun chasse pour son compte.

Levaillant, qui le premier a donné une bonne figure et une exacte description du plumage de cet oiseau, ayant, comme nous, eu le malheur de perdre ses observations, aura sans doute faussé ses souvenirs lorsqu'il tenait la plume pour en décrire les mœurs, car ce qu'il dit au sujet de l'aile de l'oiseau qui lui servirait de massue, n'est pas exact, puisqu'elle ne lui sert que de bouclier : c'est avec la plante du pied qu'il terrasse ses ennemis. Nous en somme d'autant plus persuadé, qu'ayant suivi pas à pas le savant voyageur, mieux que personne nous avons été à même de lui rendre cette justice consciencieuse que peu de personnes avant nous s'accordaient à lui allouer. —Puissent les voyageurs suivre son exemple ! et la science d'observation, celle que nous regardons comme la clef de toutes les sciences naturelles fera plus de progrès.—Nous ajouterons que c'est en juillet que le Serpentaire a son plus beau plumage. Le mâle, qui est un peu plus petit que la femelle, a une coloration plus pâle, plus grise et plus blanche. C'est aussi vers le milieu de ce mois que commencent les amours, et tous deux travaillent à la construction ou au replâtrage du nid où plutôt de l'aire qui doit contenir la nouvelle famille. Cette aire est presque toujours placée sur la sommité d'un buisson élevé et très-touffu, le plus souvent un Mimosa. Elle est composée de buchettes et de terre, le centre en est garni de substances moelleuses, soit de plumes ou de laine, quelque fois même du pollen des plantes; il est facile de compter le nombre d'années par les diverses couches qui la composent, comme pour les Aigles chaque année apporte au nid une couche nouvelle.—Il arrive souvent que les branches qui l'entourent poussant sur les côtés des jets, le cachent complètement à la vue, ce qui devient une sécurité de plus pour la famille.—Nous avons observé que dans les pays boisés, le Serpentaire faisait son aire sur les grands arbres. Du reste, n'importe où il se trouve, le couple s'y retire chaque soir pour y passer la nuit.—C'est en août qu'a lieu la ponte, elle est généralement de deux œufs, quelquefois trois. Ces derniers sont à peu près du volume de ceux d'une oie, mais d'une forme plus ronde d'un bout ; leur couleur est d'un blanc pur sans aucune trace de taches. Au bout de six semaines les jeunes éclosent ; ils sont alors recouverts d'un duvet blanc, qui au bout de cinq à six autres semaines laisse poindre çà et là des plumes ; ces dernières ont à la teinte près la même coloration que celles de l'adulte.

Ce qu'il y a de plus terrible et de plus fatigant pour les parents,

c'est que la faiblesse des pieds des jeunes les forçant de rester au moins six mois dans leur nid, ils sont tous deux obligés de chasser sans relâche pour assouvir l'appétit dévorant de leurs enfans qui absorbent une quantité si considérable de reptiles, qu'elle surpasse de beaucoup celles des adultes. Ce qui oblige les père et mère à des courses lointaines et à avoir recours, soit aux tortues, aux lezards, et même à de gros insectes comme des Sauterelles quand la disette des premiers se fait sentir. Mais la becquée ne se donne qu'avec des objets qui ont déjà subi une préparation dans le jabot, du moins, lorsque les jeunes sont encore trop faibles pour manger d'une autre façon ; car une fois assez forts pour avaler des reptiles complets, les parents ne se donnent plus cette peine, et les apportent tout entiers en ayant le soin de les choisir d'une taille proportionnée, ou en les morcelant pour en faciliter la digestion. Rien de plus curieux que de voir ces oiseaux qui ont acquis tout leur développement, se mouvoir sur leurs tarses à l'aide de leurs talons, ce qui leur donne une tournure fort originale.

Nous avons remarqué que pendant la couvaison, le mâle seul était chargé de nourrir sa femelle qui n'abandonne jamais ses œufs ; aussi est-il facile de reconnaître par la présence des débris d'ossemens le local choisi pour l'habitation de ces oiseaux.

Comme presque tous les grands oiseaux de proie, le couple Serpentaire ne souffre aucune autre espèce dans le canton qu'il a choisi pour son domaine, mais en revanche les petits oiseaux, et principalement les diverses espèces des Cisserins, choisissent-ils le voisinage de leur domicile pour y construire leurs nids qui sont suspendus tout autour de cette aire ; il semble que ces frêles créatures cherchent, en agissant ainsi, à se mettre sous la protection des hôtes qui habitent le palais du canton. Chose étrange que la domination ! le droit du plus fort semble toujours être le point de ralliement de toutes les craintes. Il faut dire qu'en cette circonstance ces petits oiseaux devinent juste, car les serpents sont si nombreux que souvent ils sont victimes de leur voracité, tandis qu'ils ne redoutent en aucune façon celle des Serpentaires qui s'enorgueillisent en quelque sorte de leur supériorité tant ils laissent approcher d'eux ces petites créatures.— Nous avons possédé pendant notre séjour au Cap de Bonne-Espérance un grand nombre de ces oiseaux, et depuis bien des années nous avions formé le souhait de voir introduire cette espèce dans nos colonies, lorsqu'en 1826 à notre retour au Cap, nous décidâmes M. Freycinet, ex-gouverneur de l'île Bourbon (aujourd'hui de la Réunion), à prendre plusieurs de ces couples pour en faire l'essai à Cayenne, où il se rendait pour prendre le même poste qu'il venait de quitter.—Pendant longues années nous avions cru cette tentative en plein succès, lorsque nous apprîmes que par la faute même des colons elle n'avait pas réussi, ceux-ci ayant détruit volontairement une des choses les plus utiles à leur conservation. Enfin comme nous venons de le dire, ayant eu en notre possession un nombre considérable de ces oiseaux, et ayant fait toutes les études possibles sur leurs mœurs, nous pouvons aujourd'hui répondre de la réussite de leur acclimatation, non-seulement dans les colonies d'Amérique et des

Indes, mais encore dans celle de l'Algérie où ces oiseaux rendraient un service immense. Réduit à l'état de domesticité, le Serpentaire se contente de viandes de toutes espèces ; ce serait un excellent sergent de ville pour les basses cours, car comme l'Agami il mettrait l'ordre dès que quelques combats s'engageraient. Malheureusement le nombre considérable d'espèces d'animaux que nous tenions ensemble nous ont toujours empéché de voir cette espèce se reproduire chez nous.—Nous avons eu la preuve que s'il avait été possible de les tenir dans un espace plus grand et plus isolé, ces oiseaux auraient produit comme en pleine liberté ; les trois œufs non à terme que nous avons trouvés nous ont fourni cette preuve.

Nous pensons donc que si on voulait introduire en Algérie d'abord un certain nombre de ces oiseaux on rendrait à cette colonie et aux autres un service réel, car le Serpentaire se chargerait de purger le sol où on le transporterait des reptiles nombreux qui causent chaque jour tant de calamités.

Nous recommandons aussi de porter la plus vive attention sur les diverses espèces de Grues, et principalement sur la *Caronculée*, qui, comme le Serpentaire, détruit un nombre infini de reptiles.

Comme ce dernier elle vivrait dans les mêmes climats et s'y reproduirait : celles que nous avons eues en notre possession se nourrissaient de viande, de reptiles, d'insectes et même de grains.

On la trouve dans les plaines arides surtout sur la côte est, presque toujours isolée excepté vers la saison des amours. Mais, dès que les jeunes sont en état de reproduire, la famille se disperse. Il en est de même des jeunes Serpentaires qui sont chassés par leurs parents lorsque l'âge leur permet de s'accoupler, ce qui n'a lieu qu'à la seconde année. Comme il y a généralement mâle et femelle dans la même couvée, ils ne se quittent pas et imitent leurs parens en se choisissant un domaine convenable, souvent à une grande distance du lieu de leur naissance.

Nous saisissons cette occasion pour signaler aux Ornithologistes la différence que nous avons observée dans les Serpentaires de la partie orientale de l'Afrique, car ici ils sont d'une taille inférieure et d'une teinte beaucoup plus pâle en tout, différence qui nous semble par sa constance devoir former une espèce distincte, pour laquelle nous proposerions le nom de *Serpentarius orientalis*, si elle était reconnue comme telle.

Paris, le 9 septembre 1856,
17 Rue St. Louis, au Marais.

4. On the Australian Dugong (Halicore australis). By Mr. Fairholme.

Moreton Bay, on the east coast of Australia (lat. 27° S), is a region of great interest to the zoologist. The southern end of it is formed by two long islands, extending together about sixty miles, within which the Bay is studded with a number of beautiful islets. On the small island of St. Helena, one of those vast congregations of

flying foxes takes place, which I have endeavoured to describe in a former paper.

The Dugong (*Halicore australis*) is still found there in considerable numbers, though I fear it is rapidly decreasing, as the chase of it in whale-boats manned by natives forms one of the great attractions of the Bay.

The blacks prefer the flesh and blubber to any other food, and the white people have found in its oil qualities similar to those of cod-liver oil, having used it successfully in some cases of consumption or debility. The native name for the Dugong is "Yungan." It is about 9 or 10 feet long when full-grown, and contains from five to eight gallons of oil. It feeds on a grass-like sea-weed growing on the large flats of the Bay, some parts of which are exposed at low water. As the tide recedes, the Dugongs retire into deeper water from the feeding-grounds. The natives tell us, that before white people came amongst them, and introduced boats and harpoons, they used to catch "yungan" by placing large nets across the channels through which they knew the animals would pass from the feeding-grounds. Since the establishment of a Pilot Station at Moreton Bay, the blacks have acquired great dexterity in the use of the whale-boat and harpoon, and are now constantly employed in the pursuit, either for themselves as food, or for Europeans, who collect the oil for sale. The chase is conducted with great caution and silence. The harpooner stands in the bow, and directs the steersman by the movement of the hand. As the Dugong must rise at intervals to blow, he endeavours to calculate the exact spot of rising, and launches the harpoon as it reaches the surface. Having only a short rope to the harpoon, the Dugong often drags the boat with considerable velocity, but is very soon exhausted.

The blacks have a grand feast over one, stripping off the whole of the flesh and blubber in one large sheet, leaving the carcass entire. Thus anyone wishing to procure skeletons entire could do so by going amongst the natives with a supply of tobacco and a little flour, as the Moreton Bay tribe has always been very friendly with the whites.

I regret to say that some entire skeletons which were being sent to England by a friend of mine, were placed with a large collection of shells in a vessel which was unfortunately burnt.

I have no doubt that the Dugong abounds in the bays and straits north of lat. 27°; but in none of these will the same facility be offered of procuring specimens as at Moreton Bay, where the blacks are so friendly, and are so well acquainted with the habits of this animal.

5. The Blacks of Moreton Bay and the Porpoises. By Mr. Fairholme.

Between the two long islands which form the south part of Moreton Bay, is a passage known as the South Passage, formerly used

for ships entering the Bay, but now given up. Near the deserted Pilot Station at Amity Point, some of the natives may constantly be found during the warmer months of the year fishing for "Mullet," a very fine fish about the size of a mackerel. In this pursuit they are assisted in a most wonderful manner by the Porpoises. It seems that from time immemorial a sort of understanding has existed between the blacks and the Porpoises for their mutual advantage, and the former pretend to know all the Porpoises about the spot, and even have names for them.

The beach here consists of shelving sand, and near the shore are small hillocks of sand, on which the blacks sit, watching for the appearance of a shoal of Mullet. Their nets, which are used by hand, and are stretched on a frame about 4 feet wide, lie ready on the beach. On seeing a shoal, several of the men run down, and with their spears make a peculiar splashing in the water. Whether the Porpoises really understand this as a signal, or think it is the fish, it is difficult to determine, but the result is always the same; they at once come in towards the shore, driving the Mullet before them. As they near the edge, a number of the blacks with spears and hand-nets quickly divide to the right and left, and dash into the water. The Porpoises being outside the shoal, numbers of fish are secured before they can break away. In the scene of apparent confusion that takes place, the blacks and Porpoises are seen splashing about close to each other. So fearless are the latter, that strangers, who have expressed doubts as to their tameness, have often been shown that they will take a fish from the end of a spear, when held to them.

For my own part I cannot doubt that the understanding is real, and that the natives know these Porpoises, and that strange Porpoises would not show so little fear of the natives. The oldest men of the tribe say that the same kind of fishing has always been carried on as long as they can remember.

Porpoises abound in the Bay, but in *no other part* do the natives fish with their assistance.

6. Mollusca nova collectionis Cumingianæ, descripta a Guilielmo Dunker, Marburgensi.

1. Trochus flavidus.

Tr. testa conica, solidula, unicolore pallide flavida, nitida; apice acuto, granoso; anfractibus lævigatis planis 10, *infera superaque suturæ parte cingulo elevato instructis; striis incrementi tenerrimis; anfractu ultimo obtuse angulato; basi convexiuscula sulcis quinis notata; apertura subtetragona.*

Patria ignota.

Species *Trocho dubio*, Phil., affinis est, qui vero colore olivaceo, pictura albo vel rufo flammulata, testa majore et latiore, anfractu ultimo magis angulato statim dignoscitur. Specimen, quod esset unicum 5 lin. altum, 4½ latum est.

2. Trochus pallidulus.

Tr. testa conica, lævigata, in apice acuta ibique granulosa, flavida, lineolis pallide luteis picta; anfractibus 10 *planis ad suturam prominulis ideoque subimbricatis, superioribus cingulo obsoleto notatis, ultimo in circuitu rotundato; basi convexa, in medio sulcis nonnullis spiralibus arata; apertura subtetragona.*

Patria ignota.

Altitudo testæ 7 lin. ejusque diametros 5 lin. Species nostra a *Trocho Laugieri*, Payr., in primis differt colore, testa tenuiore et majore.

3. Trochus flammiger.

Tr. testa conica, solida, glabra, flavo-albida, lineis undulatis vel flammulis luteis picta; anfractibus plano-convexis 10, *sutura distincta divisis, ultimo in circuitu obtuse angulato; basi convexiuscula unicolore lutea, in medio alba, sulcis paucis umbilicaribus signata; apertura rotundato-tetragona.*

Patria ignota.

Species forma sua *Trocho*, qui antecedit, similis, pictura et testa solida differt.

Hæ tres species ad genus Leachanum *Zizyphinus* dictum—idem, quod *Calliostoma*, Sow.,—pertinent.

4. Bullia Cumingiana.

B. testa angusta, subulato-turrita, flavo-albida, partim subcærulescente; anfractibus 10–11 *convexiusculis, sutura satis profunda divisis, superioribus longitudine costatis transversimque cancellatis, inferioribus obsolete striatis, infra suturam creniferis, ultimo subinflato* $\frac{2}{5}$ *totius testæ æquante; labro externo sulcis striisque incrementi notato; columella arcuata; faucibus albis.*

Patria ignota.

Hæc species, pæne 13 lin. longa, *Bulliæ turritæ*, Gray (Zool. of Beechey's Voyage, p. 126), peraffinis, ad genus *Leiodomus* Swainsoni pertinet, quod vero non satis firmatum esse videtur.

5. Bullia elegans.

B. testa solida, pallide lutescente, elongato-turrita, in apice obtusa; anfractibus 8 *planiusculis, lævibus, politis, sutura profunda callosa interdum castanea disjunctis, in superiore parte pliciferis, plicis albis sulco spirali cancellatis ideoque nodulis geminis instructis, ultimo tenuilirato ad basin carina pallide fusca notato, dimidia totius testæ parte paullo breviore; labro incrassato lævissimo columellaque parum sinuata albis; faucibus fuscis.*

Patria ignota.

Hæc Bulliarum species elegantissima Buccino Natalensi Kraussano certe peraffinis, statura majore, testa solidiore, labro incrassato intus lævissimo plicisque sulco spirali quasi binodoso distinguenda est.

6. Pleurotoma concinna.

Pl. testa acute-turrita, subfusiformi, solidula, unicolore rufescente, in rostro rosea, costulis lineisque elevatis cincta ; anfractibus circa 10 *perparum convexis, sutura haud distincta sejunctis, ultimo spiræ altitudinem pæne æquante ; canali subobliquo ; labri incisura profunda.*

Patria ignota est.

Testa circiter 12 lin. longa, $3\frac{2}{3}$ lin. lata, elegantissimarum una est sui generis ; anfractus ultimus costulis multis validioribus et subtilioribus cinctus est ; costa, si a sutura inde numeras, secunda, quæ labri fissura terminatur, tuberculorum undulatorum serie duplici cingitur. Costularum interstitia sub vitro oblique clathrata vel reticulata apparent.—Cochlea nostra ad Pleurotomas proprie sit dictas pertinens, habitu pæne *Pleurotomæ virginis*, Lam., sed multo minor, colore rufescente et imprimis rostro roseo ab aliis speciebus primo obtutu facile distinguenda est.

7. Trophon Morrisi.

Tr. testa solida, ovato-fusiformi, in apice acuta ; anfractibus convexis longitudine plicatis transversimque tenuicostatis et liratis, ultimo subventroso ceteris longiore ; labro sulcato ; cauda brevi, subrimata ; canali aperto, paullum incurvo.

Patria ignota.

Testa 14 lin. longa, $7\frac{1}{2}$ lin. lata, ovato-acuta, subfusiformis. Anfractus 7 convexi sutura profunda disjuncti, plicis vel costis 10 æquidistantibus et liris transversis cingulisque elevatis instructi. Apertura ovata in canalem brevem apertum sensim transit. Color totius testæ albus ; apicem versus flavescit. Fauces fasciis tribus fuscis notatæ sunt. An *Murex costularis*, Lam. Enc. Méth. 419. f. 8? Varices 7 indicat auctor : in figura 10 numerantur. Species *Fuso cinereo*, Say, Amer. Conch. t. 29, sane peraffinis, testa multo majore, anfractibus tumidioribus ideoque sutura profundiore et sculptura distinctiore satis discrepare videtur.

8. Cominella elongata.

C. testa ovato-acuta, subfusiformi, costis inæqualibus subnodosis lirisque subtilioribus cincta, griseo fuscoque variegata ; anfractibus convexis ; labro sulcato ; labio superne uniplicato ; canali longiusculo, paullulum incurvo.

Patria ignota.

Hæc species magnitudine et statura elongata fusiformi insignis, 22 lin. longa, 9 lin. lata est. Anfractus 7 convexi infra suturam haud profundam paullo appressi, costis numerosis plus minusve distinctis subnodosis cinguntur : ultimus eorum circiter $\frac{2}{5}$ totius testæ adæquat ; apertura angusta ; labrum intus incrassatum et sulcatum ; labium superne plica vel potius costa unica valida in tuberculum obsoletum exeunte instructum. Pictura parum insignis : fundus albidus et lutescens strigis maculisque irregularibus variegatus est ; fauces fuscescentes ; labrum album. *Fusorum* genus plica columellæ deficiente satis distinctum est, ne dicam de ipsius animalis natura.

9. Adamsia typica.

A. testa crassa, ponderosa, ovato-acuta, subturrita, longitudine plicato-costata, costulis minutissimis confertis scabris subsquamosis æquidistantibus cincta, albida, passim subrosea, fusco cingulata, cingulis in costarum interstitiis magis conspicuis; anfractibus 7 convexis, ultimo circiter $\frac{3}{5}$ totius testæ æquante; cauda brevi, truncata; labro acuto, paullulum expanso, intus sulcato et incrassato; apertura angusta; columella lævissima; faucibus lacteis.

Patria: ad Philippinarum insulas habitare dicitur hæc cochlea.

Species 15 lin. longa, 8 lin. lata, ad hoc usque tempus certe rarissima, ad *Cominellas* maxime accedit, a quibus vero aperturæ indole valde differt, cum costa valida in labii superiore parte insidente, qua *Cominellæ* insignes sunt, hæc cochlea plane careat. Præterea sculptura et totus testæ habitus tam singularis est, ut eam pro novi generis typo habendam esse putaverim.

10. Purpura fasciata.

P. testa ovata, solidiuscula, subgrisea fusco fasciata; spira exsertiuscula, acuta, subgradata; anfractibus tumidis, supra carinatis, transversim costulatis, costulis aperturam versus subimbricatis, anfractu ultimo ceteris pæne triplo majore, tumido, bicarinato, carinis nodiferis; apertura pallide fulva; labro acuto, intus sulcato, sulcis in margine fuscis.

Patria ignota est.

Species elegans 12 lin. longa; præsertim fasciis vivide fuscis in fundo griseo-rubente insignis, ab omnibus quas novimus *Purpuris* veris satis distincta est.

11. Cytherea subtrigona.

C. testa solida, ovato-trigona, modice convexa, concentrice obsoleteque striata, pæne lævi, inæquilatera, antice brevi subtruncata, postice producta, cuneiformi, carina obtusa ab umbonibus prominentibus ad latus posticum decurrente; lunula lanceolata.

Patria ignota.

Species subtrigona, circiter 2 poll. longa, antice brevis, alta, postice producta et attenuata. Margo cardinalis anticus et posticus pæne rectilinei et valde declives sunt; margo basalis anticus linea pæne orbiculata terminatus est. Umbones subacuti se invicem fere tangentes valde porrecti sunt. Area lata subcordiformis, lunula lanceolata fossula levi circumscribitur. Ligamentum crassum breve. Cardo dentibus validis munitus est; dentes mediani vel primarii longiores sunt ut in *Cythereis* solent; dens lateralis posticus subtiliter granulato-striatus. Impressiones et linea palliaris ut in *Cytherea lusoria* pæne se offerunt. Color internus albus in dorso violaceus est. Statu integro testa ab epidermide cornea tegitur. Long., alt. et crass. ratio hæc est: 100, 86, 48.

12. Pectunculus Grayanus.

P. testa suborbiculari, convexa, solida, inæquilaterali, subglabra,

alba, pallide rubente et carneola, flammis rufis lineolisque numerosis acute angulatis varie picta, epidermide villosa induta, intus sordide alba, musculis pallioque fuscis; umbonibus tumidis.

Longitudo speciminum majorum 25 lin. Long., altit. et crass. ratio hæc est: 100, 88, 62.

Patria Nova Seelandia. Attulit clar. Earle.

Testa hujus speciei transversa, suborbicularis antice rotundata brevis, postice paullum attenuata et longior, concentrice obsoleteque striata, lineis radiantibus subtilissimis confertissimis instructa pæne glabrata; umbones tumidi. Color et pictura aliis *Pectunculis* respondent, flammulæ lineæque acute angulatæ rufæ in fundo albido et rubente umbones inflatos versus sensim clariores fiunt. Color internus albidus in regione pallii et musculorum fuscus est. Musculi in speciminibus adultis valde elevati apparent. Crenæ in valvarum margine basali crassæ utrinque sensim minores evadunt, in regione musculorum plane evanescunt. Cardinis dentes laterales crassi, mediani obsoletissimi vel evanidi. Epidermis villosa plurimam partem detrivit. Ligamenti area parva.

Inter *Pectunculos*, qui nobis innotuerunt, hæc species ad *Pect. flammeum*, Reeve (Proc. Zool. Soc. 1843), maxime accedit.

7. Mytilacea nova collectionis Cumingianæ, descripta a Guil. Dunker.

1. Mytilus splendens.

M. testa elongato-ovata, concentrice striata; epidermide splendente fusca et nigricante in mediis valvis viridi; pagina interna livido-rubente, marginem inferiorem et posticum versus albida, margaritacea; umbonibus tumidis, gibbosis.

Hab. Ad litus Peruanum.

Concha magnitudine *Mytili edulis* ambitu variat, nam modo est elongato-subtrigona, modo ovata. Umbones valde tumidi et gibbosi sub epidermide rubentes. Epidermis nitida maximam partem obscure fusca, in mediis valvis vivide viridis vel e viride nigricans, interdum zonis fuscis et virescentibus variegata. Sub vitro lineolæ subtilissimæ undulatæ ab umbonibus radiantes conspiciuntur. Cardo prorsus edentulus, margo totus simplex, ab epidermide late involutus. Fossula ad ligamentum recipiendum haud profunda.

2. Mytilus rostratus.

M. testa ovato-acuta, ventrosa, solida, unicolore fusco-violacea, longitudinaliter costata, costis mature furcatis; epidermide nigra; apicibus rostriformibus extrinsecus curvatis; cardine dentibus nonnullis munito.

Hab. In litore insulæ Van Diemen.

Testa 20½ lin. longa, 8½ lin. alta, 7 lin. lata. Altitudo maxima in mediis valvis sita est. Valvarum ambitus plus minusve ovatus, ita ut nullibi angulus distinctus sit et margines unus in alterum sen-

sim transeant. Pars media basalis semper est ventrosa. Costæ ab apicibus acutis rostriformibus exeuntes, in omni incrementi stadio pluries diffinduntur marginem posticum versus sæpius evanescentes. Totus margo crenulis circumdatur. Cardo denticulis duobus vel tribus in utraque valva munitus est; interdum denticulus unus dextræ valvæ a tuberculis duobus sinistræ recipitur. Ligamentum crassum et latum satis profunde immersum est. Pagina interna parum nitet.

Species nostra *Mytilo purpurato* (*Modiolæ*, Lam.) affinis, qui testa minore, solidiore, apicibus obtusis, cardine tenerrime crenato, costis crassioribus aliisque notis differt.

3. Mytilus horridus.

M. testa magna, crassa, oblique ovata, postice dilatata, modice convexa, concentrice plicoso-striata, alba, epidermide fusca lamellosa, postice horride barbata vestita; umbonibus magnis, obtusis, curvatis; dorso et latere postico æqualiter arcuatis, basi antice valde sinuata.

Hab. In litore Novæ Hollandiæ septentrionali.

Concha magna, crassa, 60 lin. longa, 32 lin. alta, 20 lin. lata est. Margo dorsalis arcum æqualem formans, in marginem posticum pæne circularem sensim transit. Margo ventris antice valde sinuatus est. Umbones obtusi, inflexi et disjuncti, ætate progrediente erosi. Epidermis crassa lamellosa in postico conchæ latere pilis et setis horridis obducta est. Ligamentum crassum pro magnitudine testæ breve. Cardo prorsus edentulus. Color paginæ internæ sordide albus languidus, omni pæne nitore margaritaceo caret. Species hæc magnifica a *Mytilo torto*, Dkr., præsertim rima recta distinguitur.

4. Mytilus atropurpureus.

M. testa oblongo-ovali, subtrigona, modice convexa, purpurea, epidermide atra obducta, concentrice striata, sulcis radiantibus subtilissimis confertissimis exarata; dorso subcompresso, in medio æqualiter curvato, interdum angulato; umbonibus terminalibus subtumidis, incurvis paullulum distantibus; margine basali anterius plus minusve sinuato; cardine utriusque valvæ denticulis nonnullis munito.

Hab. In Africa occidentali. Suspicor hanc speciem in aqua dulci vel semisalsa vixisse, nam ejusdem byssus contexta est cum *Melania* cujusdam fragmentis.

Concha adulta 15 lin. longa, 9 lin. alta, tenuis, habitu inconstans, formam *Mytili edulis* junioris interdum refert. Testa tota purpurea aut fusco-purpurascens, intus iridescens, epidermide nigerrima nitida vestita, sulcisque radiantibus plurimis confertissimis 150 usque ad 160 instructa est, qui quidem sulci in regione apicum partim dichotomi sunt et valvarum marginem versus validiores fiunt. Apices in speciminibus adultis decorticati et erosi, margarita splendente insignes sunt. Quot sulci, tot crenulis margo circumdatur.

Mytilus niger, Gmel. p. 3362, le *Dotel* Adansonii (Hist. du Senég. p. 211. t. 15. f. 3) certe species peraffinis est, sed illius testa sub

epidermide nitidissime lactea vocatur. Præterea "le Dotel" major, minore sulcorum numero instructus est, nam centenos tantum sulcos in eo numeravit auctor.—Clar. Sylv. Hanley in describendo *Mytilo nigro* (An Illustr. and Descr. Cat. of Recent Shells, pt. ii. p. 245 ?) nostram ipsam concham ante oculos habuisse videtur.—*Mytilus striatulus*, L. Schröt. Einl. vol. iii. p. 449. t. 9. f. 16, statura aliena striisque in latere basali deficiendibus imprimis distinguendus esse videtur. *Mytilus tenuistriatus*, Dkr. Moll. Guin. p. 47. t. 9. f. 1, 2, 3, species multo minor, ad *Volsellas* pæne accedit.

5. Mytilus Morrisi.

M. testa ovato-trigona, modice convexa, fusco-purpurea, epidermide cornea vestita, concentrice striata, costulis confertis granosis mature furcatis sculpta; dorso parum compresso, subangulato; umbonibus terminalibus incurvis; margine baseos fere recto; cardine utriusque valvæ denticulis nonnullis instructo; marginibus crenis parvis circumdatis.

Hab. Ad Guineam.

Testa formam *Mytili atropurpurei* pæne refert, sed habitu minore, costulis granosis mature furcatis et epidermide obscure cornea facile distingui potest. *Mytilus senegalensis*, Lam., valvis angustis et margine dorsali postico basi subparallelo imprimis differt.

6. Mytilus Adamsianus.

M. testa ovato-trigona, utrinque obtuse carinata, solidula, costis mature bifidis eleganter granosis sculpta, fusco-purpurascente et albida; epidermide cornea vestita; umbonibus terminalibus; margine crenato.

Hab. Ad Isthmum Panamense (*Cuming*).

Testa parva 10 lin. longa, $5\frac{1}{2}$ lin. alta, $4\frac{1}{2}$ lin. lata, *Mytilo Magellanico* juvenili similis est, sed costulis confertis altioribus, distinctissime granosis facile distinguitur. Margo basalis pæne rectilineus. Color utrinque fusco-purpurascens, venter albidus. Facies interna albida, marginem versus livida et vivide margaritacea. Fossula ad ligamentum recipiendum satis profunda. Apices acuti terminales. Cardo in valva sinistra dentibus duobus, in dextra unico tantum instructus.

7. Mytilus obscurus.

M. testa ovata, parva, solidula, concentrice obsoleteque striata, albida, aliquantulum rufescente, epidermide obscure cornea opaca vestita; apicibus obtusis incurvis sæpius decorticatis, paullo distantibus; facie interna parum margaritacea; cardine prorsus edentulo; extremitate antica intus paullulum excavata.

Hab. Ad Sydney urbem Novæ Hollandiæ.

Concha parva $10\frac{1}{2}$ lin. tantum longa, 6 lin. alta et $4\frac{1}{2}$ lin. lata, *Mytilo eduli* nondum adulto, qui pellucidus Penn. dicitur, haud dissimilis est.

8. Mytilus curvatus.

M. testa parva, solidula, subtrigona, rufo-violacea, in dorso alta, in basi valde arcuata, costulis dichotomis instructa; epidermide fusco-cornea vestita; umbonibus parvis inflexis; toto margine excepta fissura crenulato; cardine in valva utraque denticulis duobus vel tribus munito.

Hab. Ad Philippinarum insulam Luzon.

Conchula parva, vix 6 lin. longa, 4 lin. alta, $2\frac{3}{4}$ lin. lata, forma pæne trigona insignis. Margo cardinalis declivis leviter arcuatus cum margine posteriore alto angulum obtusum format; margo basalis in fissura, quæ ad byssum emittendam destinata est, valde curvata. Umbones perparum recedentes. Costulæ furcatæ marginem versus posticum distinctiores evadunt. Fossula ad ligamentum recipiendum satis profunda. Pagina interna marginem versus vivide iridescens.

9. Volsella gubernaculum.

V. testa ovata, valde fornicata, utrinque subangulata, concentrice rugoso-striata, pallide flavescente, virgis inæqualibus violaceis radiata, epidermide cornea vestita; umbonibus prominentibus incurvis violaceis perparum distantibus; ligamento brevi.

Patria ignota.

Testa subsolida, antice attenuata, postice lata et rotundata, 18 lin. longa, 11 lin. alta, $8\frac{1}{2}$ lin. lata, præsertim dorso valde fornicato et basi parum sinuata pæne recta insignis est. Umbones incurvi violacei, nitentes, glabrati marginem anticum previssimum eminent. Ligamentum pro magnitudine testæ breve, paullo immersum est. Color valvarum internus pallide luteus, umbones versus violaceus.

10. Volsella arata.

V. testa elongata, subrhombea, tumida, liris costisque postice crassioribus arata, colore antice lacteo vel pallide rubente, postice fusco-violaceo, epidermide crassa obscure cornea.

Hab. In Novæ Hollandiæ litore septentrionali.

Concha 29 lin. longa, 12 lin. alta, $10\frac{1}{2}$ lin. crassa, quoad formam *Volsellæ rhomboideæ*, Hanl., affinis est. Valvæ linea obliqua pallida ab umbonibus tumidis ad posticam baseos partem paullo sinuatam decurrente et colore duplici in duas partes dividuntur. Striæ incrementi, et parte fissæ, inde a linea illa obliqua validiores fiunt, ita ut testa sulcis exarata appareat. Facies interna nitorem margaritaceum languidum præbet. Ligamentum angustum longum totum pæne marginem cardinalem tenet.

11. Volsella Fortunei.

V. testa parvula, ovato-oblonga, subtrigona, utrinque obtuse carinata, concentrice rugose striata, superius violacea, inferius albida, epidermide virente obducta; margine baseos subrecto; dorso subangulato; umbonibus parvulis prominulis.

Hab. Mare Chinense. Attulit clar. Fortune.

Conchula parva, $5\frac{1}{2}$ lin. longa, $2\frac{3}{4}$ lin. alta, 2 lin. lata, habitu *My-*

tili minimi, sed umbonibus recedentibus magis ad *Volsellas* accedit. Striæ concentricæ antice rugosæ. Cardo plane edentulus. Ligamentum longum et tenue. Pagina interna superius pulcherrime violacea et margaritacea.

12. Volsella subpurpurea.

V. testa elongato-ovali, angusta, tenui, subpurpurea, epidermide cornea nitida induta, concentrice tenerrimeque striata, striis obsoletissimis ab umbonibus radiantibus marginem posticum versus evanescentibus instructa, antrorsum angustata, posteriorem partem versus parum dilatata, in medio dorso subfornicata paullulum angulata, margine baseos subsinuata; umbonibus parvis, in speciminibus adultis decorticatis parum prominentibus.

Hab. In Senegallio flumine.

Testa 15 lin. longa, $5\frac{3}{4}$ lin. alta, $5\frac{1}{4}$ lin. lata, sculptura, colore et cardinis structura *Volsellæ tristi* affinis, præsertim margine cardinis multo longiore, basi subsinuata et valvis tumidioribus differt.

13. Volsella tristis.

V. testa elongata, recta, tenui, fusco-purpureo et albido variegata, concentrice obsoleteque striata, pæne glabrata, sulcis ab apicibus radiantibus confertissimis, tenuissimis, sub vitro tantum perspicuis, instructa; epidermide nitida cornea vestita; facie interna albida et livida marginem versus iridescente.

Hab. Ad Chusan teste Benson.

Concha forma angusta, longe porrecta insignis, $15\frac{1}{2}'''$ longa, $6\frac{1}{4}'''$ alta et $4\frac{1}{4}'''$ crassa est. Altitudo ejus maxima in $\frac{1}{3}$ longitudinis vel eo in loco sita est, ubi margo dorsalis anticus, quem ligamentum breve et tenue occupat, finem habet. Margo ventralis perparum arcuatus pæne rectus, antrorsum paullo adscendit et mucrone vel potius ala parvula parum ultra apices prominente terminatur, in qua costulæ nonnullæ observantur. Præterea monendum est, marginem dorsalem plicis nonnullis obsoletissimis instructum esse. Internus testæ color livido-albus parum margaritaceus. Cardo utriusque valvæ sub apicibus dentibus parvulis 4–5 munitus. Præterea in fine ligamenti, quod fossulam haud profundam tenet, crenarum 10–12 series observari potest, quæ *Nucularum* cardinem in mentem vocant.

14. Volsella perfragilis.

V. testa elongata, recta, compressa, tenerrima, subdiaphana, parum splendida, pallide cornea, postice virescente maculisque minimis pallide fuscis aspersa, striis incrementi concentricis tenuissimis instructa, costa obsoletissima recta ab umbonibus prominulis ad posticam baseos partem decurrente, margine dorsali recto longissimo, margine ventrali antice ascendente; ligamento perlongo, angusto, margarita marginem posteriorem versus iridescente.

Hab. Ad insulas Moluccenses.

Species singularis sesquipollicem longa, dimidium alta, $3\frac{1}{2}$ lin. crassa, *Modiolæ eleganti*, Gray (Spic. Zool. t. 6. f. 14; Wood, Ind. p. 235), affinis, margine dorsi recto, umbonibus minoribus, testaque compressa præsertim differt.

15. VOLSELLA UNDULATA.

V. testa oblonga, fragili, concentrice tenuissimeque striata, glabra, nitida, pellucente, albida, picturis undulatis varieyata lineisque rufis ab umbonibus minutis ad latus posticum decurrentibus ornata, ventre plerumque unicolore; epidermide tenera virente; margine baseos postice aliquantulum sinuato, pœne recto; dorso postice fornicato.

Hab. Ad insulas Moluccenses.

Testa 11 lin. longa, 5 lin. alta, 3 lin. lata, ad *Volsellam Japonicam* proxime accedit, sed statura breviore et basi subsinuata imprimis differt.

16. VOLSELLA JAPONICA.

V. testa oblonga, recta, convexa, tenui, nitida, concentrice tenuissimeque striata, pœne prorsus glabra, alba, maculis undulatis et angulatis rufis varie picta lineisque ab umbonibus gracilibus prominulis incurvis ad latus posticum radiantibus ornata, margine dorsali et basali fere rectis; ligamento longo, angusto; epidermide tenera pallide cornea subvirente.

Hab. In litore maris Japonici.

Concha gracilis 15 lin. longa, 7 lin. alta et $3\frac{1}{2}$ lin. crassa, splendore et pictura elegantissima insignis est.

17. VOLSELLA GLABERRIMA.

V. testa oblonga, recta, tenui, convexa, nitidissima, subpellucida, concentrice obsoletissimeque striata, glaberrima, fusco-cornea, subviolacea, picturis undulatis fuscis, zonis concentricis lineisque gracilibus pallidis ab umbonibus prominulis ad latus posticum radiantibus ornata; epidermide tenui virescente vestita; margine cardinali recto; ligamento longo, angusto, immerso; margine basali leviter arcuato.

Hab. Mare Australe prope urbem Sydney.

Species *Vols. Japonicæ* affinis, sed valvis majoribus et latioribus vel potius altioribus, margine ventris magis arcuato et lineis radiantibus pallidis in fundo obscuriore satis diversa.

18. VOLSELLA INCONSTANS.

V. testa tenui, ovato-oblonga, antice ventrosa, lateribus oblique obtuseque carinata, concentrice idque tenerrime striata, pœne lævi, albida, in dorso interdum violaceo lividove maculata, vel tota violacea, epidermide cornea, tenui, nitida vestita; umbonibus tumidis, sæpius decorticatis.

Hab. In litore insulæ Van Diemen.

Concha pro ætate variabilis. Testa enim junior brevis plerumque

marginem basalem rectum vel adeo leviter arcuatam ostendit, ætate vero progrediente valvæ marginem baseos posticum versus extenduntur, quo fit, ut venter sinum levem formet. Pars valvarum antica umbonibus rotundatis valde productis habitum *Lithophagorum* præ se fert. Carina obtusa ab umbonibus ad latus posticum decurrens, in adultis speciminibus distinctior esse solet, quam in pullis. Ligamentum tenue et angustum. Testa si epidermis detrivit, splendorem margaritaceum sæpius offert. Cardo denticulis plane caret. Specimen quod exstat maximum 13 lin. longum, 6 lin. altum et 5 lin. latum est. Valvæ nonnullæ antice costulis duabus obsoletissimis notatæ sunt.

19. Volsella subsulcata.

V. testa ovato-oblonga, tumida, alba, in dorso livido- vel rufo-fusca, utrinque costulata, costulis granosis, nonnullis furcatis, in dorso oblique divaricatis; epidermide fusco-cornea, postice setigera; carina obtusa ab umbonibus parvis ad latus posticum decurrente.

Hab. Ad Philippinarum insulam Manilam.

Hæc concha 13 lin. longa, 6½ lin. alta, 5½ lin. lata inter *Volsellam setigeram*, Dkr. et *sulcatam*, Lam., quasi intermedia est species. Testa habitu varians carina obtusa ab umbonibus decurrente plus minusve conspicua instructa est. Umbones plerumque decorticati, parvi, obtusi. Costulæ granosæ in dorso et latere postico magis perspicuæ sunt, quam in latere ventris, ubi sensim evanescunt, exceptis iis costulis paucis, quæ ante umbones jacent. Testa semper est duplici coloris, dorsum livido- vel rufo-fuscum, venter paullo sinuatus albus. Facies interna in speciminibus adultis impressiones musculares fortes ostendit. Cardo denticulis nonnullis munitus est. Excepta baseos parte aliquantulum sinuata totus margo crenis parvulis circumdatur. Ligamentum crassum profunde immersum est.

20. Volsella setigera.

V. testa ovato-oblonga, tumida, subcylindrica, concentrice striata, antice et postice tenuiter sulcata, alba, epidermide viridi-cornea, postice setigera induta, setis brevibus sparsis; umbonibus tumidis, incurvis; margine utrinque crenato.

Patria ignota.

Testa 12 lin. longa, 6 lin. alta, 5 lin. crassa est. Margo dorsalis paullo declivis postice in arcum levem sensim transit, margo ventris pæne rectilineus. Valvæ costulis subgranosis ab apicibus utrinque decurrentibus instructæ sunt; epidermis posticum valvarum latus versus, ab ea inde parte, ubi costulæ incipiunt, setis sparsis tegitur, quas quidem setas plerumque mutilatas invenies. Valvarum pars media transversim striata, basin versus subrugosa est. Hæc species forma haud insolita, costularum structura ad *Lanistinas* accedit.

21. Volsella flavida.

V. testa oblonga, tenui, inflata, lineis concentricis tenuibus eleva-

tis sculpta, flavida, linea ab umbonibus ad basin oblique decurrente colore pallidiore signata; umbonibus tumidis; margine ventrali postice sinuato.

Hab. In sinu ad Manilam.

Testa tenuis et convexa, 16 lin. longa, 8 lin. alta, $6\frac{1}{2}$ lin. lata est. Margo dorsalis anterior rectus, antrorsum paullo inclinatus, posticus arcuatus in extremitatem posticam basin versus productam sensim transit; margo ventris postice sinuatus, antice leviter arcuatus; extremitas antica rotundata ultra apices parum prosilit. Striæ concentricæ graciles distantes et elevatæ lineas concentricas subtilissimas sub vitro tantum conspicuas includunt.

Species *Modiolæ vestitæ*, Phil. (Enum. Moll. vol. ii. p. 51. t. 15. f. 12), affinis, testa paullulum longiore, tenuiore, parum splendente, epidermide pallidiore, forma graciliore postice magis producta, umbonibus minoribus striisque concentricis elevatis differt. Præterea nostra species tegumento tomentoso, a quo *Volsella vestita* includitur, prorsus carere videtur. Exstat varietas colore obscuriore, testa postice magis producta insignis.

22. Volsella splendida.

V. testa oblonga, inflata, alba, epidermide obscure castanea splendida obducta, concentrice striata; margine dorsali arcuato, subangulato, ventrali postice sinuato, extremitate antica parum producta, latere postico subdilatato rotundata; sulco levi colore pallidiore terminata ab umbonibus tumidis ad sinum baseos decurrente.

Patria California.

Testa 14 lin. longa, 8 lin. alta, totidem crassa, *Volsellæ vestitæ* nec non *flavidæ* affinis, valvis latioribus, colore obscuriore et sulco ab umbonibus decurrente imprimis differt.

23. Modiolarca (Volsella) subtorta.

V. testa parvula pæne inæquivalvi subtorta, ovata, subtrapezina, concentrice striata et rugosa, fusca, epidermide sublamellosa induta, dorso parum arcuato, basi antice parum sinuata, umbonibus parvulis recedentibus statu integro incurvis, extremitate antica producta.

Hab. In Novæ Hollandiæ litore septentrionali.

Species parvula angusta 4 lin. longa, 2 lin. alta, $1\frac{1}{2}$ lin. lata, habitu et præsertim formatione extremitatis anticæ *Modiolarcam trapezinam* in mentem vocat. Valvulæ pæne inæquales subtortæ epidermide partem posticam versus sublamellosa teguntur. Apices in speciminibus adultis erosi sunt, imo specimina exstant, magnam partem decorticata. Ligamentum tenue profunde immersum est. Impressiones musculares fortes et pro exiguitate testæ magnæ sunt. Species nostra generi *Grayano Modiolarcæ* ut adnumeretur necesse est.

24. Lanistina nana.

L. testa minima, ovata, concentrice striata, pallide cornea, rufo

variegata, pellucida, sulco ab umbonibus parvulis ad basin decurrente insigni.

Hab. Port Lincoln.

Testa minima, vix 2 lin. longa, tenuissima, pellucens, lineis rufis undulatis et reticulatis picta, antice et postice tenuiter costulata. Pagina interna margaritacea; margo cardinis tenuissime crenulatus.

25. Lanistina concinna.

L. testa parvula, fragili, ovata, modice convexa, flava lineis nonnullis præsertim apices versus undulatis et angulatis fuscis picta, epidermide viridi pellucente vestita, sulcis ab apicibus parvulis incurvis utroque latere radiantibus instructa.

Hab. Ad Philippinarum insulam Zeba (*Cuming*).

Species 7 lin. longa, $3\frac{1}{2}$ lin. alta, $2\frac{1}{2}$ lin. crassa, antice angustata, postice dilatata, paullulum compressa. Margo dorsalis æqualiter parumque arcuatus, basalis pæne rectilineus. Extremitas antica angusta arcuata, costulis nonnullis signata, ultra apices minutos incurvos prominens. Costulæ planæ marginem versus ex parte furcillatæ in latere postico 20–24 numerantur; interstitia earum latitudinem non excedunt.

Differt hæc species a *Modiola strigata*, Hanl. (Proc. Zool. Soc. 1844), testa minus convexa, postice magis dilatata, umbonibus haud tumidis costulisque latioribus planis partim dichotomis.

26. Crenella bulla.

C. testa fragili, oblique elliptica, bullata, alba, striis tenerrimis confertissimis ab umbonibus radiantibus sub vitro tantum cognoscentibus undique instructa, epidermide tenuissima pallida obducta; umbonibus incurvis gracilibus anticis; ligamento brevi; toto margine intus subtiliter crenulato.

Hab. Ad Philippinarum insulam Luzon.

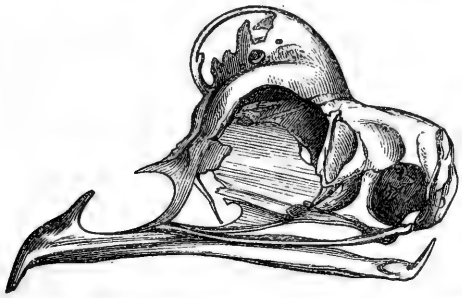
Testa tenuissima, perfragilis, pellucida, tota alba, 5 lin. longa, 4 lin. alta, 4 lin. crassa, subglobosa vel bullata, ambitum fere exacte ellipticum refert, si modo angulum obtusum, quem margo cardinalis posticus cum latere postico format, non respicis.

November 25, 1856.

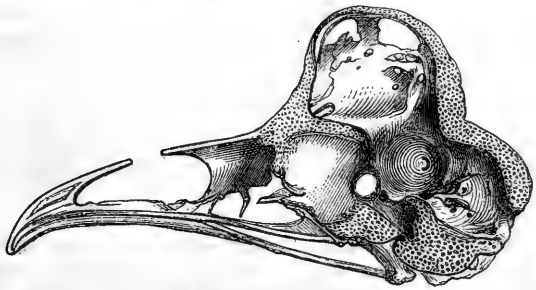
J. S. Gaskoin, Esq., F.L.S., in the Chair.

Mr. Tegetmeier brought before the notice of the Members living specimens and preparations illustrating the very remarkable peculiarities existing in the skulls of the feather-crested variety of the domestic Fowl, now known as Polish. In these birds, the anterior portion of the frontal bone is expanded into a large spherical tuberosity or cyst, which is partly osseous and partly membranous; the

anterior portions of the brain are entirely contained in this tuberosity, being protected from external injury solely by the feathers of the crest and the integuments; the posterior portions are situated, as



No. 1.—Skull of Crested Hen (var. Golden-spangled Polish), showing spherical tuberosity and deficient intermaxillary bones.



No. 2.—Longitudinal vertical section of the skull of a Crested Cock (var. Silver-spangled Polish), showing the shape of the cavity containing the encephalon.

usual, in the cavity of the cranium: as the communication between it and the tuberosity is constricted, the brain necessarily assumes the form of an hour-glass, the anterior being the larger portion.

This very extraordinary structure, which is well developed even before the escape of the chick from the shell, was noticed by Peter Borelli in 1656, and again described with many errors by Blumenbach in 'De Nisus formativi Aberrationibus,' 1813. Blumenbach states that it is confined to the females, which is incorrect; that the fowls are remarkably stupid, whereas their instincts do not appear to differ in the slightest degree from those of the other non-incubating varieties of domestic fowl; and lastly, that the tuberosity is caused by a tight constriction of the integuments, which however does not exist.

Pallas, who also notices the peculiarity, erroneously attributes it

to a cross with the Numidian meleagris; and the description of a very old specimen in the Catalogue of the Museum of the College of Surgeons, states it to be the result of disease, whereas it is the normal condition of all largely crested fowls.

An intimate connexion exists between the size of the tuberosity and that of the feathered crest, so that those chickens may be selected at birth that will eventually possess the largest crests.

The intermaxillary bones are usually more or less deficient in all the varieties of crested fowls, the nostrils arched, and the comb when present is crescentic or bicorned. Several of the varieties of crested fowls are destitute of fleshy wattles, their place being supplied by a ruff or beard of feathers; there is, however, no corresponding alteration in the lower maxillary bone.

Mr. Woodward exhibited preparations of the mantle and oral apparatus of the recent British Terebratula (*T. caput-serpentis*), specimens of which had been forwarded in a living state from Oban, Argyle, by J. Leckenby, Esq., of Scarborough. It appears that this shell, although a native of the deep sea, can live a week out of water, if placed in a bottle or tin-box with moist sea-weed. The valves are so accurately adjusted as to prevent the escape of the contained fluid. The mantle, arms and cirri of this species are frosted over with radiated *spicula*, composed of carbonate of lime, as described by Oscar Schmidt, and form a beautiful object for the polariscope. To the palæontologist this structural peculiarity is extremely interesting, as it explains the preservation of many parts of the internal organization, including the delicate *cirri* in fossil *Brachiopoda*.

Mr. Fraser exhibited a considerable number of Birds, from the collection of T. C. Eyton, Esq., and more particularly drew attention to a singular variety of *Ramphastos discolorus*, Linn., in which the blood-red colouring of the abdomen and upper tail-coverts was replaced by chrome-yellow.

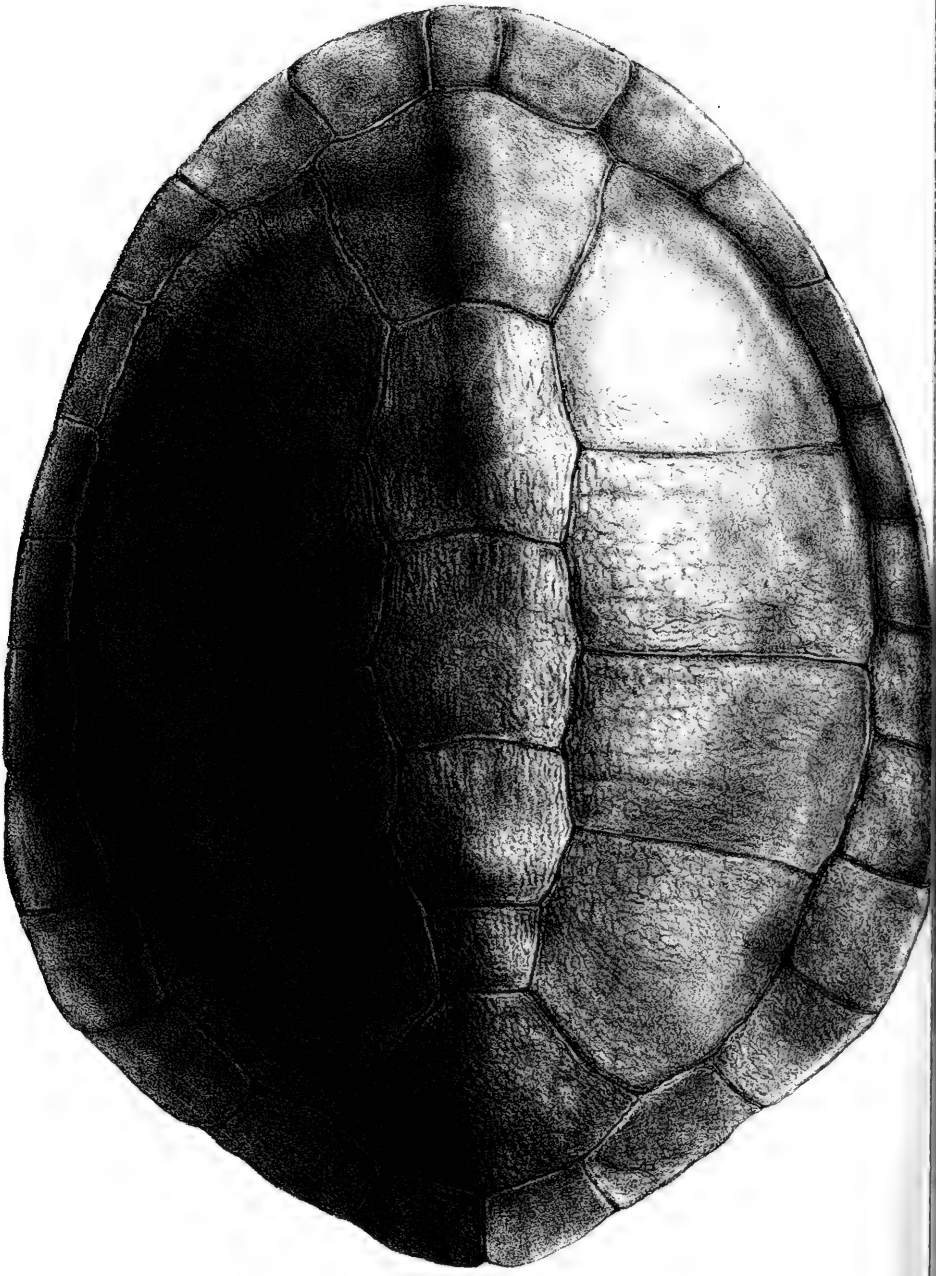
The specimen was procured from Rio de Janeiro.

He next directed attention to a species of *Trogon*, which is so nearly allied to *Trogon collaris*, Vieill., that by most writers it might be considered as identical with, or a mere variety of that species. This bird, for which Mr. Fraser proposed the name of *Trogon Eytoni*, differs, however, in having the mandibles larger and more robust; the plumage of the neck and breast of a fine coppery bronze, instead of green; the central tail-feathers bronze instead of green; and the barring of the wing-coverts and lateral tail-feathers broader, and consequently more distinct.

Total length, $9\frac{1}{2}$ inches; bill, $\frac{7}{8}$; wing, $4\frac{3}{4}$; tail, $5\frac{3}{4}$.

Hab. Rio de Janeiro.

The third specimen was a fine species of *Juida* (which Mr. Fraser proposed to call *Juida Eytoni*), nearly allied to *Juida longicauda*,



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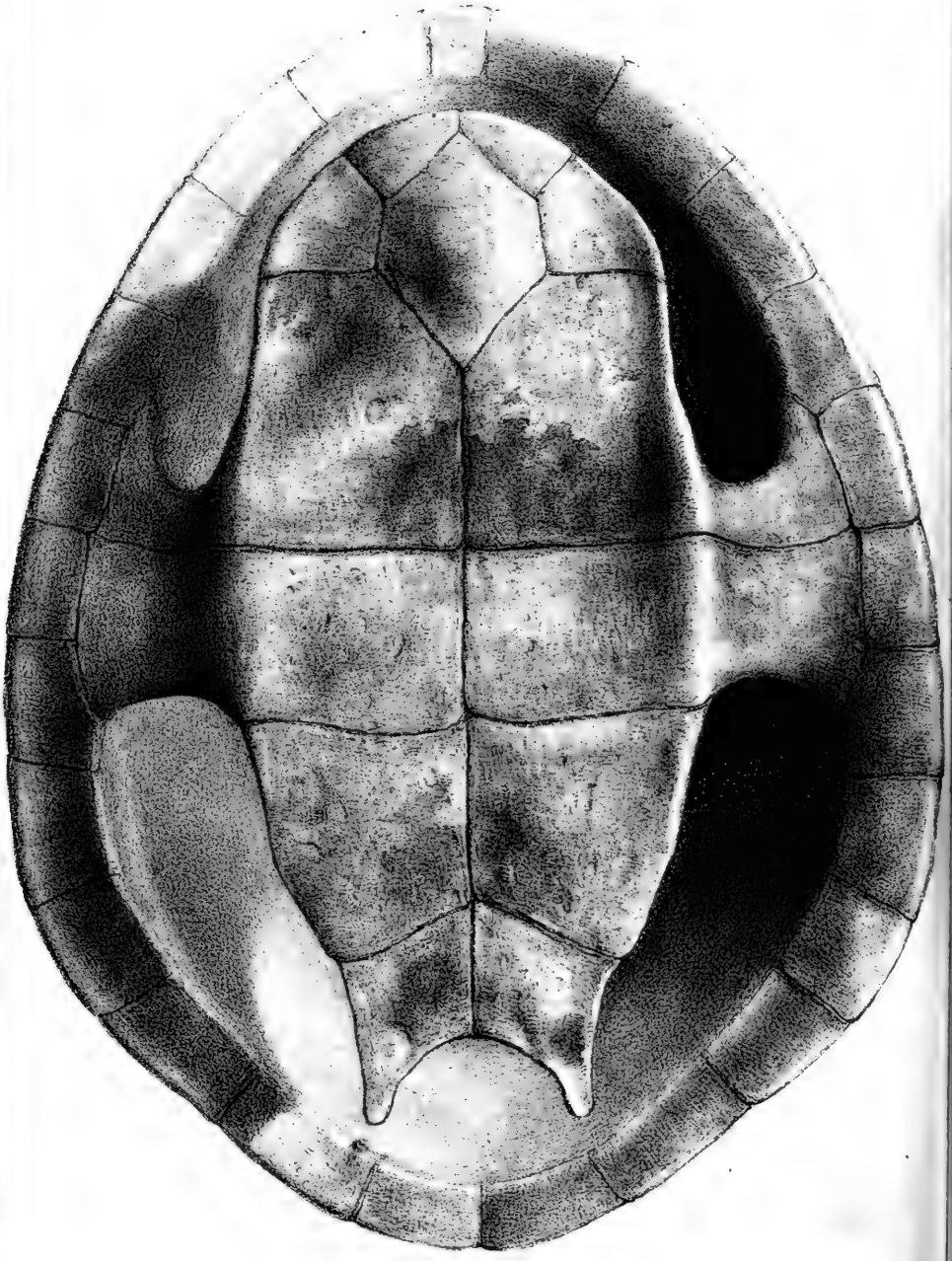
W. West l.

CHELODINA EXPANSA



G.H.Ford

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CHELODINA EXPANSA

Swains., but differing from that species in having the whole of the body and wings of a fine oil-green, instead of bluish-green, and in having the velvety-black marks near the tips of the wing-coverts and scapularies more conspicuous than in that species; the lower parts of the back and upper tail-coverts of a lovely purple, changing into green on their edges and tips, in lieu of dark bronzy-purple; the band across the abdomen dark coppery-brown.

Total length, 19½ inches; bill, 1¼; wing, 8; tail, 14; tarsi, 1¾.

Hab. W. Africa: precise locality unknown.

The Secretary read the following—

NOTICE OF A NEW SPECIES OF TRICHOTROPIS, FROM THE COLLECTION OF HUGH CUMING, ESQ. BY ARTHUR ADAMS, F.L.S., ETC.

TRICHOTROPIS GOULDII, A. Adams.

T. testa ovato-fusiformi, vix rimata, alba, tenui; spira elata; anfractibus septem convexis, liris elevatis, spiralibus et lamellis tenuibus longitudinalibus concinne cancellatis, interstitiis transversim striatis; apertura ovali, antice producta, canali obsoleta; labio lævi, rotundato, antice subreflexo; labro margine simplici, acuto.

Long. 1½ poll.

Hab. Chiriqui, Veragua (*Mr. T. Bridges*). Mus. Cuming.

I have much pleasure in naming this elegant addition to the genus *Trichotropis* after the distinguished American conchologist Dr. Gould. In a recent state the shell is probably covered with a thin light-brown epidermis. It differs from the typical genus in the canal of the aperture being almost obsolete.

December 9, 1856.

Dr. Gray, F.R.S., in the Chair.

Professor Owen read a paper entitled "Osteological Contributions to the Natural History of the Chimpanzees and Orangs (*Troglodytes*, *Pithecus*), No. VI.," which will be published in the Transactions of the Society.

The following papers were also read:—

1. DESCRIPTION OF A NEW SPECIES OF CHELODINA FROM AUSTRALIA. BY DR. J. E. GRAY, F.R.S., ETC.

(Reptilia, Pl. XII.)

Mr. Stutchbury, who has recently returned from Australia,

brought with him a series of animals which he collected during his geological researches.

In examining this collection with the intention of selecting those specimens which will be interesting additions to the very rich collection of Australian animals in the British Museum (including almost all the species described by Mr. Gould and other recent writers on the fauna of that continent), I was pleased to discover what appears to be a very distinct species of the Australian genus of Long-necked freshwater Tortoises (*Chelodina*).

To the description of this species I have added a short note on the peculiarities of two other species.

CHELODINA EXPANSA, n. s. (Pl. XII. adult and young.)

Shell oblong, rather depressed, broader behind, brown; plates thin, with short, narrow inosculating grooves; the margins flattened, expanded; the side of the back regularly convex; the lateral marginal plates rather broad, not revolute. The sternum flat, bluntly keeled on the sides, yellow. Head, neck and limbs dark olive above; chin, throat, and under side of the limbs whitish.

Shell, length 11, breadth 8 inches. Neck 8 inches long.

The young shell is like the adult, but the lateral margins are slightly revolute on the edges, though the plates are broad like the adult. The under side of the margin yellow, with a triangular black spot on the front edge of each shield; the dorsal shield thin, with three distant concentric grooves, with a rather rugose, moderate-sized areola; the areola of the costal plate subcentral; the areola of the first vertebral plate is subcentral, of the second, third, fourth and fifth vertebral plate it is on the middle of the hinder margin; the areola of the marginal plate is on the hinder outer margin. The front vertebral shield is large, and as broad as long; the others are much broader than long, the third being the shortest.

This species differs from *Chelodina longicollis*, *C. oblonga* and *C. Colliei*, in the generally expanded form, and especially in the breadth and non-revolution of the lateral margin, and in the side of the sternum not being so sharply keeled as in the two latter species.

It differs from *Chelodina sulcifera* in the membranous character of the shields, and also in the sternum being narrow in front, like that of *C. oblonga* and *C. Colliei*, and not expanded and broader, as in *C. longicollis* and *C. sulcifera*.

CHELODINA LONGICOLLIS.

A fine shell of the adult animal of this species, larger than any I have hitherto received, was in the collection.

The shell is rather convex and swollen on the sides, with a deep, broad, rounded concavity along the centre of the second, third and fourth vertebral plate, about two-thirds the width of the plates. The black sutural lines on the sternum are narrow and uniform.

Length of the shell $8\frac{1}{2}$; width 6 inches.

Chelymys Macquaria.

Two adult specimens of this kind were also in the series. They are both much darker than the two specimens in the British Museum Collection. They are also peculiar for having a very distinct, deep, narrow, interrupted groove along the vertebral line, deepest and widest on the fourth vertebral plate. The discal shields are also marked with rather deep distinct radiating grooves, which are evidently indentations in the bones of the animal, only covered by the very thin skin-like shields.

Shell, length 11, breadth 8 inches.

2. On some Fish from Asia Minor and Palestine. By Sir John Richardson, C.B., F.R.S. L. & Ed. etc.

Through the kindness of Dr. Gray of the British Museum, I have been permitted to examine a small collection of Fish made by H. Poole, Esq., in Palestine and Asia Minor. Though they do not present to the ichthyologist any novel generic forms, they are interesting on account of the localities in which they were found.

Cyprinodon Hammonis, Cuv. et Val. xviii. 169.

This small fish was taken in a marshy spot, on the immediate beach of the Dead Sea, at Usdum, the supposed site of Sodom. The marsh, which contained some very small puddles of salt-water in which the fish were swimming, and from whence they were scooped out with ease by the hands, is fed by a saline spring which issues a little higher up, and is so little above the level of the sea, that Mr. Poole believed that the fish were washed into the pools by the waves. The opinion that the exhalations of the Dead Sea are immediately fatal to animal life, and that not even a bird can fly over it, has long been exploded. One of Mr. Poole's companions bathed in it daily with impunity, and even fancied that in diving he had discovered the remains of a ruined city under its waters, opposite to Usdum. Mr. Poole also observed ducks diving in it, and concluded, justly we think, that they must have found something edible to induce them to repeat that act, which they did frequently.

Lieut. Lynch of the U. S. Navy examined the water of the Dead Sea (Exp. to Jordan, &c. p. 377) with a powerful microscope, and found that it contained no animalculæ and no vestige of animal matter. Its specific gravity was 1·13, compared with distilled water as 1·0, while water of the Atlantic from lat. 25° N. and 52° W. longitude was 1·02. Another examination of the water of the Dead Sea, quoted on the last page of Lieut. Lynch's book, gives its specific gravity as 1·227 at temp. 60°, and the solid saline matter as 267 in 1000. Specimens of the water taken up by Mr. Poole have been deposited at the Geological Society, together with examples of the water in which the fish were found, and of the salt spring which fed the marsh.

With respect to the *Cyprinodonts*, several of the species inhabit salt and fresh waters indifferently, the *C. Hammonis* being one of the number. It was originally discovered by Ehrenberg in the springs of the Oasis of Jupiter Ammon, and subsequently in great plenty in other districts of Egypt and Syria. M. Eloy found it in the waters of Damascus, and Rüppell states that it is an inhabitant of all parts of the Red Sea, and also of the fresh-water springs at Tor, which have a temperature of $26\frac{1}{2}°$ of Reaumur or $91°{\cdot}6$ of Fahr. This is also the temperature of one of the hot springs of Cannea in Ceylon, inhabited by the *Ambassis thermalis*. M. Renaud, on sending examples of this *Ambassis* to Cuvier, stated that the heat of the spring was 115° Fahr.; but there is reason to infer, either that his thermometer was incorrect, or that he took the temperature of the feeding spring only.

When Dr. Davy visited the springs in October 1817, the hottest well raised the thermometer to 107°, but he was told that the heat fluctuated, and had been observed as high as 110° F. There are in all seven wells, their temperatures being various, and that of one of them as low as 86°. In one only, in which the thermometer stood at 91°, did he observe fish. He thought it probable that all the wells were supplied with water from the same source (Davy's Travels in Ceylon, p. 44).

In an excursion from the south side of the Sea of Marmora to the Asiatic Olympus, Mr. Poole obtained several Cyprinoids and some Gobies chiefly from Lake Apollonia or Apollonitis near Broussa, and from the River Gemlek that falls into the Sinus Cianus. He also caught some Trout on the summit of Olympus itself. The specimens are unfortunately so much decayed that their original forms cannot be ascertained with sufficient precision, but they have much resemblance to the common *Salmo fario* of Linnæus, and like it have two longitudinal rows of teeth on the vomer, without a cluster on the front of that bone. The Cyprinoids and Gobies are in good condition.

Cyprinus Bithynicus, Richardson.

The *Cyprini* resemble one another so closely, that it is matter of extreme difficulty to determine the species when unaided by correctly labelled specimens. One of Mr. Poole's fish, caught in Lake Apollonitis, has the four minute barbels of *Cyprinus carpio*, but differs from that typical form in the great compression of its body, while it does not agree so perfectly with *C. elatus, hungaricus, Nordmanni*, and other species with deep bodies, described and figured in the 'Histoire des Poissons,' as to be referable with confidence to any of them. In general form, the origin of the barbels, position of the fins, and numbers of their rays, as well as in the outline of the preorbitar and rest of the suborbitar scale bones, it corresponds more closely with *C. flavipinnis* than with any other member of this group noticed in that work; but as *flavipinnis* belongs to the Indian Archipelago, a minute comparison of specimens is necessary to establish their identity. Hence I have designated Mr. Poole's fish by a

geographical appellation, and shall proceed to mention the proportions of its various external parts. Its rays are, D. 4|18; A. 3|45, the last one divided to the base; P. 19; V. 9; C. $19\frac{5}{4}$.

Head a very little less than a fourth of the total length, measured to the tips of the caudal lobes, or a third of the length measured to near the end of the scales on the base of that fin. Height of the body greatest at the front of the dorsal, and equal to a third of the length measured to the tips of the central caudal rays, and consequently sensibly exceeding the length of the head. The greatest thickness of the fish is in the temporal region at the upper anterior angle of the operculum, and the length of the transverse diameter at that place is contained two and a half times in the height of the body; but posterior to the head, the thickness nowhere exceeds a third of the height. The body thins off from the lateral line to the acute edge of the back, and the sides below are also flattened in, but the edge of the belly is flat to the width of the transverse insertion of the ventrals, or about equal to the diameter of the eye.

In profile the fish resembles, as we have said, *C. flavipinnis*, as represented by pl. 457 of the 'Histoire des Poissons,' but the scales are probably smaller, there being thirty-seven in our fish on the lateral line, which runs perfectly straight at mid-height throughout. Snout obtuse. Barbels like those of the species just referred to, but more slender and considerably shorter. Eyes close to the profile, about a diameter and a half of the orbit apart transversely, one diameter from the end of the snout, and one and three-quarters anterior to the gill-opening; the diameter being to the length of the head as 1 : 3·75. Length of the dorsal equal to the vertical distance between the upper surface of the ventrals and the summit of the back. The first ray of the fin stands midway between the end of the snout and the base of the caudal; the ventrals being attached immediately beneath the second soft ray. The fourth stiff ray is as usual robust and denticulated posteriorly, while the three shorter, graduated, anterior stiff rays are incumbent on its base. The third anal ray is similar to the fourth dorsal one, and stands directly under the last two branching rays of the dorsal.

Teeth.—The lower pharyngeal bone is on the whole crescentic, but of irregular form. With its fellow it embraces the lower part of the gullet in nearly a half-circle. On its interior edge there is a row of about twelve small, acutely subulate teeth. At its middle there are three larger obtuse teeth, which stand one before the other in an antero-posterior (or dermo-central) direction, and are contiguous or incumbent on each other. The most interior one is obtusely conical, with a minute central cusp: the next, which is slightly the largest of the three, is worn on the exterior side; and the outer one is worn on both sides, but still blunt on the summit: besides these three there are two much smaller and more chisel-shaped ones, abreast of the second of the larger ones, and on its mesial side. There are thus five molar teeth on each lower pharyngeal bone, and a row of acicular or subulate tooth-like rakers on its inner border.

Leuciscus Apollonitis, Richardson.

The difficulty of grouping and describing the numerous species of this genus is acknowledged by all who have made the attempt. M. Valenciennes has shown that the labours of Agassiz, Bonaparte and other first-rate ichthyologists on the *Leucisci* have been by no means successful, nor has he himself been more fortunate in his endeavours; the small groups of species described in the 'Histoire des Poissons' being far from sufficiently precise to do away with the necessity of reviewing almost the whole genus before any member of it brought from a new locality can be rightly placed. The entire question of geographical distribution rests on the correct recognition of species; and a great advance in ichthyological science will be made, when the Cyprinoids of Asiatic Turkey, Persia, and Affghanistan shall be collected and described, so as to complete the missing links between the European and Indian forms. Enlightened travellers, therefore, like Mr. Poole, who bring home specimens of freshwater fishes from these countries, merit a grateful commendation from a Natural History Society. The specimen that we have now particularly to notice has a strong resemblance to the English Red-eye or Rudd, the Rotengle of the French, and the *Leuciscus erythrophthalmus* of Cuvier, which is the type of the subgenus *Scardinius* of Bonaparte. In this group the mandible ascends obliquely in front of the upper jaw, so that when the mouth is shut it forms the most anterior point of the fish. It happens that Mr. Poole's specimen is exactly of the same size with the figure of the Rudd in Mr. Yarrell's beautiful work, so that an exact comparison can be made between them, and the most striking difference is that the Rudd has a slightly greater height of body. The length of the head, the position of the dorsal fin, the decurvature of the lateral line, and the numbers of rays in the fins, are the same in both. The ventrals, however, are a little further forward in *L. Apollonitis*, so that the tips of the pectorals overlap them a little, and the scales are a trifle smaller, numbering two more on the lateral line. In the Asiatic fish, moreover, the profile from the point of the snout to the dorsal is less arched, being nearly straight; and the number of the pharyngeal teeth being different in the two species, we obtain a precise distinctive mark. Those of *Apollonitis* number five in the inferior or exterior row, all denticulated within and hooked at the point; while the three forming the interior row are very short, and are likewise denticulated on their interior sides. *L. erythrophthalmus* has only four teeth in the inferior row.

As in most *Leucisci* the second dorsal ray is unbranched and tapering, and the first, which is shorter, is applied closely to its base without the intervention of membrane. In this species the second ray is the tallest in the fin, and it is perfectly flexible, without any of that stiffness which is characteristic of Agassiz' genus *Rhodeus*, in which moreover the pharyngeal teeth are chisel-shaped. The first ray of the dorsal stands on the highest point of the back, and exactly midway between the tip of the snout and the extremities of the

middle rays of the caudal; while the middle of the dorsal is in the middle of the total length measured to the points of the caudal rays. The insertion of the ventrals again is midway between the point of the snout and the base of the caudal.

Rays:—Br. 3–3; D. 10; A. 13, last ray deeply divided; V. 9; C. $19\frac{5}{6}$; P. 15 or 16.

Body much compressed, thinning off rapidly towards the belly: its greatest thickness is considerably above the middle, and is equal to between a third and a fourth of its utmost height. Lateral line traced along the lower third of the height, parallel to the curve of the ventral edge, and consequently very concave upwards. It is composed of forty-two scales. Under the front of the dorsal, where the body is highest, there are seven rows of scales above the row which forms the lateral line and four below, or twelve in all. The scales are dotted with black on the edges, and traversed by about four radiating lines on the exposed disk and two or three shorter ones on the covered base, all issuing from the same point. Head small, its length being contained four times and a half in the total length of the fish, measured to the tips of the caudal lobes, and being consequently perceptibly less than the height of the fish. Its breadth between the eyes is a very little in excess of the diameter of the eye, and is greater than the thickness of the body. Preorbitar scale bone nearly rectangular, with the corners rounded off, a little longer than high, and traversed by an unbranched muco-duct, which is continuous with the muciferous tube of the other suborbitars: the second of these bones is narrower than the third one.

Mandible ascending and shutting against the front of the upper jaw. Its joint is directly beneath the anterior curve of the orbit. The eye is nearer to the tip of the snout than to the gill-opening, and its diameter rather exceeds a third of the length of the head. First ray of the dorsal standing midway between the tip of the snout and the extremity of the middle caudal ray; while the middle of the fin is equidistant from the tip of the snout and the distal points of the caudal lobes. Tips of the pectorals slightly overlapping the base of the ventrals, which lies midway between the end of the snout and the base of the caudal. The greatest height of body is at the front of the dorsal, and rather exceeds one-fourth of the entire length of the fish.

M. Valenciennes remarks that descriptions, even when aided by good figures, do not suffice to discriminate the nearly resembling species of *Leuciscus*; hence this or any other proposed new species cannot be considered as properly established until it has been compared with authentic specimens of the known forms.

Leuciscus Cii (Richardson).

This *Leuciscus* was caught by Mr. Poole in the River Gemlek, anciently named Cius, which falls into the Propontis near the promontory of Posidium. Like the preceding one it belongs to the group of species which have the dorsal placed over the space between the ventrals and anal, but in this instance considerably nearer the

former. Its pharyngeal teeth are in two rows, viz. five inferior taller ones, and two interior shorter ones, all incurved at the tips, and some of them distinctly denticulated on the inner edge, others only obsoletely so.

Rays:—D. 10; A. 11, the last one deeply divided, and the front one short and incumbent; V. 9; P. 18; C. 19.

In general form this fish resembles the *Leuciscus Baldneri* more nearly than it does any of the other species figured in the 'Histoire des Poissons,' but the head is a little longer, and the snout does not bulge out at the nostrils; the last ray of the dorsal also stands a little before the anus, and the anal does not occupy so much space as in *L. Baldneri*. Of the figures given by Yarrell, it has most likeness to the Graining or *L. Lancastriensis*.

Length of the head contained four times in the length of the fish up to the base of the caudal, or four and a half times in the length when that fin is included. The form of the head is conical. The eye approaches the upper profile, and its diameter measures about a fourth of the length of the head; it is situated a little more than a diameter from the tip of the snout, and nearly two diameters from the extreme edge of the gill-cover. Preorbitar subtriangular, with its corners irregularly rounded off, and its oral border traversed by a muciferous tube having short lateral branches. The remainder of the suborbital chain unites imperceptibly with the silvery integument of the cheek, but is indicated by its muciferous tube skirting the under curve of the orbit. When the head is allowed to dry, however, the second and third suborbitars are perceived to be very narrow, and the fourth one much broader.

The height of the body is about one-fifth of the total length to the tips of the caudal, or, more exactly, a fourth of the length up to the end of the scales on that fin. It is a very little less than the length of the head. The thickness of the fish is greatest at the nape, which is much rounded, and is equal to half the greatest height of the body. The back is more obtuse than the belly. Lateral line decurved, running more than a third of the height from the rim of the belly, and traced on forty-seven scales. There are seven rows above the lateral line at the ventrals, and four below, making with the one contributing to form the line, twelve in all. Of these, two scales are below the upper ventral ray. There are about seventeen short lines on the base of a scale, and twelve or fourteen longer ones on the exposed disk, all radiating from one point. The concentric lines of structure are crowded, but very evident.

Appendix.

Museum of Practical Geology,
Jermyn Street,
November 27th, 1856.

My dear Sir Roderick,

I hasten to give you the results obtained in the examination of waters which were forwarded to me by Mr. Reeks:—

1. Cylindrella. Ghiesbreghti Pfr. 2. C. turris Pfr. 3. C. clava. Pfr.
4. 5. Helix meta. Pfr. and var. 6. 7. H. Lombei Pfr. and var.
8. H. Grevillei Pfr.

G.B. Sowerby del. et lith.

W. West. Imp.

1. Brine spring near Usdum with fish. Temp. 90° F. Spec. grav. 1·035.
2. North End near Jordan. Temp. 83° F. Spec. grav. 1·196.
3. Dead Sea, Usdum, South End. Temp. 83° F. Spec. grav. 1·204.
4. El Lisan (Peninsula), North End. Spec. grav. 1·200.

No. 1 smelt strongly of sulphuretted hydrogen, and contained a good deal of suspended matters. No. 2 pretty clear; less sulphuretted hydrogen. Nos. 3 and 4 clear, and no sulphuretted hydrogen.

I remain,
My dear Sir Roderick,
Yours very sincerely,
A. W. Hofman.

Sir Roderick Murchison,
&c. &c.

Calculated evaporation from the area of the Dead Sea at temp. 84° F. (58·6 dew-point) 1,500,000,000 gallons, or 6,500,000 tons. Assumed area 320 square miles (H. Poole).

3. Descriptions of Nineteen New Species of Land-Shells, from Mr. H. Cuming's Collection, collected by M. Ghiesbreght at Chiapa, Mexico. By Dr. L. Pfeiffer.

(Mollusca, Pl. XXXVI.)

1. Simpulopsis Chiapensis, Pfr. *S. testa depresse globosa, tenuissima, confertim striata, nitida, pellucida, cornea; spira minuta, parum prominula; sutura canaliculata; anfr. 2½ convexis, ultimo magno; columella tenui, arcuata; apertura diagonali, lunato-circulari; perist. simplice, recto, margine dextro superne subrecedente.*
Diam. maj. 8½, min. 6½, alt. 4⅓ mill.

2. Helix helictomphala, Pfr. *H. testa umbilicata, depressa, solida, oblique costulata, nitidula, pallide lutescenti-cornea; spira vix elevata; anfr. 5½ convexiusculis, ultimo antice subdeflexo, supra medium subcarinato, basi inflato, circa umbilicum, ⅓ diametri fere æquantem, scalariformem subcompresso, antice constricto et scrobiculato; apertura diagonali, rotundato-lunari, dente linguæformi, sublibero parietis coarctata; perist. albo, angulatim reflexo, margine supero subhorizontali, dextro et basali acute unidentatis.*
Diam. maj. 12, min. 10⅓, alt. 5⅓ mill.

3. Helix Chiapensis, Pfr. *H. testa umbilicata, depressa, solidula, striata, nitida, albido-cornea, ad suturam fusculo-fasciata; spira breviter conoidea; anfr. 5½ convexiusculis, ultimo antice deflexo, superne turgido, subtus constricto, basi*

inflato; umbilico parvo, subregulari, pervio; apertura diagonali, magna, sinuato-lunari, dente parvulo, tenui, obliquo, libero parietis subcoarctata; perist. albo, breviter reflexo, marginibus conniventibus, supero subascendente, dextro dente descendente et basali denticulo obsoleto munito.
Diam. maj. $10\frac{1}{2}$, min. 9, alt. 6 mill.

4. Spiraxis euptycta, Pfr. *Sp. testa turrita, solidula, plicis compressis, superne distantibus, deorsum confertioribus sculpta, nitidula, cereo-albida; spira regulariter attenuata, acutiuscula; sutura plicis excurrentibus crenata; anfr. 9–$9\frac{1}{2}$ convexis, ultimo $\frac{1}{4}$ longitudinis vix æquante, rotundato; lamina columellari leviter torta, subreflexa, non truncata; apertura vix obliqua, oblonga; perist. simplice, margine dextro antrorsum subarcuato.*
Long. $9\frac{1}{2}$, diam. $2\frac{3}{4}$ mill.

5. Spiraxis dubia, Pfr. *Sp. testa turrito-oblonga, solidula, plicis confertis, validis, obtusis munita, nitidula, corneo-albida, strigis castaneis in medio anfr. ultimi evanescentibus irregulariter picta, subvaricosa; spira elongata, apice acuta; anfr. 9 convexiusculis, ultimo $\frac{1}{3}$ longitudinis non attingente; lamina columellari tenui, torta, ad basin apertura subverticali, subrhombeam canalem formante; perist. simplice, marginibus callo tenui junctis, dextro antrorsum leviter arcuato, basi recedente.*
Long. $9\frac{1}{2}$, diam. fere $4\frac{1}{2}$ mill.

6. Spiraxis biconica, Pfr. *Sp. testa subfusiformi, utrinque conico-attenuata, solidula, lævigata, nitida, pallide rubenticornea; spira conica, acutiuscula; sutura marginata; anfr. 7 vix convexiusculis, ultimo spiram paulo superante, basi valde attenuato; lamina columellari callosa, torta, non truncata; apertura subverticali, angustissima, acuminato-oblonga; perist. simplice, margine dextro valde antrorsum arcuato.*
Long. $13\frac{1}{2}$, diam. 6 mill.

7. Spiraxis catenata, Pfr. *Sp. testa subfusiformi-oblonga, solidula, nitida, irregulariter striatula, corneo-lutescente, fascia castanea suturali, alteraque maculatim interrupta supra medium anfr. ultimi ornata; spira conica, obtusula; anfr. 6 modice convexis, ultimo spira paulo longiore, basi subattenuato; lamina columellari callosa, torta, non truncata; apertura verticali, angusta, acuminata, sinuato-semiovali; perist. simplice, margine dextro superne sinuoso, tum antrorsum arcuato.*
Long. 11, diam. 4 mill.

8. Spiraxis oblonga, Pfr. *Sp. testa oblonga, solidula, lævigata, nitida, cornea; spira elongato-conica, apice obtusa; sutura levi, late marginata; anfr. 5 planis, ultimo spiram vix superante, basi minime attenuato; lamina columellari compressa, alte torta, basi non truncata; apertura verticali, an-*

guste ovali, longe acuminata; perist. simplice, margine dextro leviter antrorsum arcuato.
Long. $9\frac{2}{3}$, diam. $4\frac{1}{2}$ mill.

9. Spiraxis parvula, Pfr. *Sp. testa subfusiformi-oblonga, tenui, lineis impressis irregulariter notata, nitida, pellucida, cornea, obsolete rufo-strigata; spira conica, acutiuscula; sutura rufo-marginata; anfr. 6 convexiusculis, ultimo $\frac{4}{7}$ longitudinis formante, basi attenuato; lamina columellari subincrassata, torta, non truncata; apertura anguste semiovali, longe acuminata; perist. simplice, margine dextro valde antrorsum arcuato.*
Long. 8, diam. vix 4 mill.

10. Achatina Chiapensis, Pfr. *A. testa cylindraceo-turrita, solidula, conferte plicato-striata, nitida, pellucida, cerea; spira gracili, apice obtusula; sutura subcrenulata marginata; anfr. 9–10 convexis, ultimo $\frac{1}{5}$ longitudinis subæquante, basi rotundato; columella subcallosa, strictiuscula, basi oblique truncata; apertura subverticali, tetragono-ovali; perist. simplice, recto.*
Long. 16, diam. $3\frac{1}{3}$ mill.

11. Achatina trypanodes, Pfr. *A. testa cylindraceo-turrita, solidula, conferte plicata, nitidula, subdiaphana, albido-cerea; spira subregulariter attenuata, obtusula; sutura subcrenulata; anfr. 12, superis perconvexis, sequentibus planioribus, ultimo $\frac{1}{5}$ longitudinis vix æquante, basi rotundato; columella brevi, leviter arcuata, oblique truncata; apertura subobliqua, elliptico-ovali; perist. simplice, margine dextro leviter antrorsum arcuato.*
Long. 13, diam. 3 mill.

12. Achatina (Oleacina) pulchella, Pfr. *A. testa oblonga, tenuiuscula, sublævigata (sub lente arcuatim et irregulariter striatula), nitida, corneo-albida, obsolete luteo-strigata; spira convexo-conica, acutiuscula; sutura anguste marginata; anfr. 6 modice convexis, ultimo $\frac{2}{3}$ longitudinis vix æquante, basi subattenuato; columella substricta, anguste truncata; apertura verticali, sinuato-semiovali, longe acuminata; perist. simplice, margine dextro antrorsum vix dilatato.*
Long. $10\frac{1}{2}$, diam. $3\frac{3}{4}$ mill.

13. Achatina (Oleacina) Ghiesbreghti, Pfr. *A. testa fusiformi, tenera longitudinaliter conferte plicata, striis tenuissimis undique decussata, sub epidermide pallide fulva albida; spira concaviusculo-conica, apice obtusa; sutura crenulato-filomarginata; anfr. 7 convexiusculis, ultimo spiram paulo superante, superne turgido, basi valde attenuato; columella ad basin aperturæ transverse truncata, prope basin plica obliqua*

munita; apertura angusta, acuminato-semiovali; perist. simplice, rufulo-limbato.
Long. 52, diam. 19 mill.

14. Cylindrella Ghiesbreghti, Pfr. (Pl. XXXVI. f. 1.) *C. testa arcuato-rimata, cylindraceo-turrita, truncata, solida, nigro-fusca; spira sensim attenuata, torte truncata; anfr. superst.* 10–11 *vix convexiusculis, superis conferte striatis, inferioribus leviter flexuose plicatis, ultimo antice soluto, striato, dorso angulato, infra medium obtuse carinato; apertura obliqua, subangulato-ovali, basi subeffusa, intus plica valida, compressa columellæ coarctata; perist. continuo, flexuoso, albido, undique breviter reflexo.*
Long. 82, diam. 22 mill.

β. Testa tenui, cinnamomea, anfr. superst. 13–16.

15. Cylindrella turris, Pfr. (Pl. XXXVI. f. 2.) *C. testa profunde subangulato-rimata, cylindraceo-turrita, truncata, tenui, confertissme subarcuato-striata, diaphana, oleoso-micante, rufa vel fulvida; spira sursum valde attenuata, magis minusve truncata; anfr. superst.* 18–24 *subplanulatis, ultimo antice soluto, dorso et basi carinato, medio angulato; apertura parum obliqua, rhombeo-ovali, plica levi columellæ basi canaliculata; perist. continuo, albo, undique expanso et reflexiusculo.*
Long. 68–72, diam. 14 mill.

16. Cylindrella clava, Pfr. (Pl. XXXVI. f. 3.) *C. testa profunde arcuato-rimata, turrito-cylindracea, truncata, tenuiuscula, confertim arcuato-striata, diaphana, parum nitida, fulva; spira sursum parum attenuata, latiuscule truncata; anfr. superst.* 16–21 *modice convexis, ultimo breviter soluto, dorso et basi carinato, latere filocarinato; apertura rhombeo-ovali, plica levi profunda columellæ coarctata, basi canaliculata; perist. continuo, albo, undique expanso et reflexiusculo.*
Long. 42–57, diam. 9–10 mill.

17. Helicina Chiapensis, Pfr. *H. testa globoso-turbinata, tenui, striatula et sub lente magis minusve distincte malleata, rubello-cornea, obsolete saturatius fasciata; spira turbinata, acuta; anfr.* 6 *convexiusculis, ultimo spiram æquante, peripheria obsoletissime subangulato; columella brevi, antrorsum in denticulum desinente, superne callum crassiusculum, circumscriptum emittente; apertura obliqua, acuminato-subovali; perist. albo, late expanso, ad insertiones angustato.—Operc. tenue, nigro-purpurascens, nucleo pallido.*
Diam. maj. 12, min. 10, alt. 9 mill.

18. Helicina brevilabris, Pfr. *H. testa globoso-turbinata, solidula, striatula, striis spiralibus confertis sub lente decussata, parum nitida, fulvida vel lutescente, interdum fascia* 1 *rubra cincta; spira convexo-conica, acuta; anfr.* 5 *vix con-*

vexiusculis, ultimo rotundato, spira breviore; columella leviter arcuata, basi subsimplice, callum emittente tenuem, diffusum; apertura obliqua, fere semicirculari; perist. undique brevissime expanso.

Diam. maj. 7, min. 6, alt. 5 mill.

19. Helicina Ghiesbreghti, Pfr. *H. testa conoidea, solidula, acute carinata, striis incrementi et antrorsum descendentibus sub lente decussatula, sulcisque spiralibus remotis sculpta, pallide lutea, ad suturam et carinam albo-fasciata; spira convexo-conoidea, submucronata; anfr. 5½ vix convexiusculis, ultimo utrinque convexiore; columella brevi, superne impressa, basi tuberculata, callum emittente nitidum, diffusum; apertura perobliqua, fere triangulari; perist. calloso, late expanso et reflexiusculo, ad carinam subrostrato.—Operc. solidulum, nigro-castaneum.*

Diam. maj. 19½, min. 16, alt. 10 mill.

4. Descriptions of Eighteen New Species of Land-Shells collected on the Admiralty Islands, from the Collection of Mr. H. Cuming. By Dr. L. Pfeiffer.

(Mollusca, Pl. XXXVI.)

1. Helix meta, Pfr. (Pl. XXXVI. f. 4, 5.) *H. testa subobtecte perforata, coniformi, tenuiuscula, vix striatula, nitida, coloribus varia; spira turbinata, acutiuscula; anfr. 6–6½ convexiusculis, ultimo infra medium obtuse subangulato, basi modice convexo; apertura diagonali, rhombeo-ovali; perist. reflexiusculo, margine dextro subflexuoso, basali reflexo, cum columellari subverticali, triangulatim supra perforationem reflexo, angulum indistinctum formante.*

Diam. maj. 23, min. 20, alt. 26 mill.

α. Unicolor vitrina, perist. albo.

β. Citrina, fascia suturali et vitta purpurascenti-nigra pone peristoma nigro-violaceum ornata.

γ. Nigra, fascia 1 suturali pallida ornata, perist. nigro.

2. Helix plagiostoma, Pfr. *H. testa oblique umbilicata, trochiformi, tenuiuscula, leviter striata, nitida, fulva; spira conica, acutiuscula; sutura submarginata; anfr. 6 convexiusculis, ultimo antice vix descendente, carinato, basi planiusculo; apertura perobliqua, subrhombea; perist. simplice, marginibus convergentibus, dextro late expanso, antrorsum arcuato, basali reflexo, cum columellari triangulatim dilatato, libero, umbilicum non claudente angulum obtusum formante.*

Diam. maj. 23½, min. 19, alt. 21 mill.

3. Helix majuscula, Pfr. *H. testa umbilicata, depressa, suborbiculata, solidula, oblique striata et irregulariter malleata,*

nitida, purpurascenti-fusca; spira vix elevata, medio plana; anfr. 5½ *parum convexis, lente accrescentibus, ultimo antice vix descendente, peripheria obtuse angulato, basi circa umbilicum infundibuliformem, magnum subcompresso; apertura diagonali, lunari, intus margaritacea; perist. calloso, albido, reflexiusculo, marginibus callo tenui junctis, basali perarcuato.*
Diam. maj. 44, min. 39, alt. 16 mill.

4. Helix quercina, Pfr. *H. testa umbilicata, globoso-conoidea, solida, oblique striata et impresso-punctata, rufo-castanea; spira conoidea, acutiuscula; anfr.* 5 *modice convexis, ultimo rotundato, antice vix descendente, juxta umbilicum angustum leviter canaliculato; apertura fere diagonali, rotundato-lunari, intus cærulescenti-albida; perist. calloso, albo, brevissime reflexo, margine columellari triangulatim dilatato, libero.*
Diam. maj. 36, min. 31, alt. 23 mill.

5. Helix Hombroni, Pfr. *H. testa angustissime umbilicata, conoideo-subglobosa, tenuiuscula, oblique striata et pilis brevibus rigidis obsita, saturate castanea; spira breviter conoidea, acutiuscula; anfr.* 5½ *convexiusculis, lente accrescentibus, ultimo vix descendente, peripheria subangulato, basi inflato; apertura fere verticali, subauriformi-lunari, intus albida; perist. albo, marginibus remotis, supero brevi, subhorizontali, expanso, basali subflexuoso, breviter reflexo, ad umbilicum dilatato.*
Diam. maj. 34, min. 29, alt. 18 mill.

This is probably the *H. Fanellei*, Hombr. & Jacq., figured in the Voy. au Pôle Sud, Atl. pl. 4. f. 15–18, but the name has been preoccupied by Le Guillon, 1842.

6. Helix Lombei, Pfr. (Pl. XXXVI. f. 6, 7.) *H. testa imperforata, depresso-turbinata, tenuiuscula, striatula et striis levissimis antrorsum descendentibus decussatula, albida, fasciis* 2 *latis fulvo-fuscis, maculisque variis nigricantibus notata; spira conoidea, acutiuscula; anfr.* 5 *convexis, ultimo depresso-rotundato, antice descendente, peripheria subangulato (angulo antice evanescente); columella intrante, declivi, lata, excavata, alba; apertura perobliqua, lunato-ovali; perist. albo, marginibus conniventibus, dextro late expanso, basali lato, plano.*
Diam. maj. 31, min. 24, alt. 17 mill.

β. Lutescens, nigro late bifasciata.
γ. Albida, strigis obliquis diaphano-griseis picta.

7. Helix flexilabris, Pfr. *H. testa imperforata, turbinata, solidula, striolis obliquis et levissimis antrorsum descendentibus subgranulata, fulvido-albida, fasciis nigro-castaneis latis vel angustis ornata; spira turbinata, obtusula; anfr.* 5½ *convexiusculis, ultimo antice descendente, peripheria obsoletissime subangulato; columella intrante, compressa, subarcuato-declivi; apertura perobliqua, lunato-elliptica; perist. late expanso,*

marginibus conniventibus, dextro flexuoso, reflexiusculo, columellari sursum adnato.

Diam. maj. 27, min. 21½, alt. 23 mill.

Nearly allied to *H. coniformis*, Fér., from which it differs by its whorls being less convex, the aperture elliptically produced, and the peristome.

8. Helix phthisica, Pfr. *H. testa imperforata, trochiformi, solidula, striatula et rugis distinctis subdistantibus, antrorsum descendentibus sculpta, opaca, sordide alba; spira regulariter conica, acutiuscula; anfr.* 5 *planiusculis, ultimo vix descendente, paulo convexiore, subangulato, basi virenti-fulvo, radiato-striato, sulcis nonnullis spiralibus notato, nitido; columella declivi, compressa, strictiuscula, lata, subexcavata; apertura perobliqua, truncato-elliptica; perist. subincrassato, marginibus vix convergentibus, dextro breviter reflexo, antrorsum arcuato, basali lato, patente.*

Diam. maj. 23, min. 18, alt. 20 mill.

This shell differs from *H. vexillaris*, Pfr., by its solid structure, the spire being highly conical, the distant folds, the peristome, &c.

9. Helix xiphias, Pfr. *H. testa umbilicata, depressissima, tenuiuscula, oblique striata, albido-cornea, fasciis* 4 *angustis castaneis, medianis* 2 *carinæ acutæ, albæ contiguis, ornata; spira vix elevata vel subimmersa; sutura carina marginata; anfr.* 5 *convexiusculis, lente accrescentibus, ultimo non descendente; umbilico* ¼ *diametri æquante; apertura perobliqua, angulato-lunari; perist. simplice, recto, marginibus subconvergentibus, dextro antrorsum arcuato, columellari subincrassato, basi nodulum callosum gerente.*

Diam. maj. 18, min. 15½, alt. 4½–5 mill.

β. Paulo minor, fusca, fasciis obsoletis.

To be compared with *H. entomostoma*, Jacq. Voy. Pôle Sud, Atl. pl. 7. f. 22–25.

10. Helix sebacea, Pfr. *H. testa umbilicata, conoideo-semiglobosa, solidula, substriata, parum nitida, sebacea; spira convexo-conoidea, obtusa; sutura submarginata; anfr.* 6 *convexiusculis, lente accrescentibus, ultimo non descendente, obsolete angulato; umbilico aperto,* ⅓ *diametri vix æquante; apertura perobliqua, lunato-ovali; perist. subsimplice, marginibus convergentibus, dextro recto, antrorsum arcuato, basali subincrassato, ad umbilicum vix dilatato.*

Diam. maj. 17½, min. 15, alt. 10 mill.

11. H. eustoma, Pfr. *H. testa umbilicata, depressa, striatula et quincuncialiter punctata (pilosa?), aurantiaco-fusca; spira plana; anfr.* 4½ *convexis, ultimo alto, inflato, antice sensim descendente et rufescente, basi circa umbilicum infundibuli-*

formem subangulato; apertura obliqua, elegantissime rotundato-lunari; perist. subincrassato, undique breviter reflexo, fusco-carneo, marginibus conniventibus, callo junctis, columellari vix dilatato.
Diam. maj. 21, min. 17½, alt. 11 mill.

12. HELIX URSINA, Pfr. *H. testa umbilicata, depressa, tenuiuscula, striatula et sublente punctulata, vix nitidula, saturate brunnea; spira brevissime conoidea, vertice subtili; anfr. 5½ modice convexis, ultimo majore, inflato, non descendente, circa umbilicum angustum, pervium subcompresso; apertura diagonali, lunato-ovali, intus lilaceo-margaritacea; perist. tenui, marginibus distantibus, dextro arcuato, breviter expanso, columellari declivi, reflexiusculo, ad umbilicum dilatato.*
Diam. maj. 20, min. 17, alt. 10½ mill.

13. HELIX MURINA, Pfr. *H. testa umbilicata, depresse turbinato-globosa, tenui, ruguloso-striata, granulato-subasperata, saturate rufa; spira breviter conoidea, obtusula; anfr. fere 5 convexis, ultimo inflato, antice vix descendente, circa umbilicum mediocrem, pervium subcompresso; apertura diagonali, lunato-rotundata, intus submargaritacea; perist. fusco-carneo, undique breviter expanso, marginibus subconvergentibus, columellari superne dilatato, fornicatim reflexo.*
Diam. maj. 15, min. 12, alt. 9 mill.

14. PARTULA STRIGOSA, Pfr. *P. testa perforata, oblongo-conica, solidula, obsoletissime decussatula, subopaca, albida, strigis irregularibus fulvis vel rufis ornata; spira conica, apice acuta; anfr. 5 subplanis, ultimo spira vix breviore, basi subattenuato, rotundato; columella superne subtorta, basi subnodosa; apertura vix obliqua, truncato-ovali, interdum callo nodiformi parietis coarctata; perist. albo, calloso, undique subæqualiter patente.*
Long. 17–18, diam. 9 mill.

15. PARTULA MINUTA, Pfr. *P. testa perforata, globoso-conica, tenui, striatula striisque spiralibus subgranulata, pallide fulvescente, diaphana; spira brevi, conica, obtusula; anfr. 4 convexis, ultimo globoso, ⅗ longitudinis formante; columella subsimplice, leviter recedente; apertura parum obliqua, ovali; perist. tenui, albo, marginibus approximatis, dextro superne perarcuato, expanso, columellari latiore, patente.*
Long. 10½, diam. 7 mill.

16. CYCLOSTOMA (LEPTOPOMA) HANLEYANUM, Pfr. *C. testa vix perforata, globoso-turbinata, tenuiuscula, striis spiralibus confertissimis subundulatis, lirisque nonnullis levibus obtusis cincta, fulvida, flammis angulosis fuscis marmorata; spira turbinata, apice acutiusculo, nigricante; anfr. 5 convexis, ultimo inflato, circa perforationem subclausam pallide; aper-*

tura obliqua, subangulato-circulari; perist. subduplice interno vix interrupto, adnato, externo patente, concentrice striatulo, latere sinistro dilatato, fornicatim reflexo.—Operc. planum, fulvum.

Diam. maj. 12, min. 10, alt. 10 mill.

17. Helicina gratiosa, Pfr. *H. testa subgloboso-turbinata, tenuiuscula, striatula, striolis spiralibus obsoletissime notata, nitida, pellucida, fuscescenti-rubra vel lutea; spira conoidea, acutiuscula; anfr. 5 convexiusculis, ultimo subcarinato, antice rotundato; columella subrecedente, alba, callum emittente albidum; apertura obliqua, subtriangulato-semicirculari; perist. undique breviter expanso.—Operc. tenue, solidum, carneum.*

Diam. maj. 9, min. $7\frac{1}{2}$, alt. fere 6 mill.

18. Helicina suavis, Pfr. *H. testa turbinata, tenui, nitidissima, superne striatula striisque spiralibus conferte notata, rubella, albido-marmorata, vel lutea aut carnea, pallide rubro variegata; spira conoidea, acuta; anfr. fere 5 convexiusculis, ultimo compresse et acute carinato, basi convexiore; columella brevi, basi subdentata, callum emittente crassiusculum diffusum; apertura obliqua, subtriangulari; perist. albo, margine supero breviter expanso, basali reflexiusculo.—Operc.?*

Diam. maj. $10\frac{1}{2}$, min. $8\frac{3}{4}$, alt. $6\frac{2}{3}$ mill.

Besides the described new species, there were in the same collection from the Admiralty Islands, *Helix Novæ Hiberniæ*, Quoy, *fringilla*, Pfr. (beautiful and large varieties), *migratoria*, Pfr., *Sachalensis*, Pfr., *motacilla*, Pfr., *Cleryi*, Recl., *helicinoides*, Jacq., *pyxis*, Hinds, *Grimardi*, Desh., *brevipila*, Pfr., *Pfeifferi*, Phil., &c.

5. Descriptions of Thirty-three New Species of Land-Shells, from the Collection of H. Cuming, Esq. By Dr. L. Pfeiffer.

(Mollusca, Pl. XXXVI.)

1. Helix gloriosa, Pfr. *H. testa imperforata, depresse ovata, crassa, ponderosa, oblique conferte plicato-striata lirisque crebris obtusis subregularibus cincta, fulvida, strigis singulis pallidis et saturatioribus notata; spira convexa, obtusa, nuda, sub lente granulata, apice subtilissimo; anfr. $3\frac{1}{2}$ rapide accrescentibus, ultimo perinflato; apertura diagonali, lunato-ovali, intus rubella; perist. crassissimo, breviter expanso, marginibus callo crasso junctis, columellari adnato.*

Diam. maj. 64, min. 50, alt. 39 mill.

Hab. Madagascar.

2. Helix ductilis, Pfr. *H. testa umbilicata, discoidea, tenui,*

sub lente confertim striatula, albido-hyalina; spira plana; anfr. fere 5 *subplanis, sensim accrescentibus, ultimo non descendente, depresso, peripheria rotundato, basi vix convexiore; umbilico perspectivo,* $\frac{1}{4}$ *diametri superante; apertura obliqua, late lunari; perist. simplice, recto, marginibus vix convergentibus, columellari brevi, verticali, cum basali subangulatim juncto.*

Diam. maj. $6\frac{1}{2}$, min. $5\frac{1}{2}$, alt. 2 mill.

Hab. Drayton Range, North Australia (*Mr. Stutchbury*).

3. Helix Stutchburyi, Pfr. *H. testa sub obtecte perforata, turbinato-globosa, tenui, superne sub lente minute granulata, pallide fulva, ad suturam et supra medium rufo-fasciata; spira convexo-conoidea, obtusula; anfr.* 5 *convexiusculis, ultimo rotundato, antice vix descendente, basi lævigato; apertura diagonali, rotundato-lunari; perist. tenui, marginibus subconvergentibus, dextro vix expansiusculo, basali breviter reflexo, columellari fornicatim dilatato, umbilicum angustissimum fere tegente.*

Diam. maj. $15\frac{1}{2}$, min. $13\frac{1}{2}$, alt. 10 mill.

Hab. Drayton Range, North Australia (*Mr. Stutchbury*).

4. Helix delta, Pfr. *H. testa sub obtecte perforata, trochiformi, tenuiuscula, striatula et foveolata, opaca, carneo-albida; spira regulariter conica, apice acuta; anfr.* 6 *planis, ultimo non descendente, subacute carinato, basi convexiusculo; apertura fere diagonali, angulato-lunari; perist. simplice, margine dextro recto, basali reflexiusculo, columellari supra perforationem dilatato, patente.*

Diam. maj. 8, min. $7\frac{1}{2}$, alt. $6\frac{1}{2}$ mill.

Hab. Drayton Range, North Australia (*Mr. Stutchbury*).

5. Helix pliculosa, Pfr. *H. testa umbilicata, turbinato-globulosa, tenuiuscula, superne confertim plicosa, diaphana, parum nitida, rubello-cornea; spira conoidea, vertice subtili; anfr.* $4\frac{1}{2}$ *convexiusculis, ultimo supra medium subangulato, antice rotundato, vix descendente, basi inflato, circa umbilicum angustum, pervium subcompresso; apertura obliqua, lunato-rotundata; perist. albido, marginibus subconniventibus, dextro expansiusculo, columellari sursum dilatato, cum basali angulum obtusum formante.*

Diam. maj. 16, min. 13, alt. 10 mill.

Hab. Drayton Range, North Australia (*Mr. Stutchbury*).

6. Helix castrensis, Pfr. *H. testa imperforata, conoideo-semiglobosa, solida, rugoso-plicatula et irregulariter subgranulata, pallide fulvida, strigis fuscis crebris regulariter radiata; spira convexiusculo-conoidea, obtusula; anfr.* 4 *vix convexiusculis, ultimo medio subacute carinato, antice breviter descendente, inflato, basi pallidiore; apertura perobliqua, subtriangulari-lunari; perist. albo, margine dextro arcuato, breviter reflexo, basali dilatato, adnato, introrsum dentibus* 2 *obtusis plicæformibus munito.*

Diam. maj. 25, min. 21, alt. 15 mill.

Hab. West Indies.

7. Helix Lindstedti, Pfr. *H. testa sinistrorsa, perforata, conoideo-lenticulari, carinata, tenui, diaphana, superne undulato-striata et minutissime granulata, parum nitida, rubello-lutescente; spira regulariter elevata, obtusa; sutura lineari; anfr. 6 planiusculis, sensim accrescentibus, ultimo non descendente, supra medium acute carinato, basi convexo, nitidissimo, non decussato, circa perforationem non apertam albido; apertura fere diagonali, securiformi; perist. simplice, recto, margine columellari in laminam brevem revolutam dilatato.*
Diam. maj. 35½, min. 31, alt. 14 mill.
Hab. Malacca (*Rev. F. W. Lindstedt*).

8. Helix Bourguignati, Pfr. *H. testa umbilicata, globoso-depressa, tenui, minutissime malleato-striata, parum nitente, diaphana, carnea; spira breviter conoidea, vertice subtili, luteo; anfr. 6 convexiusculis, regulariter accrescentibus, ultimo rotundato, antice vix descendente; umbilico angusto, vix pervio; apertura obliqua, rotundato-lunari; perist. intus albolabiato, marginibus vix convergentibus, dextro recto, basali reflexiusculo, ad umbilicum dilatato, patulo.*
Diam. maj. 19, min. 16, alt. 11 mill.
Hab. Crimea.

9. Helix Adelaidæ, Pfr. *H. testa umbilicata, depressa, carinata, tenuiuscula, striata, alba, fascia fuscula supera ornata; spira vix elevata, vertice obtusiusculo, corneo; anfr. 4 convexiusculis, ultimo non descendente, supra peripheriam subacute carinato, basi inflato; umbilico perspectivo, ¼ diametri fere æquante; apertura fere diagonali, lunato-rotundata, ad carinam vix angulata; perist. recto, intus levissime labiato, marginibus conniventibus, columellari subpatulo.*
Diam. maj. 6, min. 5, alt. fere 3 mill.
Hab. Adelaide, Australia.

10. Helix chionodiscus, Pfr. *H. testa subobtecte umbilicata, conoideo-lentiformi, carinata, solida, rugoso-striatula, opaca, nivea; spira convexiusculo-conoidea, nucleo lævisculo, obtuso; anfr. 5 vix convexiusculis, ultimo antice breviter deflexo, infra suturam linearem turgidulo, peripheria magis minusve acute carinato, basi convexo; apertura diagonali, rhombeo-lunari; perist. subcalloso, marginibus subparallelis, dextro recto, basali per arcuato, reflexo, versus umbilicum sensim dilatato, lamina lata adnata illum fere claudente.*
Diam. maj. 26, min. 23, alt. 13 mill.
Hab. Crimea.

11. Helix Grevillei, Pfr. (Pl. XXXVI. fig. 8.) *H. testa imperforata, conica, solida, striatula et plicis validis oblique antrorsum descendentibus, interdum malleato-interruptis munita, castanea, strigis sparsis nigricantibus notata; spira conoidea,*

apice rosea, acutiuscula; anfr. $4\frac{1}{2}$ *convexiusculis, rapide accrescentibus, penultimo subtus albo-calloso, ultimo antice descendente, peripheria obtuse sed distincte angulato; apertura perobliqua, truncato-oblonga, intus pallide cærulescente; perist. nigro, expanso et reflexo, marginibus parallelis, callo nigro junctis, columellari dilatato, plano, adnato, dextrorsum subdentato, ad axin albido.*

Diam. maj. 49–58, min. 36–42, alt. 32–39 mill.
Hab. Ceylon (*Mr. Thwaites*).

12. Ennea insignis, Pfr. *E. testa breviter rimata, ovato-oblonga, tenuissima, oblique confertim striata, striisque spiralibus versus basin evanescentibus decussatula, nitida, pellucida, cereo-hyalina; spira ovoidea, apice obtusa; sutura submarginata; anfr. 7 convexiusculis, penultimo supra aperturam subplanato, ultimo* $\frac{3}{7}$ *longitudinis formante, antice arcuatim ascendente, juxta rimam subcompresso; columella recedente, dentato-plicata; perist. tenui, albo, undique expanso, margine columellari dilatato, patente.*

Long. 37, diam. 20 mill.
Hab. Gaboon, Africa (*Mr. Auboy*).

13. Bulimus Palavanensis, Pfr. *B. testa imperforata, oblonga, solida, striatula, epidermide fusco-cinerea, castaneo varie strigata, sursum detrita munita; spira convexiusculo-conica, apice obtusula; anfr.* $5–5\frac{1}{2}$ *modice convexis, ultimo spiram subæquante vel breviore; columella substricta, albida; apertura obliqua, truncato-ovali, intus griseo-cærulescente; perist. calloso, nigricante, breviter reflexo.*

Long. 48–49, diam. 27 mill.
Hab. Palawan (*Dr. Traill*).

14. Bulimus librosus, Pfr. *B. testa imperforata, ovato-oblonga, solida, striatula, epidermide subhydrophana, libro-cinerea, fusco irregulariter strigata et ad suturam ocellata obducta; spira convexiusculo-conica, obtusa; anfr.* $5\frac{1}{2}$ *planiusculis, ultimo spira vix breviore, epidermide decidua circa columellam pallidam, compressam, substrictam saturate castanea, nitida; apertura obliqua, ovali oblonga, intus cærulescente; perist. castaneo-nigro, subincrassato, revoluto, margine dextro leviter arcuato.*

Long. 40, diam. 21 mill.
Hab. Palawan (*Dr. Traill*).

15. Bulimus Lindstedti, Pfr. *B. testa sinistrorsa, imperforata, ovato-conica, solida, striatula, nitida, candida; spira elongato-conica, apice obtusula; anfr.* $6\frac{1}{2}$ *convexiusculis, ultimo* $\frac{3}{7}$ *longitudinis subæquante, obsolete angulato, antice rotundato; columella subverticali, vix torta; apertura fere diagonali, subsemicirculari; perist. leviter incrassato, expanso, marginibus callo concolore junctis.*

Long. 39, diam. 17 mill.
Hab. Malacca (*Rev. F. W. Lindstedt*).

16. Bulimus parallelus, Pfr. *B. testa compresse umbilicata, fusiformi, tenuiuscula, striatula, fulva, epidermide albida subreticulata; spira elongato-conica, obtusa; anfr. 7 modice convexis, ultimo spira paulo breviore, basi compresso; columella superne leviter torto-plicata; apertura verticali, oblonga, lateribus parallelis, basi effusa, utrinque fusco-strigata; perist. tenui, albo, expanso, margine dextro supra medium impresso, columellari latiore, sulco arcuato ab anfractu contiguo separato.*
Long. 22, diam. 7 mill.
Hab. St. Catherine's, Brazil.

17. Bulimus Catharinæ, Pfr. *B. testa breviter rimata, subperforata, fusiformi, solidula, undique leviter punctato-rugulosa, albida, punctis corneis substrigatim conspersa; spira ventroso-turrita, apice acutiuscula; anfr. 8½ convexiusculis, ultimo ⅓ longitudinis vix attingente, basi crista valida, compressa et pone illam minore munito, antice interne et externe interrupte nigro-strigato; apertura obliqua, subseptemdentata; plica 1 lamellæformi in pariete, secunda subquadrangulari ad columellam, tertia obliqua in latere sinistro baseos effusæ, 3 subæqualibus et 1 minuta in margine dextro; perist. albo, undique modice expanso.*
Long. 23–25, diam. 7½–8 mill.
Hab. St. Catherine's, Brazil.

18. Bulimus sugillatus, Pfr. *B. testa anguste umbilicata, oblongo-turrita, tenui, irregulariter plicato-striata, cornea, strigis subpunctatis opacis albis, singulisque rufis notata; spira elongato-conica, acuta; sutura levissime crenulata; anfr. 9 convexis, ultimo ⅖ longitudinis subæquante, basi subcompresso; columella leviter et stricte recedente; apertura parum obliqua, oblonga; perist. simplice, margine dextro recto, columellari sursum dilatato, fornicatim reflexo.*
Long. 24, diam. 9½ mill.
Hab. Bolivia.

19. Bulimus Gayi, Pfr. *B. testa subobtecte umbilicata, conico-ovata, solidula, fusca, fasciis angustis albis varie ornata; spira conica, obtusa; anfr. 5 modice convexis, ultimo spiram paulo superante, basi rotundato; columella leviter arcuata; apertura parum obliqua, truncato-ovali, intus albida; perist. simplice, margine dextro recto, columellari perdilatato, umbilicum angustum fere tegente.*
Long. 27, diam. 16 mill.
Hab. Bolivia.

20. Bulimus Sabatieri, Pfr. *B. testa subperforata, ovato-oblonga, tenuiuscula, sublævigata, irregulariter striatula, strigis undulatis pallide lutescentibus et saturate brunneis alternantibus picta; spira conica, sursum pallidiore, apice obtuso; anfr. 6 parum convexis, ultimo spira paulo breviore, infra medium obsolete angulato; columella stricta, violaceo-fusca; apertura parum*

obliqua, anguste elliptica ; perist. simplice, recto, margine columellari sursum dilatato, reflexo, subadnato.
Long. 22, diam. 12 mill; ap. 11 mill. longa, 5½ lata.
Hab. Banks of the "Fleuve blanc," China? (*Mr. Sabatier*).

21. Bulimus Dutaillyi, Pfr. *B. testa subperforata, oblongo-turrita, tenui, confertim plicatula, nitida, albida, fasciis 6–7 interruptis spadiceis ornata ; spira elongata, apice acuta ; anfr. 7 convexiusculis, ultimo ⅔ longitudinis subæquante, basi attenuato ; columella vix arcuata, subrecedente ; apertura vix obliqua, elliptico-oblonga ; perist. simplice, recto, margine columellari papyraceo, superne reflexo, subadnato.*
Long. 31, diam. 12 mill. ; ap. 13½ mill. longa, 6½ lata.
Hab. Brazils (*Mr. Dutailly*).

22. Bulimus pliculatus, Pfr. *B. testa umbilicata, ovato-conica, tenuiuscula, plicis levibus, subvariciformibus sculpta, haud nitente, pallide grisea, strigis angustissimis albis et fuscis irregulariter picta ; spira conica, acuta ; anfr. 7 convexiusculis, ultimo spira paulo breviore, basi circa umbilicum mediocrem, rotundum subcompresso ; columella substricta ; apertura vix obliqua, elliptico-oblonga ; perist. simplice, recto, margine columellari a basi dilatato, subfornicatim reflexo.*
Long. 23, diam. 11⅓ mill.
Hab. Bolivia.

23. Bulimus Clouéi, Pfr. *B. testa perforata, ovato-turrita, solidula, striata et interdum submalleata, alba, strigis, maculis et punctis corneo-fuscis irregulariter notata ; spira elongato-conica, acutiuscula ; anfr. 7 modice convexis, ultimo ⅔ longitudinis vix æquante, subangulato, circa perforationem non perviam corneo-areoloto ; columella breviter recedente ; apertura obliqua, sinuato-ovali, intus fuscula ; perist. breviter expanso, margine columellari superne dilatato, reflexo, tum angulo obtuso ad basin descendente.*
Long. 22, diam. 10 mill.
Hab. Brazil (*Mr. Cloué*).

24. Bulimus puncticulatus, Pfr. *B. testa profunde et compresse umbilicata, ovato-conica, tenuiuscula, sublævigata, nitida, albida, punctis pellucidis raris conspersa ; spira elongato-conica, acutiuscula ; anfr. 7 planiusculis, summis lutescentibus, ultimo spira breviore, antice ascendente, basi levissime compresso ; columella subrecedente, leviter arcuata ; apertura subverticali, oblongo-ovali ; perist. simplice, margine dextro breviter expanso, columellari perdilatato, subflexuoso, patente.*
Long. 29, diam. 12½ mill.
Hab. Bolivia.

25. Partula alabastrina, Pfr. *P. testa compresse umbilicata, oblongo-conica, tenui, levissime striatula, vix nitidula, lutescenti-alabastrina ; spira conica, obtusula ; anfr. 5½ convexis, ultimo*

spiram vix superante, basi attenuato, subcompresso; apertura parum obliqua, oblique truncato-oblonga; columella substricte recedente; perist. albo, marginibus callo tenuissimo junctis, dextro late expanso, columellari latissimo, patente.
Long. 23, diam. 11 mill.
Hab. Salomon's Islands.

26. Cyclostoma (Cyclotus) Lindstedti, Pfr. *C. testa umbilicata, depressa, subdiscoidea, distincte striata, strigis fulgurantibus nigro-fuscis et luteis, superne latis, subtus linearibus picta; spira vix elevata; anfr.* 4 *convexis, celeriter accrescentibus, ultimo terete, vix descendente; umbilico lato.* $\frac{1}{3}$ *diametri superante; apertura obliqua, subcirculari; perist. breviter adnato, duplicato; interno expansiusculo, externo albo, undique subæqualiter patente.—Operc.* Cycloti.
Diam. maj. 11, min. 9, alt. 4 mill.
Hab. Mount Ophir, Malacca (*Rev. F. W. Lindstedt*).

27. Cataulus hæmastomus, Pfr. *C. testa breviter et profunde rimata, ovali-pyramidali, tenuiuscula, conferte striatula, parum nitente, diaphana, citrina; spira convexiusculo-turrita, apice subacuta; sutura submarginata; anfr.* 8 *convexis, ultimo vix attenuato, basi axin excedente; carina umbilicali valida, compressa, antrorsum vix dilatata; periomphalo lato, costulato-striato; apertura subcirculari; perist. fusco-sanguineo, simplice, ad anfractum contiguum angustato, lateribus rectangule late patente et revoluto, basi subproducto, canali mediocri perforato.*
Long. 27–28, diam. 11–12 mill.
Hab. Ceylon (*Mr. Thwaites*).

28. Helicina (Alcadia) rhamphostyla, Pfr. *H. testa conoideo-globosa, solida, sublævigata, albida vel lutescente; spira breviter conoidea, obtusula; anfr.* $4\frac{1}{2}$, *superis vix convexiusculis, ultimo magno, rotundato; columella lata, superne in callum crassum, semicircularem dilatata, basi dextrorsum curvata; apertura obliqua, subsemicirculari; perist. expanso, tenui, intus calloso, margine dextro subrepando, basali sinu profundo ab extremitate rostriformi columellæ disjuncto, præterea plica pone columellam intrante munito.—Operc.?*
Diam. maj. $15\frac{1}{2}$, min. 13, alt. 12 mill.
Hab. ——?

29. Helicina Norfolkensis, Pfr. *H. testa depresso-turbinata, solidula, leviter striata, albida; spira conoidea, versus apicem minute papillarem lutescente; anfr.* 5 *vix convexiusculis, ultimo antice rugoso, peripheria subangulato, basi planiusculo, callo granuloso nitido circumscripto et epidermide fulva decidua obducto; columella brevi, arcuata; apertura fere diagonali, subtriangulari-lunari; perist. simplice, recto, margine basali subincrassato.—Operc. testaceum, pallidum.*
Diam. maj. 14, min. 12, alt. 8 mill.
Hab. Norfolk Islands.

30. Helicina pictella, Pfr. *H. testa conoideo-depressa, tenui, sub lente tenuiter et subconferte lirata, parum nitida, diaphana, pallide cornea, ad suturam rubro-maculata; spira breviter conoidea; anfr. 4 convexiusculis, ultimo subangulato, basi callo tenui subcircumscripto obducto; columella brevissima, simplice, tenui; apertura parum obliqua, semiovali; perist. simplice, recto, margine basali angulum rectum cum columella formante.—Operc.?*
Diam. maj. 4, min. $3\frac{1}{3}$, alt. 2 mill.
Hab. Norfolk Islands.

31. Helicina Draytonensis, Pfr. *H. testa conoidea, solidula, ruguloso-striata striisque spiralibus nonnullis notata, parum nitida, carnea; spira conoidea, apice mucronulata, lutea; anfr. $4\frac{1}{2}$ planiusculis, ultimo subcarinato, basi convexiore, callo tenui, subdiffuso obducto; apertura diagonali, triangulari-semiovali; perist. albo, breviter expanso, margine basali leviter arcuato, angulatim cum columella brevi, simplice juncto.—Operc.?*
Diam. maj. $5\frac{1}{2}$, min. $4\frac{1}{2}$, alt. $3\frac{1}{2}$ mill.
Hab. Drayton Range, North Australia.

32. Helicina Heatei, Pfr. *H. testa subdepressa, tenuiuscula, striatula et subgranulata, parum nitida, fasciis latis saturate purpureis et albis picta; spira brevissime conoidea, mucronulata; anfr. 5 vix convexiusculis, ultimo lato, peripheria subcarinato, basi circa callum fulvo-aurantiacum, circumscriptum albo; apertura perobliqua, triangulari-semiovali; columella brevi, perarcuata; perist. reflexo, læte aurantiaco, margine basali levissime arcuato, immediate in callum basalem continuato.—Operc.?*
Diam. maj. 14, min. $11\frac{1}{3}$, alt. $7\frac{1}{2}$ mill.

β. Lutea, spira et fascia unica anfr. ultimi supera purpureis, callo basali et peristomate igneis.
Hab. Island of Granada, West Indies (named after *R. W. Heate, Esq.*, Lieut.-Governor of the Island).

33. Helicina rufa, Pfr. *H. testa subconoideo-depressa, solidula, subrugoso-striata et punctulata, nitida, rufa; spira subconoideo-convexa, vertice subtili; anfr. $4\frac{1}{2}$, superis planiusculis, ultimo lato, depresso, peripheria subrotundato; apertura diagonali, late semiovali; columella verticaliter ab anfr. penultimo descendente, leviter curvata, antice in tuberculum desinente, callum basalem emittente subgranulatum, circumscriptum; perist. breviter expanso, albo-limbato.—Operc. concolor.*
Diam. maj. 13, min. 11, alt. $6\frac{2}{3}$ mill.

β. Pallide straminea, perist. intus pallide aurantiaco.
γ. Minor, rufa.
Diam. maj. 10, min. $8\frac{2}{3}$, alt. $5\frac{1}{2}$ mill.
Hab. Haiti (*Mr. Sallé*).

J. Wolf, lith.

M & N. Hanhart. Imp.

PARADOXURUS STRICTUS, *Hodgson*

J. Wolf. lith.

M & N. Hanhart, Imp.

MUSTELA STRIGIDORSA. Hodgson.

J. Wolf lith.

Mintern Bros. imp.

ARCTONYX ISONYX, *Hodgson*.

6. Descriptions of Two New Species of Melampus, from Mr. Cuming's Collection. By Dr. L. Pfeiffer.

1. Melampus oblongus, Pfr. *M. testa subrimata, oblonga, solida, lævigata, fulvido-carnea, albido obsolete fasciata et strigata, strigisque variciformibus irregularibus fusculis notata; spira convexo-conoidea, apice mucronulata, plerumque fusca; sutura lineari, lacera; anfr.* 8–9 *vix convexiusculis, ultimo* $\frac{3}{5}$ *longitudinis formante, prope suturam subangustato, basi saccato; apertura verticali, angusta, callo profundo nodiformi parietali et plica columellari obliqua, compressa coarctata; perist. fusco-limbato, margine dextro acuto, intus callo albo, subplicifero munito, columellari incrassato, adnato.*

Long. $11\frac{1}{2}$, diam. 6 mill.

β. Paulo minor, gracilior, castaneus, albo-trifasciatus.

Hab. Island of Bermuda.

Habitu similis *M. cingulato*, sed evidenter affinior *M. angiostomo*, Desh., a quo differt statura, numero anfractuum et callo marginis dextri non denticulato.

2. Melampus (Ophicardelus) Stutchburyi, Pfr. *M. testa subumbilicata, fusiformi-ovata, solidula, striatula, superne liris obtuse elevatis circumdata, opaca, nigro-fusca, albo trifasciata; spira convexo-conica, apice acuta, interdum suberosa; sutura lineari, deorsum sublacera; anfr.* 7 *planis, ultimo fere* $\frac{3}{5}$ *longitudinis formante, infra medium obsolete spiraliter striato, basi parum attenuato; apertura subverticali, semiovali; plica parietali* 1 *compressa, alba, intrante, extus in carinam subacutam, periomphalum infundibuliformem cingentem producta; plica columellari compressa, oblique vix ascendente; perist. acuto, margine dextro inermi, superne repando, columellari fornicatim reflexo, libero, umbilicum simulante.*

Long. 16, diam. 8 mill.

Port Curtis, Australia (*Mr. Stutchbury*).

7. Catalogue of a Collection of Mammalia from Nepal, Sikim, and Tibet, presented to the Hon. East India Company by B. H. Hodgson, Esq., in 1853*. By Thomas Horsfield, M.D., F.R.S., etc.

(Mammalia, Pl. XLVII.–L.)

1. Semnopithecus schistaceus, Hodgson, J. A. S. Beng. ix. p. 1212; Horsf. Catal. Mamm. Mus. E. I. C. p. 6.

Presbytes Entellus, Gray, Catal. Hodgs. Coll. p. 1.

Langur, Hodgson.

Hab. Nepal; Hills.

* Those marked with an asterisk were discovered since the publication of the Catalogue of Mammalia presented to the British Museum by B. H. Hodgson, Esq. in 1846.

2. Macacus Rhesus, Desm., Gray, Catal. Hodgs. Coll. p. 2.
Macacus (*Pithex*) *oinops*, Hodgson, J. A. S. Beng. ix. p. 1211
Hab. Nepal; Hills.

*3. Megaderma schistacea, Hodgson, J. A. S. Beng. xvi. p. 889, with a figure (1847); Horsfield, Ann. Nat. Hist. n. s. xvi. p. 101 (1855).
Megaderma Lyra, Geoffr. apud Kelaart, Prodr. Faunæ Zeylanicæ, Mammalia, p. 11.
Hab. Sikim Tarai.

*4. Rhinolophus perniger, Hodgson, J. A. S. Beng. xii. p. 414 (1843), xvi. p. 896; Blyth, J. A. S. Beng. xiii. p. 484; Horsfield, Ann. Nat. Hist. n. s. xvi. p. 102 (1855).
Hab. Central regions of the Sub-Himalaya.

5. Rhinolophus tragatus, Hodgs. J. A. S. Beng. iv. p. 699; Gray, Catal. Mamm. Brit. Mus. p. 22; Catal. Hodgson's Coll. p. 2; Blyth, J. A. S. Beng. xiii. p. 484; Horsfield, Ann. Nat. Hist. n. s. xvi. p. 102 (1855).
Hab. Central hilly regions, Nepal.

6. Hipposideros armiger, Hodgs. J. A. S. Beng. iv. p. 699; Gray, Catal. Mamm. Brit. Mus. p. 24; Catal. Hodgs. Coll. p. 3; Blyth, J. A. S. Beng. xiii. p. 488.
Hab. Nepal; Central hilly regions.

*7. Vespertilio Siligorensis, Hodgson, Horsfield, Ann. Nat. Hist. n. s. xvi. p. 102 (1855).
Hab. Nepal; Central Hills.

*8. Vespertilio Darjelingensis, Hodgson, Horsfield, Ann. Nat. Hist. n. s. xvi. p. 102 (1855).
Hab. Nepal; Central Hills.
"Differs only from the English *V. mystacinus* in having the tips of the fur of the back brighter."—R. H. Tomes, Ann. N. H. 1856, p. 27.

*9. Scotophilus Coromandelicus, F. Cuvier, sp.
Vespertilio coromandelicus, Lesch. & Cuv. Nouv. Ann. de la Mus.; Schinz, Syst. Mamm. p. 171; Horsfield, Ann. Nat. Hist. n. s. xvi. p. 103 (1855).
Hab. Nepal.

*10. Murina suillus, Temm. sp.
Vespertilio suillus, Temm. Monogr. ii. p. 224. t. 56. f. 4, 5, 6.
Murina suillus, Gray, Ann. Nat. Hist. 1842, p. 259.
Hab. Nepal.

*11. Barbastellus Daubentonii, Mém. Acad. Par. 1759, ii. p. 8; Bell, Brit. Quad.
Barbastellus communis, Gray, Mag. Zool. & Bot. ii. p. 13.
Hab. Nepal.

*12. Plecotus homochrous, Hodgson, J. A. S. Beng. xvi. p. 894; Horsfield, Ann. Nat. Hist. n. s. xvi. p. 103 (1855).
Hab. Central regions of the Sub-Himalaya.

*13. Plecotus Darjelingensis, Hodgson, Horsfield, Ann. Nat. Hist. n. s. xvi. p. 103 (1855).
Hab. Nepal; Central Hills.

*14. Lasiurus Pearsoni, Horsfield, Catal. Mamm. East India Comp. Museum, p. 36 (1851); Ann. Nat. Hist. n. s. xvi. p. 103 (1855); Blyth, J. A. S. Beng. xx. p. 524.
Hab. Darjeling.

*15. Nycticejus nivicolus, Hodgson; Horsfield, Ann. Nat. Hist. n. s. xvi. p. 104 (1855).
Hab. Nepal.

16. Felis Tigris, Linn.; Horsfield, Catal. Mamm. Mus. E. I. C. p. 43.
Hab. Tarai of Nepal.

17. Felis Uncia, Erxleb. Syst. Mamm. p. 508.
Leopardus Uncia, Gray, Catal. Mamm. Br. Mus. p. 41.
Uncia Irbis, Ehrenb. sp.; Gray, Ann. Nat. Hist. xiv. p. 394 (1854).
Felis Uncioides, Hodgson, MSS. List of Mamm. presented to E. I. C. Museum (1852); Horsfield, Ann. Nat. Hist. n. s. xvi. p. 105 (1855).
I'ker of Tibetans, Hodgson.
Hab. Tibet.

18. Felis macrosceloides, Hodgson, Calc. Journ. N. H. iv. p. 286; Ill. P. Z. S. 1853, Mamm. t. 38; Horsfield, Ann. Nat. Hist. n. s. xvi. p. 105 (1855).
Felis macroscelis, Hodgson, J. A. S. Beng. xi. p. 275.
Felis, n. sp., Tickell, J. A. S. Beng. xii., with a figure.
Lamchitia of Tibetans, Hodgson.
Hab. Bengal; Tibet.

19. Felis Murmensis, Hodgson, P. Z. S. 1832, p. 10.
Varietas *nigra*, Horsfield, Ann. Nat. Hist. n. s. xvi. p. 105 (1855).
Murmi Cat, Hodgson.
Hab. Hilly regions.

*20. Felis Charltoni, Gray, Brit. Mus.
Uncia Charltoni, Gray, Ann. Nat. Hist. xiv. p. 394 (1854).
Felis Duvancelli, Hodgson, MSS. 1852.
Hab. Hilly regions.

21. Felis pardochrous, Hodgson.
Felis pardochrous, Hodgs. Calcutta Journ. N. H. iv. p. 286.
Felis (Leopardus) pardochrous, Horsfield, Catal. Mamm. Mus. E. I. C. p. 47.
Hab. Hilly regions.

22. Felis (Lynx) Chaus, Güldenst.; Horsfield, Catal. Mamm. Mus. E. I. C. p. 50.
Chaus lybicus, Gray, Catal. Mamm. Brit. Mus. p. 45; Catal. Hodgs. Coll. p. 7.
Bowbhow, Nepalese, Hodgson.
Hab. Hills and Tarai of Nepal.

23. Prionodon pardicolor, Hodgs. Calcutta Journ. N. H. ii. p. 57; J. A. S. Beng. x. p. 909; Horsfield, Catal. Mamm. Mus. E. I. C. p. 52.
Linsang pardicolor, Gray.
Hab. Hills of Nepal.

24. Viverra Zibetha, Linn.; Gray & Hardw. Ill. Ind. Zool. 11. t. 5; Catal. Mamm. Brit. Mus. p. 52; Hodgs. Catal. p. 7; Horsfield, Catal. Mamm. Mus. E. I. C. p. 54.
Hab. Nepal; Hills and Tarai.

25. Viverricula Indica, Geoffr. sp.; Hodgson, J. A. S. Beng. x. p. 909; Horsfield, Catal. Mamm. Mus. E. I. C. p. 58.
Viverricula Malaccensis, Gray, Catal. Mamm. Brit. Mus. p. 48; Hodgs. Catal. p. 8.
Sayer, Hodgson.
Hab. Nepal; Tarai.

*26. Paradoxurus strictus, Hodgson (Pl. XLVII.); Horsfield, Ann. Nat. Hist. n. s. p. 105 (1855).
Hab. Nepal; Plains.

*27. Paradoxurus quadriscriptus, Hodgson (Pl. XLVIII.); Horsfield, Ann. Nat. Hist. n. s. xvi. p. 106 (1855).
Hab. Nepal; Hills.

28. Paradoxurus Grayi, Bennett, P. Z. S. 1835, p. 118.
Paguma Grayi, Gray, Catal. Mamm. Brit. Mus. p. 54; Catal. Hodgs. Coll. p. 9; Horsf. Catal. Mamm. Mus. E. I. C. p. 66.
Paradoxurus nipalensis, Hodgson, As. Res. xix. p. 76.
Hab. Nepal; Hills.

29. Hyæna striata, Zimm.
Hyæna virgata, Hodgson, MSS. 1852.
Hyæna striata, Horsfield, Ann. Nat. Hist. n. s. xvi. p. 107.
Lakerbagha, Nepal, Hodgson.
Hab. Tarai of Nepal.

30. Cuon primævus, Hodgson, Calcutta Journ. Nat. Hist. ii. pp. 205, 412; Gray, Catal. Mamm. Brit. Mus. p. 73; Catal. Hodgs. Coll. p. 10; Horsfield, Catal. Mamm. Mus. E. I. C. p. 73.
Hab. Hills and Plains.

31. Canis aureus, Linn. (Catal. Hodgson's Coll. p. 11; Horsfield, Catal. Mamm. Mus. E. I. C. p. 80).
Sacalius indicus, Hodgs. J. A. S. Beng. x. p. 918.
Siyar of the Nepalese, Hodgson.
Hab. Nepal; Plains.

32. Vulpes Bengalensis, Shaw, sp.; Gray, Catal. Mamm. Brit. Mus. p. 61; Catal. Hodgs. Coll. p. 11; Horsfield, Catal. Mamm. Mus. E. I. C. p. 84.
Vulpes indicus, Hodgson, J. A. S. Beng. x. p. 918.
Lomer of the Nepalese, Hodgson.
Hab. Nepal; Tarai.

33. Vulpes montanus, Pearson, Beng. Sport. Mag. iv. p. 126 (1836); Gray, Catal. Hodgs. Coll. p. 12; Horsfield, Catal. Mamm. Mus. E. I. C. p. 87.
Wamu of the Nepalese, Hodgson.
Hab. Tibet.

34. Vulpes ferrilatus, Hodgson, J. A. S. Beng. xi. p. 278, fig. (1842); Gray, Catal. Hodgs. Coll. p. 12.
Iger of Tibetans, Hodgson.
Hab. Tibet.

*35. Lupus laniger, Hodgson; Horsfield, Ann. Nat. Hist. n. s. xvi. p. 107 (1855).
Changu of Tibetans, Hodgson.
Hab. Tibet.

36. Herpestes Nyula, Hodgs. J. A. S. Beng. v. p. 236; Gray, Catal. Hodgs. Coll. p. 8; Horsfield, Catal. Mamm. Mus. E. I. C. p. 92.
Hab. Plains of Nepal.

37. Urva cancrivora, Hodgson, J. A. S. Beng. vi. p. 561; Gray, Catal. Hodgs. Coll. p. 8; Horsfield, Catal. Mamm. Mus. E. I. C. p. 93.
Hab. Tibet.

38. Martes flavigula, Boddaert, sp.; Gray, Catal. Hodgs. Coll. p. 12; Horsfield, Catal. Mamm. Mus. E. I. C. p. 98.
Hab. Nepal; Hills.

39. Mustela canigula, Hodgson, J. A. S. Beng. xi. p. 279 (1842); Calcutta Journ. N. H. iv. p. 287; Gray, Catal. Hodgs. Coll. p. 13.
Hab. Nepal; Hills.

*40. Mustela strigidorsa, Hodgson (Pl. XLIX.); Gray, P. Z. S. 1853, p. 191; Horsfield, Ann. N. H. n. s. xvi. p. 107 (1855).
Hab. Sikim.

41. Mustela (Putorius) Kathiah, Hodgs. J. A. S. Beng. iv. p. 702; Horsfield, Catal. Mamm. Mus. E. I. C. p. 102.
Mustela Kathiah, v. *auriventer*, Hodgs. J. A. S. Beng. x. p. 909; Gray, Catal. Hodgs. Coll. p. 13.
Kathia Nyul, Nepalese, *Hodgson*.
Hab. Kachars.

*42. Putorius Tibetanus, Hodgson, J. A. S. Beng. xviii. pt. 1. p. 446 (1849); Horsfield, Catal. Mamm. Mus. E. I. C. p. 105.
Tibetan Stoat, Hodgson.
Hab. Tibet.

43. Helictis Nipalensis, Hodgson, J. A. S. Beng. v. p. 237; Gray, Catal. Hodgs. Coll. p. 14; Horsfield, Catal. Mamm. Mus. E. I. C. p. 108; Gray, P. Z. S. 1853, p. 191.
Oker of the Nepalese, Hodgson.
Hab. Nepal; Tibet.

*44. Arctonyx Isonyx, Hodgson, MSS. (Pl. L.)
? *Arctonyx collaris*, F. Cuv.
Hab. Nepal; Tarai.

This species was discovered by Mr. Hodgson seven years back in the Tarai of Nepal, and is considered by him to be distinct from the *A. collaris*, but, upon comparison with specimens of *A. collaris* at the British Museum and the India House, its value as a distinct species requires more specimens for comparison.

*45. Meles leucurus, Hodgson, sp.; Gray, Ann. N. H. xii. n. s. p. 221; P. Z. S. 1853, p. 191; Horsfield, Ann. Nat. Hist. n. s. xvi. p. 108 (1855).
Taxidea leucurus, Hodgs. J. A. S. Beng. xvi. p. 763 (1847), with a figure.
Pseudomeles leucurus, Hodgson, MSS. 1852.
Tumpha of Tibetans, Hodgson.
Hab. Plains of Tibet.

46. Lutra Chinensis ?, Gray, Ann. N. H. 1836; Catal. Mamm. Br. Mus. p. 71; Catal. Hodgs. Coll. p. 14; Horsfield, Catal. Mamm. Mus. E. I. C. p. 116; Ann. N. H. n. s. xvi. p. 109 (1855).
Lutra Tarayensis, Hodgson, J. A. S. Beng. viii. p. 319 (1839); Blyth, J. A. S. Beng. xi. p. 99.
Udh of Nepalese, Hodgson.
Hab. Nepal; Hills and Tarai.

*47. Aonyx Sikimensis, Hodgson; Horsfield, Ann. N. H. n. s. xvi. p. 109 (1855).
Hab. Nepal; Hills and Tarai.
Aonyx sikimensis:—Snout to vent 24 inches; tail 13; head $4\frac{1}{2}$; palma $2\frac{5}{8}$; planta $3\frac{1}{2}$. Colour: a medial earthy brown, paler below, especially on head and neck.—*Hodgson, MSS.*

48. Helarctos Tibetanus, Cuvier; Gray, Catal. Mamm. Brit. Mus. p. 73; Catal. Hodgs. Coll. p. 15; Horsfield, Catal. Mamm. Mus. E. I. C. p. 124.
Bhalu of the Nepalese, Hodgson.
Hab. Nepal; hilly regions.

49. Ailurus fulgens, F. Cuvier; Hardwicke, Trans. Linn. Soc. xv. p. 161; Gray, Catal. Mamm. Brit. Mus. p. 75; Catal. Hodgs. Coll. p. 15; Horsfield, Catal. Mamm. Mus. E. I. C. p. 126.
Ailurus ochraceus, Hodgson, J. A. S. Beng. xvi. p. 1118.
Hab. Nepal.

50. Talpa micrura, Hodgson, J. A. S. Beng. x. p. 910; Gray, Catal. Mamm. Br. Mus. p. 75; Catal. Hodgs. Coll. p. 16; Horsfield, Catal. Mamm. Mus. E. I. C. p. 129.
? *Talpa cryptura*, Blyth.
Purium of the Nepalese, Hodgson.
Hab. Nepal; Hills.

*51. Sorex murinus, Linn.; Gray, Catal. Hodgs. Coll. p. 16; Horsfield, Catal. Mamm. Mus. E. I. C. p. 134; Ann. N. H. n. s. xvi. p. 110; Blyth, J. A. S. Beng. 1855, p. 28; Tomes, Ann. N. H. n. s. xvii. p. 15 (1856).
Chuchunder, Hodgson.
Hab. Nepal; Plains.

*52. Sorex saturatior, Hodgson; Horsfield, Ann. N. H. n. s. xvi. p. 110 (1855); Tomes, Ann. N. H. n. s. xvii. p. 22.
Hab. Nepal; Hills.

*53. Sorex leucops, Hodgson; Horsfield, Ann. N. H. n. s. xvi. p. 111 (1855); Tomes, Ann. N. H. n. s. xvii. p. 22.
White-lipped Shrew, Hodgson.
Hab. Nepal; Hills.

54. Sorex pygmæus, Hodgson, J. A. S. Beng. x. p. 910; Ann. N. H. xv. p. 269; Gray, Catal. Hodgs. Coll. p. 16; Horsfield, Ann. N. H. n. s. xvi. p. 111; Blyth, J. A. S. Beng. 1855, p. 32; Tomes, Ann. N. H. n. s. xvii. p. 20.
Hab. Nepal; Central Hills.

55. Sorex nemorivagus, Hodgson, Calc. Journ. N. H. iv. p. 288; Ann. N. H. xv. p. 269; Gray, Catal. Hodgs. Coll. p. 16; Horsfield, Ann. N. H. n. s. xvi. p. 111; Blyth, J. A. S. Beng. 1855, p. 31; Tomes, Ann. N. H. n. s. xvii. p. 18.
Hab. Nepal; Central Hills.

*56. Sorex soccatus, Hodgson, Ann. N. H. xv. p. 270; ? Blyth, J. A. S. Beng. 1855, p. 30; Tomes, Ann. N. H. n. s. xvii. p. 17.
Hab. Nepal; Central Hills.

*57. Soriculus nigrescens, Gray, sp.
Corsira nigrescens, Gray, Ann. N. H. x. p. 261 (1842).
Soriculus nigrescens, Blyth, J. A. S. Beng. 1855, p. 36.
Sorex Sikimensis, Hodgson, Ann. N. H. iii. n. s. p. 203; Horsfield, Catal. Mamm. Mus. E. I. C. p. 136; Ann. N. H. n. s. xvi. p. 111.
Sorex soccatus, Hodgs. Calc. Journ. N. H. iv. p. 288 (not described).
Sorex aterrimus, Blyth, J. A. S. Beng. 1843, p. 128?
Chika of the Nepalese, Hodgson.
Hab. Nepal.

*58. Corsira (?) caudata, Hodgson, sp.
Sorex caudatus, Hodgson, Ann. N. H. n. s. iii. p. 203; Horsfield, Catal. Mamm. Mus. E. I. C. p. 135; Ann. N. H. n. s. xvi. p. 111.
Corsira (?) *caudata*, Blyth, J. A. S. Beng. 1855, p. 37; Tomes, Ann. N. H. n. s. xvii. p. 27.
Hab. Sikim and Darjeeling.
"After a very careful comparison of two specimens of *C. caudata*, in the Museum at the India House, with a specimen of the *C. alpina* of Europe, I concluded that they were very closely affined, if not perfectly identical. The naked compressed tip of the tail in the last-mentioned species, as remarked by Mr. Blyth, also occurs in one of the examples of *C. caudata*; indeed, were this specimen to be placed along with the European species, it would be almost impossible to distinguish them."—*R. F. Tomes.*

59. Mus Nipalensis, Hodgson, J. A. S. Beng. x. p. 915; Gray, Catal. Hodgs. Coll. p. 19.
Hab. Nepal; Hills.

*60. Mus Tarayensis, Hodgson; Horsfield, Ann. N. H. n. s. xvi. p. 112 (1855).
Hab. Nepal; Tarai; Plains.

*61. Mus Morungensis, Hodgson; Horsfield, Ann. N. H. n. s. xvi. p. 112 (1855).
Hab. Nepal, Tarai, Plains.

*62. Mus plurimammis, Hodgson; Horsfield, Ann. N. H. n. s. xvi. p. 112 (1855).
Hab. Nepal, Tarai, Plains.

Remark.—This species, according to Mr. Hodgson, has eighteen teats.

*63. Mus æquicaudalis, Hodgson, Ann. N. H. n. s. iii. p. 203; Horsfield, Catal. Mamm. Mus. E. I. C. p. 144.
Hab. Nepal; Hills.

*64. Mus caudatior, Hodgson, Ann. N. H. n. s. iii. p. 203; Horsfield, Catal. Mamm. Mus. E. I. C. p. 144.
Hab. Nepal; Hills.

*65. Neodon Sikimensis, Hodgson, Ann. N. H. n. s. iii. p. 203; Horsfield, Catal. Mamm. Mus. E. I. C. p. 146.
Phalchua of the Nepalese, Hodgson.
Hab. Sikim, 7000 to 15,000 feet.

"Snout to vent $4\frac{3}{4}$ inches; head $1\frac{1}{4}$; tail $1\frac{3}{4}$; palma $\frac{7}{16}$ths; planta $\frac{3}{4}$ths. Weight $1\frac{1}{4}$ oz. Teats six in number. Intestines 30 inches; small 16 inches; great 14 inches. Cæcum 6 inches, sacced and banded. Stomach bagpipe-shaped, with slight medial constriction and proximate orifices.

"Breeds in hollow decayed fallen trees, or roots of trees. Nest saucer-shape, made of soft grass. Young three or four."—*Hodgson, MSS.*

66. Arvicola ? Myothrix, Hodgson, J. A. S. Beng. x. p. 915.
Mus ? *Myothrix*, Hodgson, Ann. N. H. 1845, p. 267; Gray, Catal. Hodgs. Coll. p. 15.
Hab. Nepal; Central Hills.

*67. ? Hystrix leucurus, Sykes, P. Z. S. 1831, p. 103; Gray, Catal. Hodgson's Coll. p. 20.
Hystrix Alophus, Hodgson, MSS. 1852.
Sahi of the Nepalese, Hodgson.
Hab. Nepal; Hills and Plains.

68. Lepus pallipes, Hodgson, J. A. S. Beng. xi. p. 288.
Lepus Taloi (Pallas), Gray, Catal. Mamm. Brit. Mus. p. 127; Catal. Hodgs. Coll. p. 20.
Rek, Rigong of the Tibetans, Hodgson.
Hab. Tibet.

69. Lepus macrotus, Hodgson, J. A. S. Beng. ix. p. 1183; Gray, Catal. Hodgs. Coll. p. 20; Horsfield, Catal. Mamm. Mus. E. I. C. p. 147.
Lepus ruficaudatus, Is. Geoffroy.
Hab. Nepal; Plains.

*70. Caprolagus hispidus, Pearson.
Lepus hispidus, Pearson, Beng. Sport. Mag. 1843, p. 131.
Caprolagus hispidus, Blyth, J. A. S. Beng. xiv. p. 248; Horsfield, Catal. Mamm. Mus. E. I. C. p. 148.
Hab. Nepal; Tarai.

71. Lagomys nipalensis, Hodgson, J. A. S. Beng. x. p. 854; Gray, Catal. Hodgs. Coll. p. 21; Horsfield, Catal. Mamm. Mus. E. I. C. p. 148.
The Abra, Hodgson.
Hab. Tibet; Nepal.

72. Sciurus macruroïdes, Hodgson, Calcutta Journ. N. H. 1841, p. 220; Gray, Catal. Hodgs. Coll. p. 22.
Salheu of the Nepalese, Hodgson.
Hab. Nepal; Hills.

73. Sciurus Lokriah, Hodgs. J. A. S. Beng. x. p. 915; Gray, Catal. Hodgs. Coll. p. 23; Horsf. Catal. Mamm. Mus. E.I.C. p. 153.
Hab. Nepal; Hills.

74. Sciurus Lokroides, Hodgs. J. A. S. Beng. v. p. 232; Gray, Catal. Hodgs. Coll. p. 23; Horsf. Catal. Mamm. Mus. E.I.C. p. 153.
Hab. Nepal; Hills.

*75. Sciurus M'Clellandi, Horsfield, P. Z. S. 1839; Catal. Mamm. Mus. E. I. C. p. 151; Ann. Nat. Hist. n. s. xvi. p. 113.
Sciurus Horsfieldi, Hodgson, MSS. 1852.
Striped Squirrel, Hodgson.
Hab. Sikim; Assam (*M'Clelland*).

76. Pteromys nobilis, Gray.
Sciuropterus nobilis, Gray, Ann. N. H. 1842, p. 263.
Pteromys nobilis, Gray, Catal. Hodgs. Coll. p. 22; Horsf. Catal. Mamm. Mus. E. I. C. p. 160.
Sciuropterus chrysothrix, Hodgs. J. A. S. Beng. xiii. p. 67.
Puruj-blakut of the Nepalese, Hodgson.
Hab. Nepal; Hills.

77. Pteromys caniceps, Gray.
Sciuropterus caniceps, Gray, Ann. N. H. 1842, p. 262.
Pteromys caniceps, Gray, Catal. Hodgs. Coll. p. 21; Horsf. Catal. Mamm. Mus. E. I. C. p. 160.
Sciuropterus senex, Hodgs. J. A. S. Beng. xiii. p. 68.
Suraj-blakut, Hodgson.
Hab. Nepal; Hills.

78. Pteromys magnificus, Hodgson, J. A. S. Beng. v. p. 231; Gray, Catal. Hodgs. Coll. p. 22; Horsf. Catal. Mamm. Mus. E. I. C. p. 161.
Suraj-blakut, Hodgson.
Hab. Nepal; Hills.

79. Sciuropterus alboniger, Hodgson, J. A. S. B. v. p. 231; Gray, Catal. Hodgs. Coll. p. 22; Horsf. Catal. Mamm. Mus. E. I. C. p. 163.
Hab. Nepal; Hills.

80. Arctomys tibetanus, Hodgson, J. A. S. Beng. xii. p. 409; Gray, Catal. Hodgs. Coll. p. 24; Horsfield, Ann. N. H. n. s. xvi. p. 113.
Jabra, or *Kadia-peu*, of the Tibetans, Hodgson.
Hab. Tibet.

81. Rhizomys badius, Hodgs. Calcutta Journ. N. H. ii. p. 60; Gray, Catal. Hodgs. Coll. p. 24; Horsf. Catal. Mamm. Mus. E. I. C. p. 165.
Hab. Nepal and Sikim.

82. Panthalops Hodgsoni, Abel, sp.
Antilope Hodgsoni, Abel, Edin. Journ. Sci. 1827, p. 165.
Panthalops Hodgsoni, Hodgson, J. A. S. Beng. xi. p. 282; Gray, Catal. Mamm. Br. Mus. (1852) p. 53.
Kemas Hodgsoni, Gray, Catal. Hodgs. Coll. p. 26; Horsf. Catal. Mamm. Mus. E. I. C. p. 166.
Cheru or *Chwe*, Tibetans, Hodgson.
Hab. Tibet.

*83. Procapra picticauda, Hodgson, J. A. S. Beng. xv. p. 334; Horsfield, Catal. Mamm. Mus. E. I. C. p. 169; Gray, Catal. Mamm. Br. Mus. 1852, p. 55.
Hab. Tibet.

84. Capricornis bubalina, Hodgson, sp.
Antilope bubalina, Hodgs. P. Z. S. 1832, p. 12.
Capricornis Thar, Ogilby, P. Z. S. 1836, p. 139.
Capricornis bubalina, Gray, Catal. Hodgs. Coll. p. 27; Horsf. Catal. Mamm. Mus. E. I. C. p. 168.
Hab. Nepal; Hills.

85. Næmorhedus Goral, Hardwicke, sp.
Antilope Goral, Hardw. Linn. Trans. xiv. p. 518. t. 14.
Nemorhedus Goral, Gray, Catal. Hodgs. Coll. p. 27; Catal. Mamm. Brit. Mus. 1852, p. 112; Horsf. Catal. Mamm. Mus. E. I. C. p. 168.
Hab. Nepal; Hills.

86. Hemitragus Jemlaicus, H. Smith, sp.
Capra Jemlaica, H. Smith, Griff. An. Kingd. iv. t. 194; Horsf. Catal. Mamm. Mus. E. I. C. p. 170.
Hemitragus Jemlaicus, Hodgson; Gray, Catal. Hodgs. Coll. p. 28; Catal. Mamm. Brit. Mus. 1852, p. 144.
Hemitragus quadrimammis, Hodgson, J. A. S. Beng. v. p. 254.
Hab. Nepal; Hills.

87. Ovis Aries, Linn.
Var. *Ovis Hoonia*, Hodgson, J. A. S. Beng. i. p. 348; Gray, Catal. Hodgs. Coll. p. 30; Catal. Mamm. Br. Mus. 1852, p. 166.
Hab. Tibet.

*Var. *Ovis Changluk*, Hodgson, MSS. 1852.
Changluk Sheep, Hodgson.
Hab. Tibet.

Var. *Ovis Barwal*, Hodgson, J. A. S. Beng. x. p. 913; Gray, Catal. Mamm. Br. Mus. 1852, p. 165.
Ovis Ammonoïdes, var. I., Gray, Catal. Hodgs. Coll. p. 29.
Hab. Nepal; Hills.

88. Ovis Ammonoïdes, Hodgson, sp.
Ovis Ammonoïdes, Hodgs. J. A. S. Beng. x. p. 236; Gray, Catal. Hodgs. Coll. p. 29.
? *Ægaceros Argali*, Pallas, Zool. Ross. As. i. p. 231. t. 20, 21.
Caprovis Argali, Gray, Catal. Mamm. Brit. Mus. 1852, p. 174.
Ovis Argali, Hodgson, J. A. S. Beng. i. p. 347.
? *Ovis Hodgsonii*, Blyth, P. Z. S. 1840, p. 65.
Nyen or *Bharal*, Hodgson.
Hab. Tibet.

89. Ovis Nahoor, Hodgson, J. A. S. Beng. iv. p. 492; Gray, Catal. Hodgs. Coll. p. 29.
Pseudois Nahoor, Gray, Knowsley, Menag. p. 40; Catal. Mamm. Br. Mus. 1852, p. 177; Horsf. Catal. Mamm. Mus. E. I. C. p. 176.
Na, or *Nawa*, or *Nahur*, Hodgson.
Hab. Tibet.

90. Moschus moschiferus, Linn.; Gray, Cat. Hodgson's Coll. p. 30; Catal. Mamm. Brit. Mus. 1852, p. 244; Horsf. Catal. Mamm. Mus. E. I. C. p. 177.
Kastury of the Tibetans, Hodgson.
Hab. Tibet.

91. Moschus leucogaster, Hodgson, J. A. S. Beng. viii. p. 203; Gray, Catal. Hodgs. Coll. p. 31; Catal. Mamm. Br. Mus. 1852, p. 245; Horsf. Catal. Mamm. Mus. E. I. C. p. 177.
Kastury, Hodgson.
Hab. Tibet.

*92. ? Bibos frontalis, Lambert, sp.
Hab. Nepal; Tarai.

93. Poephagus grunniens, Linn. sp.
Bos grunniens, Linn. S. N. 12. i. p. 99.
Poephagus grunniens, Gray, Catal. Mamm. Br. Mus. p. 153; id. Ung. Furcip. p. 40; Horsf. Catal. Mamm. Mus. E. I. C. p. 184.
Bison Poephagus, Gray, Catal. Hodgs. Coll. p. 25.
Hab. Tibet.

A figure of the calf of *Poephagus grunniens* is given in the Illustrated Proc. Zool. Soc. 1853, pl. 35.

*94. Budorcas taxicolor, Hodgson, J. A. S. Beng. 1850, p. 65. t. 1; Gray, Catal. Mamm. Br. Mus. 1852, p. 45; Horsfield, P. Z. S. 1853, Mamm. pl. 36.
Nemorhœdus taxicolor, Turner, P. Z. S. 1849.
Takin, Hodgson.
Hab. Eastern Himalaya (Assam).

95. Rusa Dimorphe, Hodgson, J. A. S. Beng. 1844, fig.; Ann. N. H. xiv. p. 74; Gray, Catal. Hodgs. Coll. p. 33; Catal. Mamm. Br. Mus. 1852, p. 209.
Séving, Hodgson.
Hab. Lower Hills and deep valleys of Central Nepal.

*96. Cervus affinis, Hodgson, J. A. S. Beng. 1841, p. 721; Gray, Catal. Mamm. Br. Mus. 1852, p. 199.
Cervus tibetanus, Hodgs. J. A. S. Beng. 1850, p. 466.
Siarupchu or *Shou,* Hodgson.
Hab. Tibet.

97. Rusa Jarai, Hodgson.
Cervus Hippelaphus or *Phursa Jarai,* Hodgson.
Rusa Hippelaphus, var., Gray, Catal. Hodgs. Coll. p. 34.
Rusa Aristotelus, var., Gray, Catal. Mamm. Brit. Mus. 1852, p. 206.
Jarai, Hodgson.
Hab. Nepal; Tarai.

98. Cervulus moschatus, De Blainv.
Stylocerus Ratwa, Hodgson, J. A. S. Beng. x. p. 914.
Muntjacus vaginalis, Gray, Catal. Hodgs. Coll. p. 31.
Cervulus moschatus, Horsfield, Catal. Mamm. Mus. E. I. C. p. 190; Gray, Catal. Mamm. Br. Mus. 1852, p. 218.
Rathúa, Hodgson.
Hab. Nepal; Hills and Tarai.

Var. Entirely black.
Cervus melas, Ogilby, P. Z. S. in Royle's Himal. p. 73.
Hab. Nepal; Hills.

99. Hyelaphus porcinus, Zimm. sp.
Cervus porcinus, Zimmerman, Schreb. t. 251.
Hyelaphus porcinus, Sundevall, Pecora, 58; Horsfield, Catal. Mamm. Mus. E. I. C. p. 189; Gray, Catal. Mamm. Br. Mus. 1852, p. 215.
Axis porcinus, Hodgson, Gray, Catal. Hodgs. Coll. p. 33.
Laghŭnä, Hodgson.
Hab. Nepal; Tarai.

*100. Asinus Kiang, Moorcroft; Gray, Knowsley Menag. p. 72; Horsf. Catal. Mamm. Mus. E. I. C. p. 190.
Asinus Hemionus (Pallas), Gray, Catal. Mamm. Br. Mus. 1852, p. 272.
Kiang.
Hab. Tibet.

101. Sus indicus, Gray, Catal. Mamm. Br. Mus. p. 185.
Sus Aper, Hodgson, J. A. S. Beng. x. p. 911.
Sus scrofa, var. *Indicus*, Horsf. Catal. Mamm. Mus. E. I. C. p. 193.
Hab. Nepal; Tarai.

*102. Porcula Salvania, Hodgson, J. A. S. Beng. 1847, p. 423; Horsfield, P. Z. S. 1853; Mamm. pl. 37.
Pigmy Hog of the Saul Forest, Hodgson.
Hab. Nepal; Tarai.

103. Manis pentadactyla, Linn.
Manis pentadactyla, Linn.; Horsf. Catal. Mamm. Mus. E. I. C. p. 196.
Manis crassicaudata, Griffith's An. King. iii. p. 507.
Bajarkit, Hodgson.
Hab. Nepal; Hills.

8. Descriptions of Coleopterous Insects in the Collection of the British Museum, hitherto apparently unnoticed. By Adam White.

(Annulosa, Pl. XL.)

In addition to the species described in my previous paper, read on the 12th of February last, I have reason to believe that the following are also new.

1. Deucalion Wollastoni, n. s. (Pl. XL. fig. 6.)

D. aterrimus, capite post oculos in mare elongato, thorace lævigato, lateribus inermibus, elytris dorso depressis, a basi ultra medium punctato-impressis, singulis lineis tribus lævibus longitudinalibus.

Hab. Lord Howe's Island.

Although this Longicorn differs in some particulars from either of the species of Mr. Wollaston's most interesting genus, I am unwilling to form another genus for its reception till the group has been more studied. The antennæ in the female are considerably longer than the elytra: in the male they are very long; the head in the male is considerably produced behind the eyes; the thorax is twice constricted: above the surface is smooth, beneath before the fore legs it is delicately and closely transversely striated.

2. MONEILEMA ALBO-PICTUM, n. s. (Pl. XL. fig. 7.)

M. aterrimum, thorace elytrisque pilis albis variegatis; oculis antice pilis albis marginatis, capite inter oculos pilis albis ornato.

Long. lin. $8\frac{1}{2}$.
Hab. Mexico.

3. MONEILEMA LÆVIDORSALE, n. s.

M. aterrimum, supra læve, elytris lateribus valde compressis, basi punctatis, dorso carina separatis.

Long. lin. 8.
Hab. Mexico.

4. MONEILEMA ? LONGIPES, n. s.

M. scabriuscule punctatum, aterrimum, pedibus elongatis crassis, thoracis lateribus obsolete tuberculatis; tarsis subtus fulvis.

Long. lin. 8.
Hab. "China?"

This species differs somewhat in form from the others; it is longer and less squat; the spine on each side of the thorax is almost obsolete; the legs, especially the femora, are longer and thicker; the coxæ have no spot of hairs. It is rather coarsely and generally punctured, even on the legs and the antennæ; the tibiæ of all the legs are considerably bent at their origin.

This was obtained on the voyage of H.M.S. Sulphur, and is more likely to be from the west coast of America than from China.

5. ANISOCERUS ONCA. (Pl. XL. fig. 8.)

A. pallide ochraceus rufescenti tinctus; capite thoraceque nigro maculatis et fasciatis; elytris singulis 17–18 *maculis nigris; corpore subtus nigro fasciato; antennis articulo tertio apice nigro-fasciculato; tibiis tarsisque pallidis, tibiis apice nigris.*

6. ANISOCERUS CAPUCINUS. (Pl. XL. fig. 9.)

A. ater, genis miniaceo vittatis; scutello nigro; elytris miniaceis, fasciis tribus transversis et macula ante apicem nigris, sutura nigra.

7. ANISOCERUS DULCISSIMUS. (Pl. XL. fig. 10.)

A. ater, genis miniaceo vittatis; elytris sulphureis seu albido-flavescentibus; fascia basali angusta et scutello miniaceis,

fascia lata ante medium obscure miniacea; marginibus apicali et laterali miniaceis; punctis quatuor nigris in parte postica elytrorum.

These three fine species of the peculiarly Brazilian genus *Anisocerus* are described in the second part of the Museum Catalogue of Longicorn Beetles, pp. 405, 406. It is just possible that the two last so-called species may eventually be found to be one. We have two specimens of the last which differ from each other in coloration, and probably connecting varieties may yet be sent to our collections from the banks of the Amazon. The *A. capucinus* was first obtained at Para by J. P. George Smith, Esq. of Liverpool; the *A. dulcissimus* was found on the Tapayos, a tributary of the Amazon, by Mr. Bates, who also sent the *A. Onca* from Ega, a locality on the same great river, which has proved to be very prolific in insect life.

8. Phædinus xanthomelas, n. s. (Pl. XL. fig. 11.)

P. niger, abdomine subtus pallido, elytris sulphureis, apice maculaque ante medium nigris; femoribus subtus ultra medium ciliatis.

Long. lin. $6\frac{3}{4}$.

Hab. Villa Nova, in ripis fluvii Amazon (*Coll. Bates*).

Head wideish, black; eyes ferruginous; a yellow mark on the clypeus, with many scattered punctures. Antennæ with the two basal joints shining, the others dull; joints from the third to the tenth dilated triangularly at the tip on the inner edge; terminal joint oblong, sides parallel, tip pointed. Thorax densely punctured and hairy, a smooth spear-shaped space on the back in the middle, pointed in front, a tubercle on each side; scutellum black. Elytra rounded at the tip, of a sulphur-yellow, each broadly tipped with black, and having a subtriangular spot just before the middle; each elytron with two parallel costæ, evanescent about the middle just behind the black spot which lies across them. Under side of abdomen pale ochraceous; legs black; femora grooved beneath at the base, edges of the groove ciliated with pale hairs.

Having only seen a single specimen of this curious species, I am unwilling to give it a new generic name, although its short form, simple sternum, grooved and ciliated femora, and the soft under side of abdomen, with other characters, show that it considerably differs from *Phædinus*.

9. Phœbe concinna, n. s. (Pl. XL. f. 12.)

P. albido-pubescens, thorace postice pallide violaceo, elytris pallide violaceis, fascia latiuscula ante apicem alba, pedibus pallide flavis, antennis basi flavis, apice fuscis, capite bicornuto.

Long. lin. $5–5\frac{1}{2}$.

Hab. Ega, on the banks of the Amazon (*Coll. Bates*).

A most delicately coloured species of the genus *Phœbe* of Serville. The head, thorax, and body are clothed with a dense white pubescence; the hinder part of the thorax has a pale violet band with a projecting lobe in front. The elytra are covered with a most deli-

cate pale violet pubescence, passing into white at the tip, and with a rather wide transverse white band before the tip, widest at the sutures. The antennæ spring from a portion of the head, which divides each eye into two portions; the first four joints are pale yellow, the others are brown; the face has two projecting upturned horns, which are sharp and brown, and when viewed in front have a semicircular outline. The abdominal segments beneath in the middle and at the end are tinged with yellowish-pink. The legs are of a delicate yellow.

10. Agelasta callizona, n. s. (Pl. XL. fig. 13.)

A. nigra, supra pube curta griseola reticulata; elytris fascia transversa mediana rubescente albo-reticulata, apice rubescentibus; femoribus supra tibiis basi rubescentibus, tibiis apice nigro-fasciculatis, tarsis aurato-fulvis, articulis basalibus supra nigris.

Long. lin. 6–9½.

Hab. Sarawak, Borneo (*Coll. A. R. Wallace*).

Blackish, with scattered punctures; the head, thorax, and elytra reticulated all over with a short griseous pubescence; the elytra at the tip and a transverse band across the middle of a pinkish-red, reticulated with white; sides of thorax, plate above, middle legs, and band behind base of hind legs pinkish-red; femora on the upper side and tibiæ, except at tip, pinkish-red; tibiæ at the ends black, and clothed thickly with hairs. Tarsi of a tawny golden-yellow, the base of the last joint above and the upper side of other joints black. Antennæ blackish-brown, basal joint the longest, reticulated with griseous pubescence, five terminal joints short brown-black, the others ringed, the sixth joint pinkish-grey, except at the tip, which is black.

11. Agelasta Wallacii, n. s.

A. capite nigro-fusco, ochraceo vittato; thorace nigro-fusco lateribus albidis, dorso ochraceo quinque-lineato tribus lineis abbreviatis; elytris nigro-fuscis, fascia lata alba transversa; elytris singulis basi ochraceo uni-guttatis, apice quinque maculatis pedibus ochraceis, tarsis supra nigris.

Cat. Longicorns, Brit. Mus. pt. 2. pl. 10. f. 10.

Long. lin. 6–8.

Hab. Borneo (Sarawak) (*Coll. A. R. Wallace*).

Head blackish-brown, cheeks and face banded with ochraceous pubescence, crown with three ochraceous lines; antennæ dark ferruginous, outside of first joint and base of the four succeeding joints pale ochrey. Thorax blackish-brown, sides margined with whitish pubescence; the back with five longitudinal ochraceous lines, two extending from front to hind margins, the alternate three abbreviated. Scutellum of a deep blackish-brown. Elytra deep blackish-brown, with a very wide white pubescent band, which is continued on the underside of the thorax; an ochraceous spot at the base, a little white spot on the suture behind the scutellum; each elytron with

five ochraceous marks on the apical half, three on the suture. Legs ochrey; femora subferruginous; tarsi above black; claw, except at the base and tip, ochrey.

12. Agelasta amica, n. s. (Pl. XL. fig. 14.)

A. nigrescenti-fusca, capite thoraceque albo-lineatis elytris rufo-fuscis cinereo polystictis, punctis majoribus nigris, fasciis duabus subundatis nigris, anteriore interrupta.

Long. lin. 6–6½.

Hab. Borneo (Sarawak) (*Coll. A. R. Wallace*).

Blackish-brown; head lineolated longitudinally with white. Thorax above with about ten white lineolets arranged longitudinally. Scutellum blackish. Elytra mostly covered with a light reddish-brown pubescence, varied with many small black dots, and with two transverse, somewhat waved, black bands, the anterior ones interrupted. Abdomen black, sides with white pubescence, edges ciliated with white; undersides with greyish pubescence; middle black, sides spotted with black. Legs cinereous; tarsi and tips of tibiæ black.

13. Agelasta Polynesus, n. s.

A. nigro-brunnea, capite thoraceque cinereo lineatis; scutello cinereo; elytris cinereo irregulariter lineatis et notatis; pedibus cinereo-pubescentibus.

Cat. Longicorns, Brit. Mus. pt. 2. pl. 10. f. 9.

Long. lin. 6–7½.

Hab. Borneo (Sarawak).

Of a very dark ferruginous brown. Head with five cinereous lines and a short one behind each antenna. Thorax with seven cinereous pubescent lines, the central one the slightest; scutellum cinereous; elytra covered with many irregular pubescent cinereous lines and marks, well relieved by the dark blackish-brown background; under side covered with whitish pubescent hairs; abdomen down the middle nearly bare of hairs; legs with cinereous pubescence.

14. Agelasta Newmanni, n. s. (Pl. XL. fig. 15.)

A. cærulescenti-cinerea pubescens, thorace nigro transversim unifasciato, elytris nigro bifasciatis et maculatis.

Long. lin. 6½.

Hab. Borneo (Sarawak) (*Coll. A. R. Wallace*).

The greater part of the insect covered with a bluish-grey pubescence, the head with some black marks, the antennæ black, the five basal joints bluish-grey at the base; thorax above with a transverse black band, the front and hind margins running into the greyish pubescent part. Scutellum covered with grey pubescence. Elytra with two transverse black bands, one before the other behind the middle; the parts clothed with greyish pubescence have a few black spots, those between the bands arranged transversely, those at the apex triangularly.

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.

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PROCEEDINGS

OF THE

ZOOLOGICAL SOCIETY OF LONDON.

January 13, 1857.

Dr. Gray, F.R.S., in the Chair.

The following papers were read :—

1. Notes on the Birds in the Museum of the Academy of Natural Sciences of Philadelphia, and other Collections in the United States of America.

By Philip Lutley Sclater, M.A., F.Z.S., etc.

Having recently returned from a few months' excursion to the United States of America, and had the advantage of a personal inspection of the principal zoological collections in the northern portion of the New World, I think it may interest the Society to give them some account of the state of Ornithology in that country (that being the branch of Zoology to which I paid most attention), and to communicate some notes on new or rare specimens of Birds which thus came under my observation.

The collection of the Academy of Natural Sciences of Philadelphia is certainly the best zoological collection in the New World, and in the particular department of Ornithology, and perhaps one or two other points, is probably superior to every Museum in Europe, and therefore the most perfect in existence. In 1852, when Dr. Ruschenberger wrote his notice on the origin, progress, and condition of the Academy, the number of specimens of birds was estimated to exceed 27,000, and since that time large additions have been made, and the number has been very considerably increased. Dr. Thomas B. Wilson is, as is well known, the person to whose munificence the Academy is indebted for the greater part of the specimens which make up this magnificent series. The general collection formed by

Prince Massena d'Essling, Duc de Rivoli, and the types of the species described by Mr. Gould in the 'Birds of Australia,' were the first and largest of Dr. Wilson's contributions towards this result; but a great number of further additions have been received during the last ten years from the same individual, and no opportunity is neglected of rendering this branch of the Academy's collection still more perfect. As the Library of the Academy is also very complete, particularly in all that relates to Ornithology, and the greatest liberality is shown to strangers who desire access to any part of the collections, it will be evident that there are few, if any, places in the globe where a student of Ornithology can pursue his researches with more convenience and profit to himself than the Academy of Natural Sciences of Philadelphia. Mr. John Cassin, so well known by his work on the Birds of California and Oregon, and his numerous papers in the Proceedings of the Academy, devotes the whole of his leisure time towards the cataloguing and arrangement of the collection of birds, and has already published Lists of the *Raptores*, and of the *Caprimulgidæ* and *Hirundinidæ* of the order *Passeres*. The collection of birds' eggs belonging to the Academy (of which Dr. Heerman published a catalogue in 1853) is likewise one of the most extensive in the world, embracing upwards of 1320 determined species.

Mr. Cassin has also a private collection of his own at Philadelphia, and is no less active in obtaining specimens in the field than in his studies of the examples contained in the Museum of the Academy.

At New York the Lyceum of Natural History have at present no collection, but publish, in their 'Annals,' many interesting papers on Ornithology, chiefly from the pen of Mr. George N. Lawrence. This gentleman is very well acquainted with the birds of the northern portion of the American continent, and possesses an extensive ornithological collection, embracing many species which he has himself described as new.

The types of the birds described by De Kay in the 'Natural History of the State of New York' are at Albany, and form part of the interesting collection which was the result of the State-survey, and so excellently illustrates the zoology of that region.

In Boston there is, as is well known, a flourishing Natural History Society, whose Museum contains a good collection of birds, principally American. Dr. Thomas Brewer, one of its members, has a very extensive cabinet of eggs, and is now about to publish, under the patronage of the Smithsonian Institution, a large work with coloured plates illustrating the eggs of all the species of North American birds—the first work of the kind undertaken in that country. Another member of the Society—Dr. Samuel Cabot—has also a collection of birds, containing, amongst others, the types of the species described by him in the Proceedings and Journal of the Society in 1843, and which he himself procured in Yucatan.

There are two collections of Natural History at Washington, which merit much attention. First, that in the Patent Office, where will

be found the specimens collected during the celebrated Exploring Expedition of Commander Wilkes, and some other of the Government expeditions: and, in the second place, the very extensive series of birds in the possession of the Smithsonian Institution, which body now takes in charge the specimens of Natural History collected by the more recent Government expeditions, as well as a large mass of material received from its own numerous correspondents. The United States Boundary Commission, and the six separate expeditions for the survey of the railway route to the Pacific, have lately accumulated a very large series of specimens of birds from the western portion of the continent in the hands of the Institution; and the publication of the Zoology of these expeditions (which Professor Baird, Mr. Cassin, and other Naturalists are now engaged upon) will make very large additions to our knowledge of North American Ornithology.

Professor Baird's private collection of birds is also very complete, and contains many of Audubon's rarer types.

The College of Charleston in South Carolina possesses an interesting collection of Natural History. The birds are principally North American, but there are several rare species from Cuba, presented to the College by Señor F. A. Sauvalle of Havana.

The following are some of the notes which I took during my inspection of the collections above mentioned, before presenting which I may be permitted to observe, that nothing can be more gratifying than the liberal access and great facilities in every case afforded to the stranger visiting the Collections and Libraries both public and private in the United States of America.

Accipitres.

The American Vultures forming the genus *Cathartes* require further investigation before the number of the species can be satisfactorily determined. Most modern writers now agree in separating the southern red-headed and black-headed species from their northern representatives of the United States, *Cathartes aura* and *C. atratus*. Prince Bonaparte first remarked upon these differences in his paper on this subject in the Comptes Rendus for 1850, p. 292. But here, as also in his 'Conspectus,' he considers *C. burrovianus*, of Cassin, the same as the southern *C. iota*. This is, in my opinion, certainly not the case. There are two specimens of Mr. Cassin's bird in the Academy's collection from Mexico, and they most nearly resemble the true *aura* of the States, but are at once distinguishable by their diminutive size, and seem to be truly distinct from both the other two red-headed species.

Amongst the rarer types in the large series of Falconidæ possessed by the Academy, is the only hitherto known specimen of *Cymindis Wilsoni*, Cassin (Journ. Ac. Phil. i. p. 21. pl. 7). This singular bird is certainly quite different from *Cymindis uncinata*, with which Dr. Cabanis seems inclined to unite it (*vide* Journ. f. Orn. 1854, Extra-h. p. lxxx); and I have lately been informed that Dr. Gund-

lach, who is still prosecuting his researches into the rich ornithology of the island of Cuba, has recently succeeded in obtaining other specimens.

The little Californian *Athene* or *Glaucidium*, which Cassin has considered to be Temminck's *Strix infuscata* (Birds of Cal. & Oreg. p. 189), and was called by Audubon *Strix passerinoides*, appears to be clearly different from the South American bird, which is legitimately entitled to bear both of these names. It seems most like the European *passerina*, but has the toes only partially covered with hairs. Unless Wagler's *Glaucidium gnoma* can be reconciled with it, of which there appears to be much doubt, it will require a new name; and I should therefore venture to suggest that it be called *Glaucidium californicum*.

The Library of the Philadelphian Academy contains a copy of the rare work called 'Registro trimestre,' published in Mexico in 1832, and of which some particulars are given by Mr. Cassin in his 'Birds of California' (p. 24). Señor De la Llave's generic appellation of *Pharomacrus* for the group of Trogons called *Calurus* by Mr. Gould, occurs here in an article entitled "*Sobre el Quetzaltolotl, genero nuevo de aves*," and is decidedly entitled to adoption. As, however, De la Llave's specific name "*mocinno*" (intended to immortalize an illustrious Mexican of that name) is rather unpleasing, I trust that the term *paradiseus* may have been previously applied to it by Prince Bonaparte. The Prince assigns the date of 1826 to the publication of this name in his 'Conspectus,' but gives no reference, and I cannot find out where this name was first employed. In the second volume of the same work, Señor De la Llave describes four new Humming-Birds under the curious specific titles *xicotencal*, *tzacatl*, *papantzin* and *topiltzin*!!

Two specimens of the bird which I described in these Proceedings under the name of *Cyphorinus albigularis* are in the collection of the Philadelphian Academy. They were obtained at Panama by Mr. Bell. I found them marked, to my surprise, *Thryothorus fasciato-ventris*, Lafr. (R. Z. 1845, p. 337), and such is indeed the case. My specific name must therefore give place, and the species *Thryothorus fasciato-ventris* should be elided from the list of Bogota Birds, in which, on Lafresnaye's authority, I have hitherto included it. The same collection also contains an example of the beautiful *Vireolanius icterophrys*, Bp. (P. Z. S. 1855, pl. ciii.).

Besides the three little Thrushes (which have been so much confounded together, and have received so many names), called in Bonaparte's 'Conspectus,' *Turdus solitarius*, *T. minor* and *T. wilsoni*, Audubon's *Turdus nanus* appears to me to be also a valid species. It most nearly resembles *T. solitarius*, of which it is the western representative, but is smaller in size, and has a more densely spotted throat and breast. I cannot understand the reasons that have induced Prince Bonaparte to banish *Turdus nævius*, of which I saw many examples in the American collections, from the family of Thrushes, and to place it among the *Tæniopterines*. I cannot at all agree with him on this point. Mr. Bell, who has observed this

bird in a state of nature, tells me that its habits are nearly those of the American Robin (*Turdus migratorius*), and I am inclined to consider that bird as its nearest ally.

The Philadelphian collection contains the only adult male I have seen of the beautiful Flycatcher named *Muscicapa rugensis* by Hombron and Jacquinot (Ann. d. Sc. Nat. xvi. p. 312). M. Pucheran, led away by the strong compressed beak, which is truly remarkable in this family, has placed this bird in the genus *Colluricincla*. But an attentive examination of its structure shows, without doubt, that it is a Muscicapine, though with abnormal characters pushed to the extreme of divergence. I think, however, it may safely be placed in the neighbourhood of *Pomarea nigra*, with which it corresponds in its changes of plumage. Prince Bonaparte has proposed for it the separate generic name *Metabolus*.

The Smithsonian Institution possesses examples of *Pachyrhamphus aglaiæ* (*v.* P. Z. S. 1856, p. 297), collected by Mr. Couch in the province of New Leon, Mexico. This is the farthest northern appearance of a bird of this family hitherto recorded.

Mr. Lawrence of New York, amongst many other very interesting birds in his collection, showed me the first example I had seen of Audubon's *Alauda spraguii*. This has always been rather a puzzling bird to me, as the New World is commonly supposed to be devoid of true Larks—although one would have thought the immense grassy prairies of the Northern Continent to be a region perfectly adapted to the members of this group of animals—and their place is occupied by the modified Starling-like form *Sturnella*. Prince Bonaparte has located this curious bird in the genus *Otocorys*; Professor Baird has called it an *Agrodroma*. But an examination of the specimen which I now exhibit, and which has been kindly lent to me by Mr. Lawrence, at once shows that its true place is not in either of these genera. Though rather tenuirostral, it must, I think, be placed within the *Alaudidæ* (and not with the Pipits) near *Calandrella* and *Otocorys*, with which forms it agrees in the absence of the first spurious quill, and I venture to propose for it the distinct generic title *Neocorys*.

Mr. John Bell of New York gave me a most interesting account of the discovery of this bird, which was made by Mr. Audubon's party on the Upper Missouri in the neighbourhood of Fort Union, at the junction of the Yellowstone and Missouri rivers. Here it is abundant, though not easy to obtain, being only noticeable when soaring high in the skies like our Sky-Lark, and pouring forth its long-continued song.

The Smithsonian Institution and Philadelphian Collection both contain examples of *Myiadestes Townsendi*, which I found, as I had anticipated, to be truly different from the bird which I characterized in these Proceedings last year under the name of *M. unicolor* (*v.* P. Z. S. 1856, p. 299), and still more so from Lafresnaye's *M. obscurus*, to which Prince Bonaparte and Cabanis have united it. Another species of this peculiar form, which I first saw in Mr. Lawrence's collection, is *M. elisabethæ* from Cuba (*Muscicapa elisabethæ*,

Lembeye, Av. de Cuba, pl. 5. fig. 3). These, with *M. armillata*, from Jamaica, *M. griseiventris* from Peru, and my *M. venezuelensis*, make a total of seven typical species of this singular group now known, and afford a beautiful example of the regular diffusion of corresponding ornithic species over distinct though neighbouring geographic areas. The Philadelphian Collection likewise contains an example of *Cichlopsis leucogonys*, Cab., belonging to the same family of birds, the type of which in the Berlin Museum has been hitherto considered as unique.

Among the Tanagers in the Philadelphian Academy I discovered two specimens of a very distinct species of *Saltator*, which I have never seen in European collections, and which I described in the Proceedings of the Academy under the name of *S. atripennis*. Dr. Cabot of Boston also showed me the type of his *Pyranga roseogularis*, which is apparently a good species. These two Tanagers must be added to those given in my Synopsis of the birds of that family published in these Proceedings last year.

On examining the type of Mr. Cassin's *Pastor nigrocinctus* (Pr. Ac. Sc. Phil. v. p. 68), I found it to be the same as the bird in the Paris Museum named *Sericulus anais* by Lesson, R. Z. 1839, p. 441, and which has rightly been raised to generic rank by Prince Bonaparte under the name *Melanopyrrhus anais* (Notes Orn. p. 9). The existence of a second example of this bird is very interesting, as it removes all doubts about its being a real and not a fictitious bird, as Mr. G. R. Gray hints in his 'List of Genera and Subgenera.'

The same collection is also fortunate in possessing amongst its *complete* series of *Paradiseidæ*, the only known specimen of the splendid second species of the genus *Diphyllodes*. American Naturalists were quite unaware when they named this bird that Prince Bonaparte's characters of his *Lophorina* (!) *respublica* (Compt. Rend. 1850, p. 131) were taken from the self-same example. And seeing that even after the correction of the error in the generic appellation (Compt. Rend. 1850, p. 291), the descriptive phrase given by the Prince is positively erroneous, and such as the bird cannot by any possibility be recognized by, I must say I think it very questionable whether we ought not to employ Cassin's name *Wilsoni* for this species, although certainly subsequent in time of publication to Prince Bonaparte's term *respublica*.

The Philadelphian Collection also possesses the only known example of *Paradigalla carunculata*, described and figured by Eydoux and Souleyet in the 'Voyage of the Venus.'

Icterus Scottii, Couch, Pr. Ac. Sc. Phil. vii. p. 66, discovered by Lieut. Couch in New Leon and Coahuila, Mexico, is the same as *Icterus parisorum*, Bp.

There have been two species of this family long confounded under the name *dominicensis*. The true *I. dominicensis* (*Pendulinus flavigaster*, Vieill.) is from Cuba and S. Domingo, and is the bird characterized under the name *Pendulinus hypomelas* in Bp.'s Consp. p. 433. sp. 8. On the other hand, his *P. dominicensis* is quite a different bird, which I propose for the future to call

ICTERUS WAGLERI.

Psarocolius flavigaster, Wagl. Isis, 1829, p. 756, nec Vieill.
Pendulinus dominicensis, Bp. Consp. p. 432, nec Linn.

Nigro-sericeus : tectricibus alarum minoribus infra et supra, dorso postico et abdomine toto flavis, hoc aurantiaco tincto : tectricibus caudæ inferioribus nigris.

Long. tota 8·0, alæ 4·2, caudæ 3·7.

There are examples of this bird at the Smithsonian Institution collected by Lieut. Couch in Coahuila. I have likewise examples of it in my own collection. *Icterus prosthemelas*, Strickland (Contr. Orn. 1850, p. 120. pl. 52) (which is *not* the same as *Pendulinus lessoni*, Bp.), is a closely allied species, but is smaller and has the under tail-coverts yellow.

Emberiza belli, Cassin (Pr. Ac. Sc. Phil. 1850, pl. 4. p. 104), and *Emberiza bilineata* (ibid. pl. 3) seem to me to form natural members of the genus *Poospiza*, and I propose to call them *Poospiza belli* and *Poospiza bilineata*.

Junco cinereus has recently been described as new for the third time as *Struthus caniceps* (Woodhouse in Pr. Ac. Sc. Phil. vi. p. 202). As I have already observed, the name *Junco* ought to be employed instead of *Struthus* for all the three closely allied species of this genus, which will henceforth stand as *J. cinereus*, *J. oregonus*, and *J. hyemalis*.

Zonotrichia gambelli (the third species of Bp.'s Consp.) is now considered in America as the young of *Z. leucophrys* : *Z. mortoni* (the fifth species), of which I have seen the type in the Philadelphian collection, is nothing more than a Chilian specimen of *Z. pileata* sive *matutina* : *Z. querula* (the ninth species) is the same as (the tenth) *Z. comata*, and ought rather to be placed in the genus *Passerella*.

Struthus atrimentalis, Couch (Pr. Ac. Sc. Phil. vii. p. 68), seems to be the same as *Spinites atrigularis* (Cab. Mus. Hein. p. 133), though M. Cabanis' phrase is not very perfect.

The beautiful *Zonotrichia cassinii* lately described by Woodhouse (Pr. Ac. Sc. Phil. vi. p. 60) is very closely allied to *Peucæa bachmanni*, and must be placed next to it.

Dr. Gambel's *Fringilla blandingiana* (Journ. Ac. Phil. i. pl. 9) is the same as *Pipilo rufipileus*, Lafr. It is not an *Embernagra*, as arranged by Bonaparte, nor a *Pipilo*, and, as divisions are made now-a-days, ought probably to have a distinct generic appellation.

Chondestes ruficauda, Bp. Notes Orn. p. 18, of which I found several specimens in the collection at Philadelphia, is a typical *Aimophila*, and *Embernagra pyrgitoides*, Lafr., seems to be nothing more than *A. rufescens*, the second species of that same genus.

The Philadelphian Collection has likewise specimens of *Chrysomitris yarrelli* (Aud.), not however from Western America, but from the Orinoco ; and I believe Audubon was altogether in error as to its locality, and that it is an inhabitant, not of the northern, but of the southern portion of the American continent.

The recent researches have increased the number of Woodpeckers of the genus *Centurus* occurring within the limits of the United States to three in number:—(1) *C. carolinus*, of the Eastern States; (2) *C. uropygialis*, Baird, lately discovered by the Naturalists attached to Lieut. Whipple's expedition in New Mexico; and (3) *C. flaviventris*, Sw., which seems to be by no means uncommon in Texas, and is apparently quite distinct from *C. santacruzi*, Bp., with which it is often considered synonymous.

There is a very fine series of specimens of the genus *Coua* in the Philadelphian collection representing every species mentioned in Prince Bonaparte's 'Conspectus,' except *C. madagascariensis*. *Coua ruficeps* is by no means the same as *C. reynaudi*, as is there made out, but is a species more like *C. cristata* with a white throat and violaceous breast from Zanzibar, while *C. reynaudi* is from Madagascar.

Certain European Naturalists appear to me to have been much too hasty in condemning the new *Grus hoyiana* lately described by Mr. Dudley in the 'Proceedings of the Philadelphian Academy.' Judging from the examples in the collection of that Institution, I venture to pronounce it an excellent species, and not the young of *Grus americana*, as Dr. Hartlaub has endeavoured to prove (Journ. f. Orn. 1855, p. 336). It would seem, however, that this bird is really a Western species from Oregon and Washington territory, and only accidentally present in Wisconsin, where it was first met with by Mr. Dudley.

2. On the Structure of the Pelvis of Chlamyphorus truncatus. By Dr. J. E. Gray, F.R.S., V.P. Ent. Soc., etc.

Sir Woodbine Parish having, after considerable trouble, at length been able to procure a second specimen of this extraordinary and most interesting animal, has kindly transmitted it to the British Museum.

The specimen had been eviscerated and simply dried in the sun, was destitute of any fur, and did not afford any means of distinguishing its sex.

The Museum already possessed the well-preserved specimen formerly procured by Sir Woodbine Parish, and the imperfect skeleton of it so well described and figured by my late excellent friend Mr. Yarrell in the Zoological Journal, vol. iii. p. 544. t. 16.

In the specimen of the skeleton figured and described by Mr. Yarrell, the bones of the pelvis were separated to preserve the outer covering entire; the "bones being cut through as near to and as parallel with the inner surface of the plates as their confined situation would admit," p. 546.

This description did not in the least prepare me for the extraordinary structure which was discovered when the flesh was removed.

The truncated posterior disk or shield is firmly attached to the

pelvis by four (or two pairs of) posterior processes, and in the central line by the elongated ridges of the posterior sacral vertebra, so as to be immoveably fixed to the pelvis. The posterior disk is thick, rather

Fig. 1.

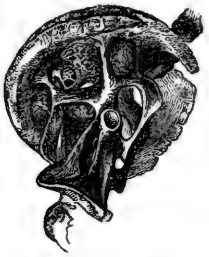


Fig. 2.

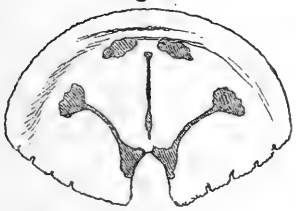


Fig. 3.

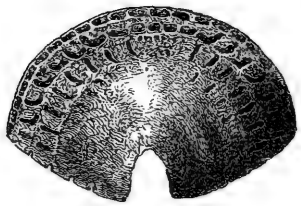


Fig. 1. Side view of the pelvis, with the inside of the attached posterior disk.
Fig. 2. The inside of the posterior disk, showing the position of the places of attachment.
Fig. 3. The outer side of the posterior disk, showing the form and position of the perforations.

solid, and furnished with a marginal series of oblong perforations, having a second series of similar but smaller perforations within them in the centre, and two series of much elongated curved slits on each side, near the margin, as in the figure.

Professor Owen informs me that a somewhat similar adhesion of the skeleton to the dermal system is to be observed in the *Glyptodon*, and also in some of the fossil Armadilloes of the older strata.

3. On the presence or absence of Air in the Bones of Birds. By Edwards Crisp, M.D.

As one of the objects of the founders of this Society, as expressed by the Charter, was the cultivation of Physiology, and as our communications of late, upon this subject, have been rather scanty, I am induced to submit this paper to the notice of the members, and I do so with a hope that it may serve to dispel one of the many errors that unfortunately encumber the science of Zoology.

My attention was first especially directed to the investigation of

this matter in consequence of hearing the following statement by Professor Owen, in one of his Lectures at the College of Surgeons, on the *Vertebrata*, of which I took notes at the time. The lecturer, to show the permeability of the bones of birds to air, said, "that a friend of his saw a man driving sea-gulls near Boulogne, and being surprised that the birds did not fly, he inquired the reason, and was told by the man that their thigh-bones had been perforated to let out the air;" and in further corroboration of this, Professor Owen said, "every sportsman knows that when the legs of a partridge are broken, it falls from the same cause."

I knew that this latter statement was an error, for two reasons—first, because a partridge does not fall when its legs are broken; and, secondly, and especially, because the thigh-bones of this bird do not contain air. In my dissections of the gulls I had not examined the thigh-bones; but to my surprise on investigating this matter, I found in all specimens afterwards dissected, that neither the *humeri* nor the *femora* contained air, but were filled with marrow. I next began to ask myself whether the presence of air in the femora of most birds would not act as an impediment to their flight, by diminishing the strength of the bone, and more particularly by depriving them of that weight and ballast which might be essential to their aërial progress? I knew, moreover, that most of our bats (the bones of which are free from air) could keep on the wing for many hours, some of them carrying their young, whilst probably the sparrow, robin, wren, partridge, and many other birds, could not sustain a continuous flight for five minutes. I next discovered that in many specimens of the common fowl, a bird that had scarcely ever topped a brick wall, the humerus was hollow; but in other birds of long flight that I examined at the same time, including the snipe, curlew, and many birds of passage, that none of the bones of the extremities contained air. Before proceeding further with the investigation, I consulted several modern writers upon the subject, and I subjoin extracts from their works for the purpose of showing the prevailing opinion upon the matter. It was not till this morning, after the above was written, that I consulted the essays of Camper and Hunter, and it will perhaps be more methodical to quote these anatomists before the others.

The first writer I find upon the subject is Camper, 'Œuvres d'Anatomie Comparée,' Paris, 1803, vol. iii. p. 460. The paper was presented to the Haarlem Academy, and he calls the discovery one entirely new, "that nearly all the bones of birds are filled with air by respiration;" he entitled it a discovery, because he knew of no author who had indicated the same thing. Marsighni had spoken of the wing-bones of the pelican as very light and hollow, but he did not allude to air, nor the manner in which it entered the cavity. The first observations (February 1771) were made on the sea-eagle, owl, maccaw, turkey, black-cock, and common fowl. The *humeri* and *femora* were perforated, and the air-sacs and lungs inflated through the apertures. He came to the conclusion (verified by finding that the thigh- and wing-bones of a sparrow contained marrow) that all high-flying birds had the bones of the extremities filled with air;

and he thought it probable that the wing-bones only of the swans, geese and ducks would be found to be hollow.

After John Hunter's paper in the sixty-fourth volume of the London Philosophical Transactions, 1774, being "An Account of certain receptacles of air in birds, which communicate with the lungs and are lodged among the fleshy parts and in the hollow bones of these animals," Camper published a letter (vol. iii. p. 474) claiming the discovery three years before Hunter had spoken of it.

Hunter, in the paper above mentioned, appears to have confined his observations to a few birds, and his three quoted experiments for the purpose of showing that a bird may breathe through apertures made in the *humerus* or air-sacs, are very inconclusive. The birds he speaks of are the ostrich, the common fowl, the woodcock, pelican and canary. The chief object of the paper was to show that the air-sacs and bones are appendages to the lungs. The essays of these great anatomists, of which I have given a brief outline, will well repay perusal; and if many subsequent writers upon the subject had depended upon their own observations, the prevailing error "*that the bones of a bird are filled with air*," would not have occurred.

In Cuvier's 'Animal Kingdom' is the following:—"The air-cavities which occupy the interior of their body, and even (usually) supersede the marrow in their bones, increase their specific lightness."

Milne-Edwards, in his 'Elémens de Zoologie,' p. 504, says, "In general, air is found in great abundance in the bones of the members most employed in locomotion. In the ostrich, for example, the air-cells in the femur have a remarkable development."

The late Mr. Yarrell, whose recent death we all so much deplore, does not in his work on British Birds speak of the bones; but in his 'British Fishes' (Introduction, p. 21), he says, in alluding to the air-bladder, "The analogy to the air-cells in birds, and the passage of air from thence into the bones of the limbs, is too obvious to be unobserved, and will give interest to further investigation." So that Mr. Yarrell's impression evidently was, that the limb-bones of birds were supplied with air.

Mr. Rymer Jones, in his 'Organization of the Animal Kingdom,' 1855, p. 75, says, "Birds, in fact, breathe not only with their lungs, but the vital element penetrates almost every part of the interior of their bodies, bathing the surfaces of their viscera, and entering the very cavities of their bones; so that the blood is most extensively subjected to its influence."

In Carpenter's 'Comparative Physiology,' 1854, it is said, that "Even the bones are made subservient to this function (respiration); for though at an early period they possess a spongy structure, like those of reptiles, and are filled with thin marrow, they subsequently become hollow, and their cavities communicate with the lungs. In the aquatic species, however, the original condition is retained through life." And in his 'Manual for the Use of Students,' p. 386, it is stated, that in most birds the bones are hollow.

Professor Owen, in his article "Aves" in the 'Cyclopædia of Anatomy and Physiology' (vol. i. p. 343), remarks, "The singular

extension of the respiratory into the osseous system was discovered simultaneously by Hunter and Camper, and ably investigated by them through the whole class of birds. It is stated that if the femur into which the air is admitted be broken, the bird shall not be able to raise itself in flight." He then quotes from Hunter's experiments before alluded to.

Professor Owen goes on to say, that "the proportion in which the skeleton is permeated by air varies in different birds. In the penguins he found no air in the bones. The struthious birds have all air admitted into the cavities, except the *humeri*, *tibiæ* and distal bones of the legs, which retain their marrow. With the exception of the woodcock, all birds of flight have air admitted into the *humerus*. The pigeons, with the exception of the crown pigeon, have no air in the femur, which retains its marrow. In the owls also the femur is filled with marrow, but in the diurnal birds of prey, as in almost all other birds of flight, the femur is filled with air. In the pelican and gannet the air enters all the bones with the exception of the phalanges of the toes. In the hornbill even these are permeated by air."

In his 'Lectures on Comparative Anatomy,' vol. ii. p. 34, nearly the same opinion is expressed, and the swifts and humming-birds are said "to have air in every bone of the skeleton down to the phalanges of the claws."

I make no apology for these quotations, because they are essential for the proper understanding of the matter.

I have placed on the table a French and English partridge, a lark, a snipe, a sparrow, a starling, and the skeleton (in maceration) of a swift (*Cypselus apus*), and it will be seen that in the three first-named birds only do the *humeri* contain air; the other bones are filled with marrow; in the remaining four birds the bones contain no air: but I should observe that in two swifts before examined I found the *humeri* hollow, the other bones full of marrow. I also exhibit the bones of many birds that I have dissected; among these are the ostrich, jabiru, eagle, sparrow-hawk, Weka-rail, green woodpecker, and many of the *femora* and *humeri* of the smaller British birds, nearly all of which are filled with marrow; indeed there are no apertures in the bones for the admission of air.

To bring the question to a more practical bearing, I subjoin a list of birds recently dissected (most of them shot by myself), in which I have examined the bones of the extremities to ascertain the presence or absence of air, and in this communication I think it better to include only British birds.

Sparrow Hawk. *F. nisus.*
Magpie. *C. pica.*
Jackdaw. *C. monedula.*
Woodpigeon. *C. palumbus.*
Turtle Dove. *C. turtur.*
Sky Lark. *A. arvensis.*
Green Woodpecker. *P. viridis.*
Common Duck.
Velvet Scouter. *O. fusca.*
Common Fowl.
Turkey.
Partridge (English). *P. cinerea.*
Partridge (French). *P. rufa.*
Bittern. *B. stellaris.*

Common Gull. *L. canus.*
Black-headed Gull. *L. ridibundus.*
Herring Gull. *L. argentatus.*
Great Black-backed Gull. *L. marinus.*
Razor Bill. *A. Torda.*
Puffin. *F. arctica.*
Red-throated Diver. *C. septentrionalis.*
Moor Hen. *G. chloropus.*
Coot. *F. atra.*
Curlew. *N. arquata.*
Godwit. *L. melanura.*
Dotterel. *C. morinellus.*
Common Snipe. *S. gallinago.*
Jack Snipe. *S. gallinula.*
Sanderling. *A. vulgaris.*
Water Ousel. *C. aquaticus.*
Swift, Common. *H. apus.*
House Martin. *H. urbica.*
Swallow. *H. rustica.*
Sand Martin. *H. riparia.*
Goat-sucker. *C. Europæus.*
Chaffinch. *F. cœlebs.*
Yellow-hammer. *E. citrinella.*
Sparrow. *F. domestica.*
Wheat-ear. *S. œnanthe.*
Wren, Common. *T. Europæus.*
Wren, Crested. *R. auricapillus.*
Robin. *S. rubicula.*
Blackbird. *T. merula.*
Thrush. *T. musicus.*
Fieldfare. *T. pilaris.*
Red-wing. *T. iliacus.*
Missel Thrush. *E. viscivorus.*
Starling. *S. vulgaris.*
Hedge Sparrow. *A. modularis.*
Little Creeper. *C. familiaris.*
Wood Lark. *A. arborea.*
Oyster-catcher. *H. ostralegus.*

I have mislaid the notes of my dissections of many other British birds, and as I do not like to trust to memory, I will reserve these for the concluding part of my paper.

Of the above fifty-two birds, the first only had many of the bones permeated with air; the next thirteen on the list had the *humeri* only hollow, and among these it will be observed that there are many of short flight. Of the remaining thirty-eight none of them had marrow in the *femora* or *humeri*, and judging from a few that were examined (the snipe, *e. g.*), none of the bones contained air. The last list includes some birds, as the swift, martin and swallow, that are longer on the wing and probably of swifter flight than any of the feathered creation.

By way of testing more accurately the correctness of my conclusions, I performed the following experiments:—I introduced a blow-pipe into the trachea of a common duck, a cock, a French partridge, an English partridge, and a snipe; I opened the *humeri* and *femora* of all, and placed the dead birds under water; I then inflated the lungs and air-cells in the chest and abdomen, the size of the birds being greatly increased by the inflation. In the cock the air escaped freely from the aperture in the *humerus*; but in the other birds no air was present. I then removed the *humerus* and *femur* at the upper joint, but still no air escaped on inflation. As I have stated before, all these birds, with the exception of the snipe, had hollow *humeri*, but none of them had air in the thigh-bones; these experiments, however, require repetition on a larger scale.

In my next paper I purpose describing the air-sacs in the thoracic and abdominal cavities of birds; the method by which air is admitted to the hollow bones; and the flight of birds in relation to these matters.

January 27, 1857.

Dr. Gray, F.R.S., in the Chair.

The following papers were read :—

1. Descriptions of Three New Species of the Genus Phaëthornis, Family Trochilidæ.
By John Gould, F.R.S., etc.

Phaëthornis viridicaudata.

Stripe over and behind the eye light buff; crown of the head, upper surface and wing-coverts bronzy grass-green, duller on the head; wings purplish brown; tail-feathers bronzy grass-green at the base, passing into dark brown towards the extremity, the central feathers tipped with white; the next margined on each side at the tip with white, and the remainder with white on the apical portion of the external web; under surface reddish buff, becoming paler on the abdomen and vent; upper mandible black; basal two-thirds of the lower mandible yellow; tip black; legs yellow.

Total length, $3\frac{3}{4}$ inches; bill, 1; wing, $1\frac{1}{2}$; tail, $1\frac{5}{8}$.

Hab. Rio de Janeiro.

Remark.—This species belongs to that section of the *Phaëthornithes* to which Prince Charles L. Bonaparte has given the generic appellation of *Pygmornis*, or, in other words, which is allied to the *P. eremita, pygmæus* and *griseogularis*; but differs from all in the absence of any red on the rump, and in the green colouring of the base of the tail.

Phaëthornis episcopus.

Head, upper surface and wing-coverts rich golden brown; behind the eye a stripe of buff; wings purplish brown; tail deep bronzy brown at the base, changing into slaty brown near the apex, and slightly tipped with grey; rump rufous; ear-coverts black; under surface deep sandy buff, crossed on the breast by a broad band of jet-black; somewhat elongated plumes; upper mandible and apical third of the lower mandible black; basal two-thirds of the latter yellow.

Total length, $3\frac{1}{2}$ inches; bill, $\frac{7}{8}$; wing, $1\frac{1}{8}$; tail, $1\frac{1}{3}$.

Hab. Demerara.

Remark.—This species differs from both *P. pygmæus* of Spix and *P. eremita* in the rich bronzy colouring of its upper surface, by the greater breadth of the black pectoral band, the deep bronzy hue of the tail, and by the small size of its short and rounded wings.

Phaëthornis obscura.

Head, upper surface, and wing-coverts dark bronzy green; stripe behind the eye buff; wings purplish brown; tail dark bronzy brown, each feather narrowly margined externally and slightly tipped with white; throat smoky black, between which and the eye a stripe of

light buff; chest clouded chestnut, passing into dark grey on the abmen, and fading into buffy white on the vent; under tail-coverts greyish white; upper mandible and tip of the lower black; basal three-fourths of the latter yellow.

Total length, $3\frac{5}{8}$ inches; bill, $\frac{7}{8}$; wing, $1\frac{3}{8}$; tail, $1\frac{1}{2}$.

Hab. Rio de Janeiro.

Remark.—This is also one of the smaller species of the former, which, like *P. viridicaudata*, would pertain to Prince C. L. Bonaparte's genus *Pygmornis*. It differs from all others yet known in its darkly coloured throat and under surface.

2. Further Additions to the List of Birds received in Collections from Bogota. By Philip Lutley Sclater, M.A., F.L.S.

Since the last communication which I made to this Society on Birds received in collections from Bogota, I have obtained specimens and information from several quarters, which have enabled me to draw up the following supplementary list of fifty-two species not mentioned in my previous papers on this subject. This increase raises the total number of birds now known as belonging to the ornithology of the interior of New Grenada to upwards of 510. That future researches will develope still farther additions, and among them many new species, I have no doubt. For there are still considerable vacancies in the series to be filled up, particularly in the *Accipitres*, *Grallæ*, *Gallinæ*, and *Anseres*, and among the more obscure groups of *Passeres* (such as the *Tyrannines*), which I have as yet hardly ventured to touch, that is, in the way of naming new species, on account of the confusion which at present prevails among those already described.

When last in Paris, I had the pleasure of examining the large series of *Trochilidæ* belonging to M. Parzudaki. From the information I thus obtained, and from the kind assistance rendered to me by Mr. Gould, I have been enabled to enumerate twenty species of that family, omitted in my former lists, which occur in the interior of New Grenada. These added to the forty-nine previously given, make up a total of about seventy birds of this group which may be considered inhabitants of this region.

M. Jules Verreaux of Paris has supplied me with numerous notes made on the birds which have come under his notice from Bogota collections since the publication of my first list.

Mr. George N. Lawrence, the well-known Ornithologist of New York, showed me a considerable collection of Bogota skins, when I was in that city during the past autumn. Out of these birds received direct from Bogota he most liberally allowed me to bring to this country, for the purpose of closer examination, such as I was not able to identify on the spot, and I have found among them several species of which I have not elsewhere seen specimens from that region.

1. Ibycter americanus (Bodd.), Strickl. Orn. Syn. i. p. 22.

In Mr. Lawrence's collection from Bogota.

2. Syrnium albitarse, G. R. Gray, in Mus. Brit.

I have lately acquired a Bogota skin of this species, which agrees perfectly with the type in the British Museum. It is very nearly allied to *Syrnium hylophilum*, and I think it quite possible that what is supposed to be that bird from Bogota in the Philadelphian collection may really be referable to this species. Dr. Kaup has united it to *S. hylophilum* in the 'Monograph of Strigidæ' in Jardine's Contributions for 1852, but, I think, incorrectly. There has, I believe, been no description published of this bird.

3. Brachygalba inornata, Sclater, P. Z. S. 1855, p. 15.

I have lately obtained a Bogota specimen of this bird.

4. Trogon viridis, Linn.

A Bogota skin in Mr. Lawrence's collection seems identical with Brazilian examples.

5. Campylopterus lazulus (Vieill.), Bp. Consp. p. 71.

6. Bourcieria torquata (Boiss.), R. Z. 1840, p. 6.

7. Bourcieria prunellii (Bourc.), R. Z. 1843, p. 70.

Obtained by M. Bourcier from the environs of Facatativa in the province of Bogota.

8. Lampornis mango (Linn.).

The Bogota bird seems to be the true *L. mango*.

9. Thalurania viridipectus, Gould, P. Z. S. 1848, p. 13.

10. Heliodoxa leadbeateri (Bourc.), R. Z. 1843, p. 102.

11. Heliomaster longirostris (Vieill.), Gould, Mon. Trochil. v. pl. 9.

This species has a considerable range, occurring also in Trinidad, Demerara, Cayenne, and Venezuela.

12. Amazilius reifferi (Bourc.), R. Z. 1843, p. 103.

Discovered by M. Reiffer at Fusugagua in the New Grenadian Andes, south of Bogota.

13. Amazilius castaneiventris, Gould, P. Z. S. 1856, p. 150.

14. Saucerottia viridigastra (Bourc.), R. Z. 1843, p. 103.

Discovered by M. Reiffer at Fusugagua.

15. Saucerottia cyaneifrons (Bourc.), R. Z. 1843, p. 100.

The locality given for this species by M. Bourcier is Ibagué, which is the capital of the province of Mariquita, on the left bank of the Magdalena. It frequently occurs in Bogota collections.

16. Hylocharis goudoti (Bourc.), R. Z. 1843, p. 100.

Also from Ibagué.

17. Hylocharis chrysogaster (Bourc.), R. Z. 1843, p. 101.

Occurs in Bogota collections.

18. Aglæactis cupreipennis (Bourc.), R. Z. 1843, p. 71.

19. Thaumantias milleri (Bourc.), P. Z. S. 1847, p. 43.

20. Myiabellia guimeti (Bourc.), R. Z. 1843, p. 72.

21. Juliamyia typica, Bp.—*Ornismyia julie*!, Bourc. R. Z. 1842, p. 373.

Hab. Tunja in New Grenada, north of Bogota.

22. Juliamyia amabilis (Gould), P. Z. S. 1851, p. 115.

23. Avocettinus eurypterus (Lodd.), P. Z. S. 1832, p. 7.

24. Lophornis delattrii (Less.), R. Z. 1839, p. 19.

25. Anabates striaticollis, sp. nov.

Olivascenti-brunneus, capite virescentiore et hujus plumis tenuissime nigro marginatis : alis nigricantibus, extus brunneo, intus autem cinnamomeo marginatis : subtus clarior et cinnamomeo tinctus ; gutture et pectore antico pallidioribus et scapis plumarum cum harum parte mediali clare flavicanti-albidis, strias obsoletas formantibus : cauda unicolore rufa : rostro flavido, culmine brunnescente, pedibus nigricantibus.

Long. tota 6·0, alæ 3·3, caudæ 2·6.

I have lately obtained a Bogota skin of this *Anabates*. Another specimen, which was previously in my collection and has been submitted to M. de Lafresnaye's examination, is marked in his handwriting "*Anabates striaticollis*, Lafr." I have therefore used that name, though as yet, I believe, unpublished. These two examples merely differ in their slightly inferior size from a third specimen marked "*Anabates olivaceiventer*" by M. de Lafresnaye some years since. I do not know whether he considers the two species indicated by these MS. names as distinct. For myself I doubt the fact. The cervical striæ, whence the name is derived, are not very well marked in my Bogota specimens.

26. Sclerurus brunneus, sp. nov.

S. supra brunneus cinnamomeo tinctus, subtus paulo pallidior ;

gutture albo mixto : alarum et caudæ pennis intus nigricantibus, illarum marginibus externis dorso concoloribus : rostro nigro, basi flavicante : pedibus nigris.

Long. tota 6·0, alæ 3·4, caudæ 2·1.

I have lately obtained a single Bogota skin of a bird of this genus, to which (as I cannot associate it with any of the already-described species) I have given a new name. From *S. caudacutus* of Brazil and *S. mexicanus* (P. Z. S. 1856, p. 290) of Mexico and Guatimala, it differs in the want of the bright rufous colouring in the rump and fore neck. In this respect it would seem to resemble Hartlaub's *S. guatimalensis* (Rev. Zool. 1844, p. 370), but that bird is said to be of the size of *S. caudacutus*, to which the present species is considerably inferior in dimensions.

27. Rhimamphus cæruleus (Wils.), Am. Orn. pl. 15. fig. 7.

I have lately acquired two Bogota specimens of this in imperfect plumage.

28. Grallaria monticola, Lafr. R. Z. 1847, p. 68 ; Des Murs, Icon. Orn. pl. 53.

29. Hypocnemis pœcilinota, Cab. ; Bp. Consp. p. 202.

In Mr. Lawrence's Bogota collection.

30. Tityra inquisitrix (Licht.), Bp. Consp. p. 180.

M. Parzudaki's collection contains an immature male of this species from Bogota.

31. Pachyrhamphus pectoralis, Sw. An. in Men. p. 288.

A single skin from Bogota in my collection agrees with the Cayenne bird.

32. Pachyrhamphus griseus (Bodd.), Pl. Enl. 687. f. 1.

I have seen several Bogota skins of this bird. I likewise possess examples from S. Martha, Trinidad, and Cayenne.

33. Cephalopterus ornatus, Geoffr.

Mr. Lawrence has a fine example of this bird in his Bogota collection.

34. Cyanocorax turcosus, Bp. Compt. Rend. Ac. Sc. Par. (1854).

I have a Bogota skin of this species received from MM. Verreaux. It is very closely allied to the better-known *C. armillatus*, but may be distinguished by its rather larger size, the more greenish tinge of the plumage, and brighter blue of the throat.

35. Chrysomus icterocephalus (Linn.), Pl. Enl. 343.

Mus. P. L. S. ex Bogota.

36. Pendulinus chrysocephalus (Linn.), Bp. Consp. p. 432.

A single skin of this bird in M. Parzudaki's collection seems to agree with examples from Cayenne.

37. Leistes guianensis (Linn.), Pl. Enl. 236. fig. 2.

Mus. Paris et P. Z. S. ex Bogota.

38. Saltator olivascens, Cab. P. Z. S. 1856, p. 71.

Mr. Cassin of Philadelphia presented me with the only Bogota example of this bird, which has yet come under my notice.

39. Ramphocelus unicolor, Sclater, P. Z. S. 1856, p. 128.

40. Euphonia crassirostris, Sclater, P. Z. S. 1856, p. 277.

41. Caica melanocephala (Linn.).

42. Pionus menstruus (Linn.).

I possess Bogota skins of both of these Parrots. Of the latter I have also examples from S. Martha (Verreaux), and Barra do Rio Negro (Wallace).

43. Urochoma hueti (Temm.).—*Psittacus hueti*, Temm. Pl. Col. 491.

Several specimens of this beautiful Parrot have lately been received in Paris from Bogota.

44. Opisthocomus cristatus, Vieill.

In Mr. Lawrence's collection from Bogota.

45. Crax alector, Linn.

In Mr. Lawrence's collection from Bogota.

46. Chlorænas rufina (Temm.), Bp. Consp. ii. p. 54.

47. Chamapelia rufipennis, Bp. Consp. ii. p. 79.

48. Geotrygon montana (Linn.), Bp. Consp. ii. p. 72.

Bogota specimens of these three Pigeons are in Mr. Lawrence's collection.

49. Ortalida montagnii, Bp. Compt. Rend. 1856 (May) xlii. p. 875.

MM. Verreaux have received this bird from Bogota.

50. Aburria carunculata, Bp.—*Penelope aburri*, Less. Tr. d'Orn. p. 482.

Discovered by M. Goudot near Bogota.

51. Tinamus canus, Wagl. Isis, 1829, p. 746.

In Mr. Lawrence's collection from Bogota.

52. Parra hypomelæna, G. R. Gray, Gen. Birds, pl. 159; P. Z. S. 1856, p. 283.

3. On the true Nautilus umbilicatus of Lister. By Augustus A. Gould, M.D.

In looking over the shells of a dealer in Boston (U. S. A.), I observed three specimens of an umbilicated Nautilus, which struck me as differing essentially from the shell commonly known as *Nautilus umbilicatus*. A more careful examination satisfied me that they were quite distinct; and I made out a comparative description of them, intending to designate the newly observed one by the name *texturatus*, on account of its finely reticulated surface. But on referring to the several figures of *N. umbilicatus*, I found that the figure of Lister, which represents the shell originally named *umbilicatus*, presented all the characteristics of the reticulated shell, while all other figures represented the smooth, shining shell ordinarily bearing that name. From both the figures and descriptions of authors, I am led to believe that the shell originally observed by Lister has not been recognized by conchologists since his day. Every writer except Favanne expressly speaks of his shell as smooth (lævis, glatte), and his figure clearly refers to the common shell. On the supposition, then, that these are two distinct species, it is proper to restrict the term applied by Lister to the shell represented by him, and to substitute another for the shell ordinarily named *umbilicatus*. The term *scrobiculatus* indicated in manuscript by Solander, and adopted by Dillwyn, and which has been placed by others as a synonym, may be appropriately restored to this species.

The principal differences between the two shells are as follow. Taking the common shell, so well represented in Sowerby's 'Thesaurus' as a standard, the other shell, which we take to be the genuine *umbilicatus* of Lister, is more ventricose, the sides being nearly parallel, and the periphery broadly rounded; the aperture is nearly quadrate rather than oval, the posterior angles being nearly right angles; the umbilicus is rather larger, its walls nearly perpendicular, in no degree cup-shaped; its marginal angle very slightly rounded, the edges of each whorl broadly spreading over the preceding whorl, and it is in all cases clearly pervious; the surface, instead of appearing smooth and shining, with only some distinct traces of revolving striæ near the aperture, has a dead, unpolished aspect, and is everywhere conspicuously reticulated with numerous, crowded, well-impressed, revolving lines; the colouring, instead of a lively ochreous, has a dusky smoky hue, and the chestnut-coloured flammules are numerous and delicate, numbering as many as five to the

inch in place of three in the *scrobiculatus*. In all the specimens of the latter which have come under my observation, the sides are conspicuously undulated by a series of distinct waves, in the direction of the lines of growth, which are wholly wanting in *umbilicatus*. The most obvious distinctive marks then are, in the former, the shining surface and waved sides; and in the latter, the numerous small flammules, dead surface, and well-marked revolving striæ. These revolving striæ are plainly indicated on the figure of Lister; and that they are not merely a style of the engraver's art, but are intended to indicate something in nature, may be inferred by comparing the figure with that of *N. Pompilius*, in immediate proximity, the surface of which is really like that of *scrobiculatus*. The best of the three specimens examined by me, is now in the possession of Hugh Cuming, Esq., and an inspection of it will fully confirm the above views.

The synonymy of the two species will then be as follows:—

N. UMBILICATUS. *Testa suborbicularis, ventricosa, striis confertis volventibus insculpta, utrinque late umbilicata; marginibus umbilicorum vix rotundatis; umbilico pervio, infundibuliformi, nigro margine externo vix rotundato; rufescens, postice radiatim ferrugineo strigata, strigis angustis, confertis.*

N. umbilicatus, Lister, Conch. t. 552. f. 4.

N. SCROBICULATUS. *Testa suborbicularis, subdepressa, lævis, nitida, lateribus radiatim fluctuatis, utrinque late umbilicata, umbilico crateriformi, margine externo rotundato, late flavescens, postice radiatim ferrugineo strigata, strigis latis, remotis.*

N. scrobiculatus, Soland. MS. Portland Catal. 169. no. 3653; Dillwyn, Catal. i. 339.

N. Pompilius, var. β., Gmelin, no. 3369.

N. crassus umbilicatus, Chemn. Conch. x. t. 137. f. 1274, 1275.

Le grand Nautile ombiliqué, Favanne, Conch. i. 726. t. 7. f. B 3, t. 69. f. D 2.

N. umbilicatus, Knorr, Vergn. iv. pl. 22. f. 4; Lamarck, Anim. s. Vert. xi. 322; Blainville, Malac. pl. 8. f. 2; Crouch, Conch. pl. 20. f. 16; Sowerby, Thes. Conch. pl. 98. f. 7.

February 10, 1857.

J. Gould, Esq., F.R.S., V.P., in the Chair.

The following paper was read:—

On the Anatomy of the Great Anteater (Myrmecophaga jubata, Linn.). Part II. By Professor Owen, F.R.S., F.Z.S., etc.*

In my former communication on the Anatomy of the Great Anteater, the position of the stomach and its relations to adjoining viscera were briefly pointed out. In the present paper I propose to describe the form and structure of this very remarkable organ in the *Myrmecophaga jubata*.

Moderately distended the stomach presents a subglobular form, of about 8 inches diameter, with a smaller subglobular appendage, as it seems, of about 3 inches diameter, intervening between the main cavity and the intestine.

The œsophagus terminates near the middle of the upper surface of the main portion, of which about 4 inches extends to the left of the cardiac orifice to form what Haller called the 'saccus cæcus.' The general configuration of the stomach, as seen from the anterior surface, will be shown in the first Plate.

On the middle of both the anterior and posterior surfaces of the stomach is a sheet of tendon, of an irregular triangular form, 6 inches in longest diameter, which is in the direction of the length of the stomach, and in which the tendon extends from the large to the small division of the organ, and acquires upon the latter its greatest thickness and whitest colour.

Upon bisecting the stomach lengthwise, the part described as the main cavity is seen to correspond with the cardiac division, and the seeming appendage, with the pyloric division, of the stomach in *Rodentia*: but they are much more distinct in structure and functions in the *Myrmecophaga* than in any other mammal with a stomach similarly divided externally. The cardiac cavity has a vascular secreting surface, the lining membrane being disposed in very numerous small rugæ; at the parts where the parietes have yielded most to the distending force, these rugæ are nearly effaced: other larger and more permanent folds are nearly straight, are confined to the vicinity of the communication with the pyloric cavity, and converge towards the aperture.

The cardiac orifice, in the inverted stomach, presents the form of a narrow, slightly bent crescentic slit. It is situated about $3\frac{1}{2}$ inches from the similarly shaped aperture of communication between the cardiac and the pyloric cavities: but the margin of this latter aper-

* This paper will be reprinted in the Transactions, and there illustrated with 4to plates.

ture is indented as it were by the ends of the converging folds of the lining membrane, about ten in number, which are continued into the pyloric cavity. The length of the cardiac slit is 1 inch; that of the intercommunicating aperture is 1 inch 3 lines.

The pyloric division of the Anteater's stomach is remarkable for the thickness of its muscular tunic and the density of its epithelial lining, which convert it into a veritable gizzard.

The muscular coat varies from one inch to half an inch in thickness; at the middle of the cavity it is separated from the lining membrane by an unusual accumulation of the elastic submucous cellular tissue, which is most accumulated in the upper wall of the cavity. A very small proportion, only, of food can enter at one time into this cavity, to be subjected to the triturating force of its parietes, operating with the aid of swallowed particles of sand in the comminution of the unmasticated or imperfectly masticated termites.

The area of the pyloric cavity, as exposed by a vertical longitudinal section, appears a mere linear, slightly sinuous tract, with a dilatation near the pylorus, due to a kind of valvular protuberance of the upper wall projecting towards that aperture. But, when the pyloric cavity is bisected transversely, its area then presents a crescentic figure, owing to the protuberance formed by the thicker muscular tunic and the more abundant submucous elastic tissue in the upper parietes. The lower longitudinal plicæ, which commenced on the cardiac side of the intercommunicating aperture, give a longitudinally ridged character to the inner surface of the cavity.

This character is changed, near the pylorus, for a reticular rugosity: the pylorus, when viewed from the duodenal side, presents a crescentic form, with the horns of the crescent directed upwards. The lining membrane of the duodenum soon becomes smooth.

Mr. Gould communicated the following letter, lately received by him from M. Elsey, Esq., the Surgeon and Naturalist attached to the Expedition under the command of A. C. Gregory, Esq., now engaged in exploring the north-western and northern portions of Australia. Mr. Gould considered this communication to be of great value, inasmuch, as, besides mentioning that the writer had acquired an extensive collection of birds, it contains numerous very interesting observations respecting the various species which had been met with in the neighbourhood of the Victoria River Depôt, N.W. Australia, lat. south 17° 34′ 30″; their interest being much enhanced by the circumstance of many of them referring to several forms not previously known to occur in that part of the country.

Victoria River Depôt, N.W. Australia,
S. Lat. 17° 34′ 30″.
June 1856.

My dear Sir,

I am sorry I cannot send you any account of large collections or extensive ornithological notes. Circumstances over which

I could have no control have kept me a close prisoner at this camp since last October. My collection of birds comprises up to the present time 103 species, some of which are, I think, new. Of Hawks I have five kinds, including two species of *Milvus*. The latter feed entirely on grasshoppers, are most cowardly birds, and utter a peculiar shrill wailing cry. The first I procured was of a very uniform dark, dirty brown colour. It was common on our first arrival here, but disappeared about December, and was soon replaced by *Milvus affinis*, which has latterly become very numerous, and now perches in hundreds on the trees around the camp. These birds are excellent eating, and certainly exceed any other game we have here in flavour and tenderness. There are also three Eagles, neither of which I have been able to get, for though knocked down with our largest shot, they have got away; one has a dark-slate upper surface and wings, and white breast and belly. It frequents Sandy Island, the Stony Spit, and other parts of the river where sandbanks afford good fishing ground. The second is smaller, and of a pure white. I have only seen it once, when passing some dangerous rapids in the boat. The third is brown, with a very light-coloured and small head and neck, while the wings have an immense expanse. I should mention that one of our men found the black and white Eagle nesting in April. The nest was of immense size, and contained a single purely white egg of an almost globular form.

I have three Owls. The Barking Owl of these parts is a fine bird, the upper surface of which is beautifully mottled with dark-red and cinnamon-browns; while the under surface is white, with a central streak of brown in the feathers of the breast. It builds in the hollows of the huge Gouty-stem tree (*Adansonia*) of this coast, and incubates in March and April. Another is a large dirty slate-brown bird, with rough, dull yellow beak and legs. I procured one specimen only early in November, most likely a stray bird. The third was an *Athene*, rather smaller, of a mottled brown. The stomachs of all the specimens of the Athene were crammed with orthoptera.

There is one true *Caprimulgus* here, of a beautiful warm mottled brown and black, and with white on the wings. It lays a dull white or greyish egg, marked with dirty green, at the foot of a tree, on the bare uneven ground. I have two species of *Ægotheles*, both of which I flushed from the holes of trees; and I have seen a large *Podargus*, with huge cellular mandibles, which was shot by the mate of the schooner, and spoilt by insects when I saw it.

About the middle of December a large flight of Swallows arrived from the south, high in the air and out of shot. They remained about us one afternoon, wheeling in the air, but did not pitch, and were gone next morning. A little Martin common here just now (May and June), is equally shy, and I cannot find its place of resort. Two *Dacelos* are frequently seen: one entirely coloured with shades of blue and grey, and with a crest of lengthened feathers on the back of the head; the other blue and warm red-brown, with finer and stronger tints than the other, and without a crest. A dull-

coloured *Halcyon* (?) *sanctus* is common; and I have shot a single pair of the beautiful *Alcyone pulchra*, which I have only seen once. My men, some of whom take great interest in my collection, mention another, which I have not seen. According to their account, it is a lovely bird, the under surface fine purple, &c. Of *Artamus* I have several species, but have no means of determining them. They usually frequent stumps and dead logs in open flats, in twos and threes, and are very active. One species only, a dusky little fellow, lives on the tops of the ranges. I have seen a number of this species sitting round the top of a lofty Palm (*Levistona*), whose head had been struck off by storm or whirlwind; it was more than 80 feet high, and, swayed in the breeze and the circle of birds, with their heads directed inwards and their tails turned outwards, had an absurd effect. Of Shrikes I have two or three, including *Grauculus melanops*. I do not know *Grallina Australis*, nor have I heard its cry, so often alluded to by Leichardt, unless indeed a black and white bird with whitish very long tarsi, and white, rather blunt and soft beak, which builds a mud nest in the branches of trees near the water, be it. It has a peculiar shrill cry as it rises from the water, and is called the "Water Magpie" by our stockmen.

Of Fly-catchers and Robins, so called, I have seven or eight species. One robin has a slate-grey back, black head and wings, and chestnut flanks, with a white stripe over the eye; it lives in the mangroves, and may be recognized at all times by its pretty little piping note. I found it nesting in November and again in February and March; the nest is an open, shallow, slightly constructed one; the eggs two in number, dull greenish-grey, speckled with brown mostly at the larger end.

There are three or four Wrens; one a brilliant glossy black, with scarlet back and rump; this is the male bird, which does not attain this plumage till the second moulting. The young birds are uniform dull wren colour. After the first moulting they have a darker tint, and a few feathers between the shoulders tipped with red, and perhaps a single black feather in the tail. At the second moulting they acquire all their gloss, and may then be seen surrounded by a group of newly fledged birds. The female is dull wren-brown, with a lighter under surface. There is another beautiful Wren much larger and longer in the body; it has a beautiful purple top to the head, with oval spot of glossy black in the centre, and black zone outside it; the body is greyish-brown; the tail is long, of a blue tint, and having a sort of water-mark, if I may so call it, on the surface, which gives various shades to the colour. There is also another Wren of the same size and form and with a similar tail, but with a plain grey head and a chestnut spot over the ear-coverts. This is a female, the other a male; of each I have only a single specimen. All these build a dome-shaped nest of grass, in a low bush or tuft of grass, and lay about February and March four white eggs, quite translucent: the yolk shining through gives them a rose tint. I have shot lately (May) a bird allied to *Cinclorhamphus*, but to what genus it belongs I do not exactly know. Of two specimens one had

in its stomach large green seeds, the other bark, bugs and various insects.

The Finches are very numerous and very beautiful. I have ten or twelve species, including *Estrelda annulosa* and *Poëphila personata*, of which there are two or three varieties, similar in size, habits and body colour, but differing in the glossy black of the face and chin, and in the colour of the beak and legs. The beautiful *Poëphila Gouldiæ* is tolerably numerous; of this also there are two varieties or species: one with a black face, surrounded by a line of bright blue; the other has the anterior half of the face scarlet, the rest black, edged with blue. Of both the breast is bright purplish-lilac; the belly canary-yellow; the back a mixture of bright green and dark brown, with light blue mixed over the rump.

There are two *Donacolas*: *flaviprymna*, and a crimson and brown one, of which there are one or two varieties. The *Donacolas* build in some parts in low tea-trees overhanging water, making a large spouted nest with a small cavity, of dry bark of tea-trees; and *Pandanus*. The *Poëphilæ* generally have large nests of grass on the ground or in low tufts of grass; one species builds in the small bushes of *Calliotrix* and *Melaleuca*, and composes its nest of minute dry twigs, often so slenderly that it appears to have a double opening. The *Estreldæ* build smaller and stouter nests in young *Eucalypti* and small trees, from 15 to 20 feet high. They all lay six white eggs.

I have met with two or three nests of the bower bird, *Chlamydera nuchalis*, but no one of my party has seen the birds.

The Crow of this part of the country is a large bird, generally solitary, with a small eye and hazel-brown iris; it is very wary, and with difficulty shot.

The *Meliphagidæ* are not numerous, at least the more common species; the *Tropidorhynchus* is feathered all over the head, and does not merit its vulgar name. There is another resembling it somewhat here, but without its singular voice, and with a stouter beak. It is much like *Anthochæra*. A true *Merops* is also met with.

I have been unable to learn anything of the habits or nidification of the *Meliphagidæ* at present.

I have not observed any true Cuckoo here, and have failed to discover the *Cuculus dumetorum* of this coast; but I have seen two Cuckoo Pheasants (*Centropus*), one much lighter-coloured than the Moreton Bay species; the other with an almost black under surface, and the general plumage of a dark tint.

A *Climacteris* of dusty-brown plumage, with a brownish-yellow spot on the wings, looks very handsome when sailing with outspread wings and tail from tree to tree, or when hopping round the trunk and branches of the gum-trees, where it feeds much on the larvæ contained in the small tough cylindrical chrysales suspended in hundreds in the cracks of the bark. It loses all its beauty when prepared as a museum specimen.

Of Cockatoos: *Cacatua galerita, sanguinea*, and *Eos*, are abundant here, the two latter especially. Leadbeater's Cockatoo, with the fine

red crest, was also seen on the southern slope of the dividing range south of lat. 18° S., and extending to the margin of the desert in lat. 20° S. It is common in the northern districts of West Australia, north of the Murchison. I have been hitherto most unfortunate in my attempts to get a Black Cockatoo. Several, however, have been shot and their tail-feathers, &c. brought in. I found *Aprosmictus erythropterus* for the first time in January; on dissection, I found the os furcatorium very small, and buried in the substance of the pectorals.

I have not found a single *Platycercus* or *Euphema*, and only two Honey Parrots, *Trichoglossus versicolor* and *T. rubritorquis*; *Nymphicus Novæ-Hollandiæ* appeared suddenly in the beginning of April, and was followed in about a fortnight by *Melopsittacus undulatus*; both became very numerous, feeding about the burnt patches of ground; they are now (June) becoming scarce.

Pigeons are not very numerous. I found *Ptilonopus Swainsoni* at Quail Island on the coast near Port Paterson, and the fine *Carpophaga leucomela* at Point Pearce, near a swamp at which we were encamped in October; I was unable to preserve it, and have not seen it again.

Phaps histrionica, or a pigeon very similar to it, has been found lately in May, and another Bronze-wing smaller, and of a uniform greyish brown with white tip to the tail, red cere, and silver-grey iris, has been common during our stay. I have been disappointed in not getting *Geophaps plumifera*. It was often seen on the route from Point Pearce, and was very numerous, with another and larger-crested Pigeon at the second depôt, established on a branch of the Upper Victoria in lat. 17° 3′ S.

The *Petrophassa albipennis* is common among the sandstone cliffs of the ranges. Of two *Geopeliæ*, one is speckled, and has a silver-grey iris; the other has a beautiful lavender-coloured breast, and pink iris, with broad bright red orbits. Both are elegant, timid birds, and their liquid voices can be heard during the heat of the day, when all else is still. Neither of these Pigeons has the peculiar vocal powers noticed in *Geop. tranquilla* by Captain Sturt. The speckled one makes a very slight flattish nest of sticks on the horizontal fork of a branch, in which it deposits two white eggs.

One *Megapodius* was shot at Point Pearce, where in the hurry and confusion I could not preserve it; it was of compact form, of a uniform olive-brown plumage, with a stout beak, red iris, and strong tarsi and toes, the hinder especially. No mounds were seen during our short stay there.

A small Quail is common among the grass, but I have not yet obtained it.

Both *Dromaius* and *Otis* are of the same size, and in every way similar to those of the south; we have nowhere confirmed the observations of Leichardt and his black fellow as to their smaller size. Indeed Mr. Gregory believes, and I think most justly, that the *Emu* may cross the entire continent from east to west, or north to south,

its habits being strictly wandering. It has no regular feeding ground or drinking place; its tracks are everywhere, and it is for ever on the move.

Of Waders I have a considerable number, but am unable to determine many of the species, as I am entirely without books of reference. I have found the beautiful *Lobivanellus lobatus* common during March and April on the sand-banks of the fresh water; it was usually associated with a small white *Himantopus*, with black wings and head. A long and pointed winged bird resembling *Glareola* is also frequent; it feeds on the wing, on grasshoppers, &c. about the *Polygonum* and other bushes fringing the banks.

I have seen *Falcinellus*, but could not get it. I have also one white *Platalea*, the *Jabiru* or *Mycteria*, and two or three Herons. The Night Heron, *Nycticorax*, is common, frequenting the dense mangroves, where it remains during the day, but flies at the most distant noise. I have also a single specimen of *Tribonyx* and *Fulica*.

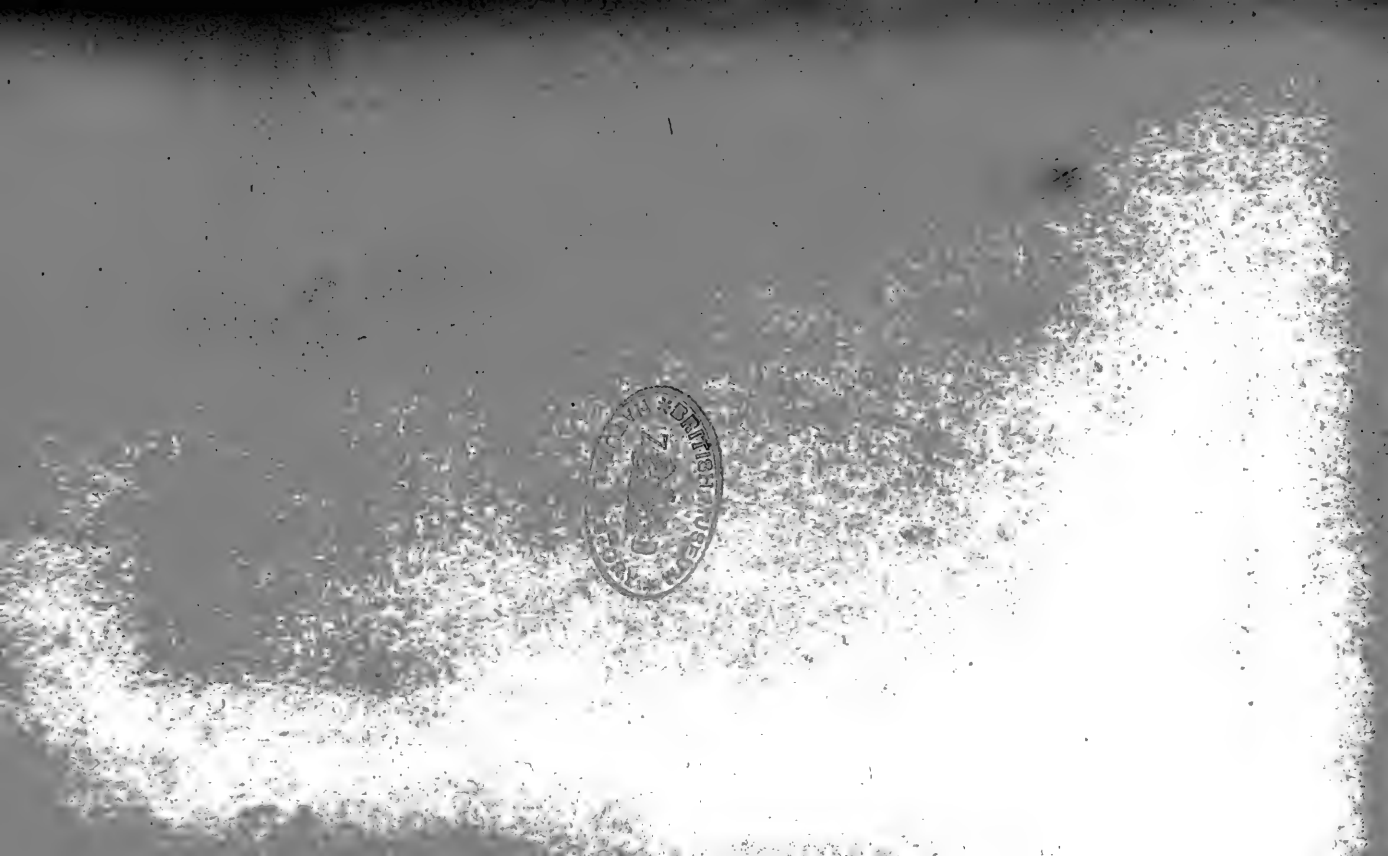
I have not had much opportunity of procuring *Natatores*. The Whistling Duck is very common, and was frequently shot on lagoons in the interior, but is very wary on the river. Large V-shaped flights of them passed over our camp during March from S.E. to N.W., in which direction they appear to have a favourite resort. I have also another Duck, similar to it, but smaller, with a soft dull-brown plumage.

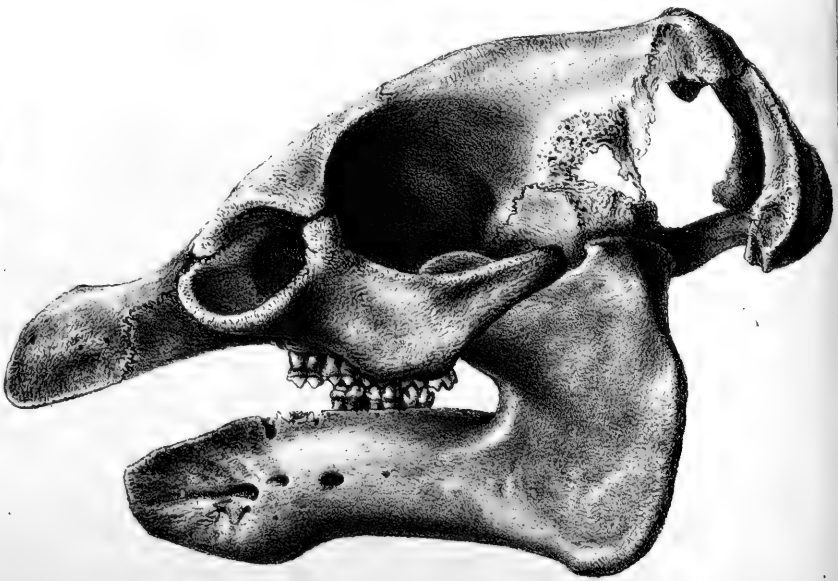
I have seen *Nettapus pulchellus*, but could not get it. Indeed my opportunities of examining the river have been so much more limited than those Captain Stokes enjoyed, that many of his birds I have not even seen. And owing to our small number I have generally on these excursions been obliged to take an oar myself, and could not therefore keep a very bright look-out.

The *Plotus* is common here, and excellent eating. During February and March it was incubating. It chooses large trees that hang over the water above or through the mangroves, and in these a number of them build a colony of large coarse flattish nests of dead sticks and twigs, which appear, from the quantity of dirt about them and their stained appearance, to be used year after year. Each season they place in the centre a few fresh green leaves, and on these lay three or four white eggs, with a very earthy opaque, but brittle shell; the lining membrane is of a blue-grey colour; they are rather smaller and more elongated than a hen's egg. We have enjoyed many fine meals of these eggs, sometimes getting from forty to fifty in a single tree. Both birds sit. The male is of a glossy greenish-black, with a little brownish-grey on the wings and wing-coverts. The female has a white under surface, but is otherwise similar.

The Pelican is white, with black wings, and a very fine blue and purple margin round the pouch. It is, I presume, *Pelecanus conspicillatus*. Its breeding season is March and April.

I have thus endeavoured to give you a rough abstract of my collections hitherto; I am now about to begin work really, as I start with the party in a few days for the Albert River, and from thence,





MANATUS VOGELII ? Owen.

if all 's well, to Moreton Bay. I shall have much pleasure in writing to you from the Gulf of Carpentaria, should I have anything of interest to communicate.

I remain,
My dear Sir,
Your obedient Servant,
M. Elsey.

John Gould, Esq.

February 24, 1857.

Dr. Gray, F.R.S., in the Chair.

The following papers were read:—

1. On the Skull of a Manatus from Western Africa. By Dr. Balfour Baikie, F.R.Geog.S.

(Mammalia, Pl. LI.)

Until very recently but two species of the somewhat scarce genus *Manatus* have been acknowledged by naturalists, viz. *M. australis* (the *M. Americanus* of some writers) and *M. Senegalensis*. Of these the former inhabits chiefly the mouths of the great rivers of the north-eastern coast of South America, and the West Indies, while the latter is confined to the tropical portions of the western coast of Africa. Some writers, as Hernandes, mention a species found along the coasts of Peru, but, if so, little or nothing is known of it or its habits. Wyman has described as *M. nasutus* what is probably a variety of *M. Senegalensis*, and Harlan as *M. latirostris* another Manatee from the Gulf of Mexico, which, however, seems to be a good species.

Individual specimens of *Manati* have rarely been met with along our own shores, as that recorded by Prof. Fleming* as having occurred in the Shetland Islands in 1823; and I am in possession of tolerable evidence, which I intend shortly to publish, that a similar animal has made its appearance from time to time in Orkney, where it is not unknown to fishermen. These are most probably stray members of *M. australis* which have crossed the Atlantic, which belief is, to some extent, supported by the fact that in Orkney they have always been seen on the western or Atlantic side of the islands.

The *M. Senegalensis* has been found in the Senegal, the Gambia, and some rivers of Western Africa; and *Manati* have also been

* *Vide* Fleming in Edin. New Phil. Journal, and Baikie and Heddle's 'Historia Naturalis Orcadensis.'

known to occur in various rivers opening into the Bight of Biafra, which have hitherto been referred to the same species, partly because no specimens had hitherto been critically examined, and partly because it seemed unlikely that two species of a genus so unprolific, even in individuals, should exist in localities so very near to each other. All probability from previous knowledge, or in the absence of more precise or more extended information, merely justified a belief in the existence of two species, one inhabiting the New World, the other peculiar to some tropical portions of the Old World.

The differences between *M. australis* and *M. Senegalensis* are quite evident. The former seems to grow to a greater size, and the shape of the skull at once distinguishes it, being altogether larger, with a more lengthened nasal opening, and more elongated intermaxillary bones, giving it a large mouth. The lower jaw, also, is less massive and angular, and its inferior margin less curved. It would seem to approach more to the fragmentary extinct forms described by Cuvier in his 'Ossemens Fossiles.' In *M. Senegalensis* again the skull is more compact, the snout shorter, the lower jaw more angular with its lower border more curved, and the zygomatic process of the temporal is less elevated.

In 1851, while Dr. Barth was journeying towards the country of Adamáwa in Central Africa, he heard from the natives, accounts of an animal said to frequent the rivers and marshes named by them Ayú (erroneously written Ajúh). He heard of the same animal, under the same name, also up the river Kwóra or Niger below Timbúktu, and he believes that it also exists in the river Shári, which runs into the marshy Lake Tsád. Dr. Barth not having been able to satisfy himself about this creature, directed Dr. Vogel's attention to it, and the latter gentleman fortunately met with a specimen in September 1855 in the upper part of the Binuë or Tsádda. An account of this Ayú having been sent by him to England, and read at the British Association Meeting at Cheltenham, Prof. Owen thought that it presented sufficient peculiarities to distinguish it as a species, which he indicated as *M. Vogelii*; but his remarks partly applied to a *Manatus* skull, which was exhibited at the time, and which by some misconception persons present had been led to consider as belonging to the very individual described by Vogel.

During the months of September and October 1854 I ascended the same river; but though this was the period when they ought to have been most abundant, yet I neither saw nor heard of any such animal; and though I always carefully examined the hunting relics in the various villages, yet I never met with its remains. From this I am led to confirm Dr. Vogel's statement, that it is a rare and scarce creature. But on the 13th July previous, just after I had entered the mouth of the Kwóra and Niger from the sea, I had spent the day in examining some of the interminable dreary creeks, which are there so apt to perplex the voyager. While returning in the afternoon I saw under some palms and mangroves a collection of miserable huts, hardly entitled to the appellation of a village, towards which I pulled and presently landed. The inhabitants in great alarm all fled

into the bush, and could not be induced to come out, so I walked through their habitations, looking around me, but finding nothing but heaps of nuts of the oil-palm. But just before embarking, my eye caught a heap of dry bones, placed evidently by the negroes as their dju-dju, or sacred heap, remains of their hunting achievements, and now dedicated to their deity. I eagerly examined the mass, but found to my grief that it was composed mostly of fragments, among which were portions of skulls of goats, of a bullock, and of a crocodile; but on turning these over I saw a more complete relic, one which struck me as being peculiar, and as something I had not previously seen. This I carried off, and it turned out to be the nearly complete skull of a *Manatus*, which was the skull exhibited at Cheltenham. Having had time lately to examine it, I found it to exhibit the peculiarities remarked by Prof. Owen, and the result is as follows:—

General Measurements.

	inches.
Extreme length	12½
Greatest depth	8
Length of nasal orifice	4¼
Breadth of nasal orifice	2
From edge of orbit to extremity of snout	3⅝
From anterior molar socket to extremity of snout	3⅜
From anterior edge of infraorbital foramen to ditto	3¼
From maxillary and intermaxillary suture to ditto	1¾
Greatest depth of zygomatic arch	2½

The proportions of the skull are more elongate than those of *M. Senegalensis*, but less so than *M. australis*. Top of skull oblong, bounded by two almost completely parallel ridges on the frontal and parietal bones. Frontal suture remaining, parietal bones united. Breadth of orbits nearly one-half of their length; orbits directed outwards, nearly in a plane with the snout at an angle of about 40°; lower edge of orbits circular, smooth, and not tuberculated. Intermaxillaries more lengthened than in Cuvier's figure of *M. Senegalensis*, but much less deep, and not nearly so elevated along the anterior angle of the nasal cavity. Cavities for nine upper molars, the anterior being but a single socket, the others adapted for three dental fangs, one internal, and two external and lateral. Fangs flattened and slightly expanded at extremity; the two external directed immediately upwards; the internal one, rather the longest, directed upwards and inwards, especially the more anterior ones. Two posterior molars still undeveloped. Molars multicuspid, with two transverse irregularly tri-tubercular ridges, the posterior one being generally partially divided into two by a small groove. The ridges on the remaining anterior molars (third and fourth) much rubbed down and worn, exposing the dentine. Remains of one incisive socket at extremity of each intermaxillary near the suture. Incisive foramen pyriform, the base anteriorly.

Lower jaw less massive than in *M. Senegalensis*, with posterior

angle less marked, and lower border much less curved; opposite sides completely anchylosed, a deep hollow under upper and inner edge. Cavities existing for eight molars, the socket of the anterior one being simple; two posterior molars but partially developed. Lower molars more distinctly three-ridged than the upper ones, but the ridges less evidently tri-tubercular. Molars with two fangs, anterior and posterior, resembling the two external fangs of the upper molars, directed downwards, flattened and expanding, especially the posterior one. Molars deciduous from before backwards, seemingly forced out by the gradual advance forwards of the posterior ones.

The temporal bones being both wanting, I am unable to speak of the zygomatic processes, which differ in shape in the two previously known species.

Dr. Vogel's measurements being from an entire head, while mine are from the dried skull, the size of the respective animals will nearly approach each other, mine being rather the smaller. In the distance between the orbit and the snout, on which Prof. Owen lays stress, they will be found so fairly to agree that they may be presumed to belong to the same species. Let us now therefore see whether the other measurements and proportions of the one we have been considering differ sufficiently from others to favour the presumption of its being a species. In *M. Senegalensis*, the contour, looking at the skull from above downwards, is nearly that of an isosceles triangle, closely approaching an equilateral triangle, while that of *M. australis* more resembles the outline of a violoncello. In the Niger specimen again, the form, though more nearly resembling the former, is certainly of an intermediate character, the base of the triangle being shorter in proportion. The profile view of *M. australis* shows a lengthened, rather narrow beak, while *M. Senegalensis* has one shorter and remarkably deep; and here again we have an intermediate form, the shape in this case certainly more resembling *M. australis*. The inferior border of the lower jaw of *M. australis* is long and straightened, while that of *M. Senegalensis* is short and curved, its posterior angle, also, being more massive and decided, and approximating to that of the Dugong. Here again the Niger Manatee intervenes, the angle being more obtuse, and the curve less than in the Senegal species. The proportion of the length of the nasal opening in *M. australis* is to the breadth as 3 to 1, in *M. Senegalensis* as 1 to $\frac{2}{3}$, but in my specimen as 2 to 1. The coronal suture, sharply angular in the South American and almost semicircular in the Senegal species, is in the Niger one acutely arched. The temporal ridge irregularly converges posteriorly in *M. australis*, in *M. Senegalensis* they gently diverge, while here they run antero-posteriorly almost entirely parallel. The temporal bones being, as I have remarked, absent, I cannot speak of the temporal zygomatic apophyses; but the molar portions which remain would seem to indicate a continuance of the same intermediate character.

But in a few points the Niger skull is peculiar, and differs quite from the others. Thus the superior and anterior angle of the parietal bone extends much further forward than in either of the others, being

to within less than an inch of the posterior angles of the nasal opening. The anterior edge of the post-orbital apophysis and the lower margins of the orbits are plain and smooth, not irregular. The vomerine sheath is not nearly so prolonged anteriorly, and does not reach to within an inch of the anterior incisive foramen. The maxillary and inter-maxillary do not unite by a bevelled surface, but by a suture forming a right angle.

On one point we can draw a tabular view of the whole of the skulls, viz. as to the comparative distance of the orbit from the end of the beak, which, compared with the total length of the skulls, is as follows:—

In Dr. Vogel's entire head of the Ayú as 7 to 36, or about 1 to 5.
In the skull from the mouth of the Kwóra as 27 to 100, or more than 1 to 4.
In the skull of *M. Senegalensis* as 1 to 3 nearly.
In the skull of *M. australis* as 5 to 14, or less than 1 to 3.

From what I have drawn out we may, I believe, make the following deductions: 1st, That in the Kwóra or Niger, and its tributary the Tsádda or Binuë, is found a *Manatus* intermediate in many of its characters between *M. australis* and *M. Senegalensis*; and 2ndly, That if these differences are, as Prof. Owen suggests, too marked for a mere variety, then there is no alternative but to allow it as a species. I do not mean to affirm its positive existence, but merely following up the idea thrown out by Prof. Owen, in examining the skull I brought home, I think the *probability* of its distinctiveness is considerably increased. Being about to revisit the river Kwóra I shall make a point of searching more closely after this animal, with a view to settling the question. If established, the genus will stand as follows:—

MANATUS, Rondel.

1. MANATUS AUSTRALIS, Tiles.
Hab. West Indies and north-east coast of South America.

2. MANATUS SENEGALENSIS, Desm.
Hab. African rivers, Senegal to the Gambia.

3. MANATUS VOGELII, Owen.
Hab. Rivers opening into the Bight of Biafra.

Whether *M. nasutus* of Wyman and *M. latirostris* of Harlan are species, varieties, or synonyms, I have not the means of ascertaining. *M. australis* is, as I have mentioned, more allied to the extinct fossil forms; and *M. Senegalensis*, again, more approaches in form of skull to the Dugong.

2. A Monograph of the Genus Lasiurus. By Robert F. Tomes, Esq.

The object of the present memoir is rather to enumerate and describe all the species at present arranged under the above name, than to enter into the claims of the group to be considered as a distinct genus.

An attempt is also made to give a tolerably correct synonymy; but there are so many descriptions which appear to refer to varieties only, as to render this part of the work by no means easy, and not altogether satisfactory. Attached to the account given of the first species on the list—*Lasiurus noveboracensis*—will be seen a rather voluminous list of synonyms; and it may appear as if undue regard had been paid to the labours of other writers, in thus reducing to one species what has by them been considered as constituting at least six. But in the examination of a large number of examples, I have felt myself quite unable to come to any other conclusion than the one here given. The various descriptions apply to the same species under the influence of the climate of different degrees of latitude. Thus the *Vespertilio noveboracensis* answers well to the account given of it in its proper locality; but as we proceed southward, we find that a Bat occurs, having precisely the same form and size, but differing somewhat in the colouring of the fur; and this difference continues to increase until we reach the tropical parts of America, where a *bright ferruginous* colour completely supersedes the original *hoary-brown*, or, as it might not improperly be called, *roan-colour*.

At various localities it has been met with by travellers, and the colour of the fur varying with most of them, has given rise to the great multiplicity of names. A large series has passed under review whilst preparing this paper, and the most exact and rigorous examination, both externally and internally, has failed to afford any material difference, beyond that of colour.

I have already referred this to the effect of climate; but it is necessary to add, that the colour of the fur is so capricious, even in the temperate parts of North America, that Major Le Conte, when describing specimens from the vicinity of Philadelphia, found the varieties so perplexing, that he could give no very definite description.

However, it may be stated, that *generally* the North American examples are some mixture of brown or rufous, thickly sprinkled with white, giving a hoary appearance; whilst those from Tropical America are almost uniformly of a bright ferruginous hue, without any mixture of white.

1. Lasiurus noveboracensis, Erxl.

Vespertilio noveboracensis, Erxl. Syst. Règ. Anim. p. 155, 1777; Harl. Faun. Amer. p. 20, 1825; Godm. Amer. Nat. Hist. i. p. 50, 1826; Fisch. Synop. Mam. p. 114, 1829; Coop. Ann. Lyc. N. H. New York, iv. p. 57, 1837; Le Conte, Proc. Acad. Nat. Sci. Philad. 1855.

New York Bat, Penn. Arc. Zool. p. 184, 1792; Synop. Quad. p. 367, 1771.

Vespertilio rubellus, Palisot de Beauvais, Cat. Peale's Mus. 1796.

Vespertilio lasiurus, Linn. edit. Gmel. 1788; Schreib. Säugt. 1826; Geoff. Ann. du Mus. viii. p. 200, 1806; Desm. Mam. p. 142, 1820; Fisch. Synop. Mam. p. 109, 1829.

Vespertilio Blosseivillii, Less. et Garn. Bull. des Sci. Nat. viii. p. 95; Fisch. Synop. Mam. p. 110, 1829.

Vespertilio Bonariensis, Less. Voy. de la Coquille, 1829.

Vespertilio villosissimus, Geoff. Ann. du Mus. viii. p. 478, 1806; Desm. Mam. p. 143, 1820; Fisch. Synop. Mam. p. 110, 1829; Rengg. Säugt. von Parag. p. 83, 1830; Wagn. Supp. Schreib. Säugt. i. p. 536, 1840.

Vespertilio monachus et *V. tessellatus*, Raff.?

Nycticejus noveboracensis, Temm. Mon. ii. p. 158, 1835–41; Wagn. Supp. Schreib. Säugt. i. p. 546, 1840; Schinz. Synop. Mam. i. p. 199, 1844.

Nyct. varius, Poep. Reise in Chili, i. p. 451, 1835; Wagn. Supp. Schreib. Säugt. i. p. 547, 1840.

Nyct. Atalapha, Raff.?

Atalapha Americana, Raff. Prod. de Som.?; Desm. Mam. p. 147, 1820.

Chauve-souris septième, Azara.

Lasiurus rufus, Gray, Cat. Mam. B.M. 1843; Gosse, Nat. Sojourn. Jamaica, p. 280, 1851.

The muzzle is of very moderate length and substance, and rather pointed; the nostrils are rather small, near together, and directed sublaterally. The end of the nose, between the nostrils, is somewhat emarginate. The ears are short, ovoid, and very much rounded at their tips, which are directed outwards. Towards the base of the front edge of the ear is a lobular projection, occasioned by a notch in the margin immediately under it, quite at the base of the ear, and contiguous to the tragus. The outer margin is continued forward along the side of the face toward the angle of the mouth, and ends near to it, in the form of a moderately developed lobe. The tragus is narrow at its base, from which it expands evenly and rather rapidly for half its length, where, making a conspicuous angle, it slopes inwards, and comes to a narrow but rounded point, its inner margin all the time maintaining a nearly straight line, excepting near the tip, where it has a decided inward curvature. The outer marginal angle, already mentioned, is something more than a simple angle, being, in fact, a rounded projection from the crooked edge of the tragus.

The wing-membranes extend to two-thirds of the distance between the extremity of the tibia and the base of the toes.

The face is more or less covered with hair on all parts, the end of the nose and the margins of the lips only being naked. On the forehead the fur is very thick, and approaches nearly to the end of the nose. Immediately in front of the eye, is a tuft of stiff hairs,

and on the upper lip is a moustache of softer ones. The inner surfaces of the ears are sparingly suffused with very fine short hairs, as are also their outer margins.

The interfemoral membrane is densely hairy on the whole of its upper surface, and the same peculiarity extends to the upper surface of the feet. The fur of the back also extends on to the membranes of the wings, over and beyond the tibia, but is there bounded by a well-defined line. It differs in this respect from the fur of the under surface, where it is seen to extend along the membrane beneath the fore-arm, somewhat irregularly scattered, and having the appearance of yellow down. Towards the wrist it becomes thicker, and is more especially so about the base of the fourth finger. This finger is also seen to be fringed with fine soft hairs at its base, when viewed from above; and a small patch of hair is visible at the base of the thumb.

Everywhere the fur is soft in texture, rather long, and tolerably thick. That which extends on to the under surface of the membranes, is unicoloured, and of a yellowish buff colour. A narrow stripe of fur, bounding that of the back on each side, is frequently of the same colour. But the colour of the body varies so much, that it appears desirable to give a short description of each of the extreme varieties, observing, at the same time, that every intermediate state may be met with.

Var. 1. Fur of the back of four colours, dark near to the skin, succeeded by yellowish brown, which is again succeeded by pale rust colour, and finally tipped with white.

Beneath, the fur is nearly similar, excepting that which is contiguous to and on the membranes. This is unicoloured and pale buff.

Hab. North America, "from one end of the country to the other, equally numerous" (*Le Conte*).

Var. 2. Similar to the last, but with the colour brighter and without the white tips to the fur.

Hab. The same as the last.

Var. 3. Fur of the upper parts nearly black at the base, succeeded by yellowish-buff, passing into bright ferruginous-red, shining and silky. That on the interfemoral membrane uniform bright ferruginous. Beneath, the fur is nearly black at its base, passing into dark brown, and tipped with bright rust-colour. The fur on the under surface of the membranes is also of the latter colour. Sometimes this variety has the chin and throat of a yellowish-buff colour, and then answers well to the description of *Nycticejus varius*, as given by Poeppig.

Hab. South America; Jamaica; Canada.

In all these varieties a white spot is observable at the axilla. The membranes appear to be light or dark, according to the depth of the colour of the fur. Frequently the membranes of the wings,

near to the sides of the body, exhibit a singularly spotted appearance, occasioned by the network of veins being paler in colour than the portions enclosed by them. It was probably to one of these that Raffinesque applied the appropriate epithet "*tessellatus*." The example in which I have seen this peculiarity most conspicuous, was obtained in the Island of Mackinac, between Lakes Huron and Michigan, by my friend Mr. P. L. Sclater, who, knowing how much I am interested in this order of Mammals, kindly presented it to me, with other North American Bats collected by him in the autumn of 1856.

Dentition.—In. $\frac{1\cdot1}{6}$, C. $\frac{1\cdot1}{1\cdot1}$, P.M. $\frac{2\cdot2}{2\cdot2}$, M. $\frac{3\cdot3}{3\cdot3}=\frac{14}{18}$.

The first pre-molar on each side in the upper jaw is small and rudimentary, and perhaps is sometimes wanting. It is placed in the angle between the canine and the contiguous pre-molar, in such a manner as not to be visible from the outside.

	1.		2.		3.		4.		5.	
	In.	Lines.	In.	Lines.	In.	Lines.	In.	Lines.	In.	Lines.
Length of the head and body...	2	1	2	1	2	2	1	11	2	7
——— of the tail	1	11	2	0	2	0	1	10	...	
——— of the head.....	0	8½	0	8	0	8	0	7½	0	7½
——— of the ear	0	3	0	3	0	3	0	3	0	3½
——— of the tragus	0	2	0	2	0	2¼	0	2	0	2¼
——— of the fore arm	1	7	1	6½	1	7½	1	6½	1	5½
——— of the longest finger ...	3	3	3	2	3	5	3	2	2	11

2. LASIURUS PRUINOSUS, Say.

Vespertilio pruinosus, Say, Long's Exped. Rock. Mount. i. p. 168, 1825 (?); De Kay, Nat. Hist. New York, i.; Fisch. Synop. Mam. p. 113; Godm. Amer. Nat. Hist. i. p. 68; Harl. Faun. Amer. p. 21; Coop. Ann. Lyc. N. H. New York, iv. p. 54.

Scotophilus pruinosus, Gray, Mag. Zool. Bot. ii. p. 498, 1838.

Nycticejus pruinosus, Temm. Mon. ii. p. 154, 1835–41; Wagn. Supp. Schreib. i. p. 544; Schinz. Synop. Mam. i. 197.

Lasiurus pruinosus, Gray, Cat. Mam. Brit. Mus. p. 32, 1843.

Vespertilio cinereus, Palisot de Beauvois, Cat. Peale's Museum, 1796.

It is not unusual to see the name of this species attached to specimens of the former, an error not easy to commit, if actual comparison of the two were made. The present one is greatly superior in size to the last, and besides this, presents some other very distinctive characters.

The head is broad, and the forehead flat; the muzzle is obtuse; the nostrils are surrounded by a well-defined rim, are directed sublaterally, and separated by a considerable interval, which is emarginate. The ears are irregularly round, their front margins projecting considerably over the forehead. Their outer or hinder margins are brought forward along the sides of the face in the shape of narrow prolongations, and terminate in two slightly projecting lobes behind the corners of the mouth. The tragus appears to offer some slight variations of form in different individuals, and even in the

same specimen I have, in one instance, observed it dissimilar in the two ears. In its general form it resembles the same part in the last species, but it is much less attenuated towards the tip, and the outer margin has a less distinctly angular projection. At its base it is of average width, from which it expands rather rapidly, and proceeds outwards for the distance of about a line, when it takes an upward direction, and becoming narrower, ends in a rounded tip. This change of direction from horizontal to vertical leaves an angle at its outer edge, which is nearly a right angle, whilst its inner edge maintains a pretty regular concave line from the base to the tip. In one instance, above alluded to, I have observed it in one ear only of full breadth at the base, and gradually curving upwards and inwards, terminate in a rounded end, about half the breadth of the base; the tragus of the other ear being of the usual form.

The membranes of the wings barely extend to the base of the toes. The thumb is rather long, and has its terminal phalange twice the length of the basal one.

The fur of the forehead extends nearly to the end of the nose. The sides of the face, and the muzzle, are moderately hairy, with a tuft of stiffish hairs in front of the eye, and a black moustache fringing the upper lip. The chin is nearly naked. A patch of fine, short, adpressed hairs occupies the inside of the ear near its tip, and the exposed surface of the tragus is similarly furnished.

Seen from beneath, the whole of the antibrachial membrane is covered with close downy hair of a yellowish colour, and fur of the same kind extends from the side of the body along the membrane beneath the arm and fore-arm, to the bases of the fingers, which, in some examples, are completely obscured by it. In breadth this band of fur varies from half to three-quarters of an inch, widest towards the fingers. Only a portion of the base of the interfemoral membrane, as seen from below, is hairy.

Viewed from above, the whole of the interfemoral membrane is hairy, as are the feet and legs, and a portion of the membrane of the wings, where they are attached to the sides of the body. The hair on the latter part, however, is of no great breadth, and its outer margin is usually straight and well defined. Over the tibia the interfemoral fur passes but to a trifling extent, and in many specimens that limb constitutes its exact boundary. In the species last described, the fur usually passes over it, and occupies a considerable space on the base of the wing.

The variations in colour in this species appear to be much less considerable than in the last. The fur of the muzzle, chin, and around the eyes, is black; that of the throat pale buffy-yellow, the line of separation of the latter colour and the black of the chin being pretty distinct. On the forehead the fur is of the same yellowish hue as that of the throat, and on the top of the head it is similarly coloured at its base, but becomes of an umber-brown colour about its middle, and is there tipped with white. This arrangement of colours represents pretty nearly the colour of all the upper parts of the body, excepting that the fur has in addition a dark-coloured

root. The colours may be thus briefly given:—dusky-grey (at the root), yellowish-buff, umber-brown, and finally white. The white is most plentiful on the shoulders, along the middle of the back, and on the rump; the yellow colour prevails on the head and neck, but becomes less in regular gradation towards the rump, where the brown in great measure takes its place, which it does completely on the interfemoral membrane.

The under surface is nearly similar, but differs in having the colours paler, the yellow less conspicuous, and the tips of the hairs buff-coloured instead of white. On the under parts, as on the upper, the yellowish colour gives way to the brown on approaching the hinder parts, and the hair on the contiguous part of the interfemoral membrane is wholly dark for the greater part of its length, and is tipped with light brown. At the insertion of the humerus is a light-coloured spot. The fur of the sides of the body, under the arms, is of a brownish-buff colour. All the fur on the wing-membranes is buffy-yellow.

The membranes are dark, excepting where there is a growth of hair, such parts being reddish-brown.

Dentition.—In. $\frac{1\cdot1}{6}$; C. $\frac{1\cdot1}{1\cdot1}$; P.M. $\frac{1\cdot1}{2\cdot2}$; M. $\frac{1\cdot1}{3\cdot3}=\frac{12}{18}$.

In the following Table of dimensions, column No. 1 has been taken from a specimen purchased of Mr. J. G. Bell of New York, No. 2 from a specimen in the British Museum, from the United States, and No. 3 from a specimen not quite adult, taken in Bermuda by the Rev. H. B. Tristram, and very kindly forwarded by him for my use.

	No. 1.	No. 2.	No. 3.
	in. lin.	in. lin.	in. lin.
Length of the head and body, about ..	3 6	3 10	2 10
——— of the tail	....	1 10	....
——— of the head.....	0 11	....	0 10
——— of the ear	0 $4\frac{1}{2}$	....	0 $4\frac{1}{2}$
——— of the tragus	0 3	....	0 3
——— of the fore-arm	2 3	2 2	2 0
——— of the longest finger	4 4	4 0	4 0
——— of the fourth finger.....	2 8	2 7	2 4
——— of the thumb	0 6	....	0 6
——— of the tibia	....	0 11	0 9
——— of the foot and claws	0 6	0 5	0 $5\frac{1}{2}$
——— of the os calcis	0 9	....	0 $7\frac{1}{2}$
Expanse of wings.....	16 6	....	15 6

Hab. North America, not abundant.

Major Le Conte observes, that he has only had the opportunity of examining six or seven examples. The British Museum contains a specimen from California, and another presented by Mr. W. S. MacLeay is labelled South America. Assuming the latter specimen to be correctly labelled, its locality renders it probable that this species, like the last, is distributed over a considerable part of the New

World, and the idea is somewhat strengthened by its occurrence in California and Bermuda.

Major Le Conte has referred this species to the *Vesp. cinereus* of the Catalogue of Peale's Museum, bearing date 1796. There appears to be no doubt that it was to this species that the above name was applied, as the only other North American Bat with which it would be likely to be confounded—*V. noveboracensis*—was clearly distinguished in the Catalogue, and called *V. rubellus*. As I do not know whether any description accompanied the name of *V. cinereus*, I must for the present retain the name given by Say; but in the event of any specific characters having been added in the Catalogue just referred to, the name of *L. cinereus* must of course be adopted.

3. Lasiurus Grayi, n. s.

This species, which I believe is undescribed, is in size a little superior to the larger examples of *L. noveboracensis*, but smaller than *L. pruinosus*. To the latter species, however, it bears the greatest resemblance in its forms and general appearance, but differs in several respects, which will be hereafter noticed.

The muzzle is rather obtuse, but less so than in *L. pruinosus*. The ears are angular-round, but more pointed than in the last-mentioned species, and have the ear-lobe near the angle of the mouth, more strongly developed. The tragus, although it presents the same general form, yet differs in having the upper or ascending part straight instead of being curved. It is also much narrower at its base.

The thumb has the same long terminal phalange and short basal one observable in the last two species. The feet are large in relation to the size of the animal. The membranes of the wings extend a little way beyond the extremity of the tibia, but *do not reach halfway along the foot*, exclusive of the toes. The extreme tip of the tail is slightly exserted, and very pointed.

The fur of the head extends down the forehead nearly to the nose; the face is moderately hairy, and has a tuft of fine long hairs immediately in front of the eye. The basal part of the hinder surface of the ear is hairy, some of the hair projecting beyond the inner margin so as to be visible from the front. Two patches of short adpressed hair of a fine nature line the inside of the ear, one of them extending from the front margin to near the tip, and the other fringing that part of the margin nearest to the root of the tragus. The latter part is sparingly covered with short adpressed hairs on its exposed surface.

The muzzle and greater part of the face are brownish-black. The fur of the upper parts is of four colours—dark at its root, then yellowish-brown, succeeded by dark brown, and tipped with white. Towards the hinder parts of the body, and on the interfemoral membrane, the yellowish colour gives way to the brown, and the fur is wholly of the latter colour, tipped with white. The throat is light yellowish-brown, passing into dusky-brown on the breast. On all the under

parts the fur is of a faded brown colour for the greater part of its length, but near the tip it becomes a little darker, and is finally tipped with dirty buff colour. The fur on the membranes beneath the humerus is in some examples of the same tricolour as the under parts of the body, but more frequently it is of a uniform brownish-yellow hue, as is that beneath the fore-arm, and that at the base of the fingers.

The hairy portions of the membranes are reddish-brown; the remaining parts very dark brown.

The variations in colour to which this species is subject depend upon the tint of the brown colour near to the tips of the hairs. In one example in the British Museum, this part of the hair is of a light red colour, inclining to pinkish, and takes up a much greater space than usual in each hair, the dusky at the base being there very much reduced. In this specimen the black of the face and the yellowish colour of the throat are scarcely observable; and this, with the red colour, gives it, at first sight, a great resemblance to the *L. noveboracensis*.

The colour of the fur is an index to that of the membranes—in this instance a reddish-brown.

The dentition has not been well examined, but the incisors are similar in number and shape to those of the last two species.

Five examples have been examined in drawing up the above description, and these are all so remarkably uniform in size, that it appears unnecessary to give the dimensions of more than two, those presenting the greatest disparity being selected.

	No. 1.		No. 2.	
	in.	lin.	in.	lin.
Length of the head and body, about ..	3	2	2	3
——— of the tail	1	7	1	8
——— of the head	....		0	9
——— of the ears	0	$3\frac{1}{2}$	0	$3\frac{1}{2}$
——— of the tragus	0	3	0	$2\frac{3}{4}$
——— of the fore-arm	1	$9\frac{1}{2}$	1	$9\frac{1}{3}$
——— of the longest finger	3	10	3	8
——— of the fourth finger.....	2	3	2	1
——— of the thumb	0	$5\frac{1}{2}$	0	5
——— of the tibia	0	8	0	8
——— of the foot and claws	0	5	0	$4\frac{1}{2}$
——— of the os calcis	....		0	8
Expanse of wings	14	0	13	9

The dimensions in column No. 1 have been taken from a perfectly adult individual in the British Museum, the locality being unknown. The specimen which has furnished the dimensions in the second column is also full-grown, but nevertheless retains some indications of youth.

Hab. This second specimen was forwarded with another, perfectly

similar, from Chili, by Mr. Bridges. All the other specimens in the British Museum Collection are without authentic habitats.

4. Lasiurus caudatus, n. s.

The extreme length of the tail of this species, exceeding that of the head and body, together with the considerable length of the hinder limbs, gives to it a very remarkable appearance, and seems to distinguish it at first sight from all the others of the group.

The muzzle has much the form and proportions of that of *L. noveboracensis*. The ears are obtusely triangular, as broad as high, and have their outer margins brought downwards and forwards along the side of the face to within a little distance of the corners of the mouth, and on the same level with it. Here they terminate, as in all the preceding species, in a separated lobe, in this instance more clearly developed than usual. This part of the ear bears considerable resemblance to the same part in the genus *Molossus*, but is less considerable in degree. The tragus is narrow at its base, from which it rapidly expands, and abruptly bending inwards, leaves an outer angle and curves to an obtuse point. It differs chiefly from the same part in *L. pruinosus* in having a more decided inward direction.

The wing-membranes barely extend to the base of the toes. The tail is longer than the head and body.

The fur of the forehead extends uninterruptedly in the direction of the nose, and approaches it nearly. As in all the preceding species, the other parts of the face are moderately hairy.

The fur of the back encroaches on the membranes of the wings for a distance of about four lines, where it has a clearly defined boundary. That of the under parts extends on to the membrane beneath the humerus, but has no regularly defined margin. Between the fore-arm and the fourth finger, in the angle formed by the two, is a growth of extremely short downy hairs of a yellow colour. The upper parts of the feet are moderately hairy, much less so than is usual in *L. pruinosus* and *L. noveboracensis*. On the upper surface of the interfemoral membrane, the fur of the rump extends only for half its length, the remaining half being naked. Its under surface is sparingly clothed with hairs for about one-third of its length, *near to the tail only*; that part of the membrane near to the knees and the end of the tail being quite naked.

The membrane itself is rather thickly marked with transverse dotted lines.

The fur is rather long and silky; that of the whole of the upper parts is of a uniform yellowish-buff colour, brown for a short length in immediate proximity to the skin. Beneath, it is reddish-brown at the base for about a third of its length; the remainder being yellowish-buff.

Dentition.—In. $\frac{1\cdot1}{6}$; C. $\frac{1\cdot1}{1\cdot1}$; P. M. $\frac{1\cdot1}{2\cdot2}$; M. $\frac{3\cdot3}{3\cdot3}=\frac{12}{18}$.

	No. 1.		No. 2.	
	in.	lin.	in.	lin.
Length of the head and body	1	9	2	0
——— of the tail	2	0	2	6
——— of the head	....		0	$7\frac{1}{2}$
——— of the ears	0	$3\frac{1}{2}$	0	3
——— of the tragus	0	3	0	3
——— of the fore-arm	1	8	1	8
——— of the longest finger	3	3	3	6
——— of the fourth finger.....	2	0	2	3
——— of the thumb	0	4	0	$4\frac{1}{2}$
——— of the tibia	0	$8\frac{1}{2}$	0	$9\frac{1}{2}$
——— of the foot and claws	0	$3\frac{1}{2}$	0	4
——— of the os calcis.....	0	5	0	6
Expanse of wings.....	13	0	12	9

Hab. Pernambuco, from which place the specimen was received which furnished the above description, and the dimensions in column No. 1. No. 2 is from a specimen in a bad state in spirit, from Chili. I have met with no other examples than the ones here described.

5. Lasiurus Aga, P. Gerv.

Nycticejus Aga, P. Gerv. in Castelnau, Expéd. dans les parties centrales de l'Amérique du Sud, &c., livr. 16. p. 73, 1855.

The following description is taken from that by the original describer.

Ears subround; tragus in the form of a hooked knife ("à peu près de la forme d'une *serpette*"). The nostrils are subtubular, pierced in the sides of the small nose, which is a little emarginate in the centre.

Tail, in the two specimens examined, absent, having been withdrawn from the membrane, in which a median furrow is left in its stead, from the inspection of which it may be inferred that the tail occupied the whole length of the membrane (as in the other species of this group).

The upper surface of the interfemoral membrane has some hairs on its base, as in many species of the genus *Vespertilio*; and its under surface bears some transverse lines of small follicles.

The general colour of the fur is buffy-chestnut, glossy above, and paler beneath.

	in.	lin.	
Length of the body.....	2	4	(English).
Interfemoral membrane along its central line..	1	9	
Fore-arm.....	1	7	
Tibia	0	9	

I now give a description of a specimen evidently of this species collected at Ega, on the Amazon, by Mr. Bates, and labelled by him "houses, Ega." As it appears to be in a better state of preservation than the two obtained from the same place by M. Castelnau, I am

able, besides confirming the accuracy of his description, to give a more detailed scale of dimensions than he has given.

It is desirable to note, that this specimen, although probably full-grown, yet exhibits some slight indications of non-maturity.

The muzzle is a little longer relatively than in the species I have before described, and is about as much pointed as in *L. noveboracensis*. The end of the nose is small; the nostrils somewhat tubular, with a distinct notch between them.

The ears are triangular-round, and somewhat more pointed than those of any other species here described. The tragus is similarly formed to that part in *L. pruinosus*.

The wing-membranes barely extend to the base of the toes, and the extreme tip of the tail is exserted.

The fur of the forehead does not approach so nearly to the nose in this species as in the others of the group.

The basal half of the superior surface of the interfemoral membrane is hairy, but the hair does not reach laterally over the tibia. Beneath, it is sparingly hairy at the root of the tail only. The membranes of the wings contiguous to the body, both above and below, are hairy, more especially on their under surface, where the hair reaches to the elbow, but does not follow the fore-arm.

On all the upper parts the fur is yellowish-buff, the hairs slightly tipped with brownish, and on the under parts uniform yellowish-buff.

Membranes of the wings darkish brown, the interfemoral membrane being paler and marked with about twenty transverse dotted lines.

	in.	lin.
Length of the head and body, about ..	2	0
——— of the tail.....	1	7
——— of the head	0	8
——— of the ears	0	$3\frac{1}{2}$
——— of the tragus	0	$2\frac{1}{2}$
——— of the fore-arm	1	7
——— of the longest finger	2	$7\frac{1}{2}$
——— of the fourth finger.....	1	10
——— of the thumb	0	4
——— of the tibia	0	$8\frac{1}{2}$
——— of the foot and claws	0	$5\frac{1}{2}$
——— of the os calcis	0	8
Expanse of wings.....	11	6

In colour this species very closely resembles the last, but, besides many minor points of distinction, the great length of the tail in the former will at once be sufficiently distinctive.

I have now described all the species that I am able with certainty to refer to this group; but there are two others described by Major Le Conte in the 'Journal of the Academy of Natural Sciences of Philadelphia' for 1855, characterized by the same formula of denti-

tion as in *Lasiurus*, but which appear nevertheless to have the other parts as in the more ordinary Bats.

One of these—*Vesp. pallidus*, Le Conte, — the writer says, has only four incisors in the lower jaw,—altogether an anomalous character, if not due to some accidental cause.

The other species is the *Vesp. crepuscularis* of the same naturalist (*V. creeks*, F. Cuv.), which, while possessing only two upper incisors, precisely as in *Lasiurus*, has yet all the other characters similar to those of *Vesp. Carolinensis*,—a species clearly appertaining to that division of the genus *Scotophilus* which constitutes Section *b*. of the genus *Vesperugo* of MM. Keyserling and Blasius.

It would appear from this that the number and form of the incisors in the upper jaw do not furnish a very valuable generic character; and when we find another species from India, not only different in its forms from *Lasiurus* and *Nycticejus* (so called), but also differing from the above-mentioned *Vesp. crepuscularis* in all respects save in the upper incisors, which are similar, we are quite justified in regarding this as a character of subordinate value in the arrangement of this difficult group of animals.

The Indian species to which I allude is referable, as far as external form is concerned, to that section of the genus *Vespertilio* which has been called *Cappacinius* by Prince Charles Lucien Bonaparte, and *Trilatitius* by Dr. Gray. It is closely affined to the *Vesp. Tasmanensis* of the latter zoologist, and may perhaps prove identical with it.

Besides the species given in this Monograph, there are several others differing materially from them, and from each other, but which have the tail-membrane hairy. As instances, may be cited *Vesp. noctivagans*, Le Conte (*V. pulverulentus*, Temm.), *Lasiurus Pearsonii*, Horsf.* (closely affined to the *Vesp. emarginatus* of the continent of Europe), and *Vesp. suillus*, Temm., called *Murina suillus* by Dr. Gray, and *Noctilinia Lasyura* by Mr. Hodgson.

From this it must be evident that this character is only of generic value when associated with others of greater constancy, and it is only by the characters taken collectively that the groups can be truthfully defined.

The form of the head, the muzzle, and the nostrils, of the ears and the tragi, the extent of the membrane in reference to the hinder extremities, the quality and distribution of the fur, the number and form of the upper incisors, and more than all, the general conformation of the cranium, supply the means by which the *Lasiuri* may be recognized and associated.

* In alluding to this species, I may mention, that it is the *Vesp. emarginatus* of continental writers to which I refer,—a well-marked species very similar in appearance to *Lasiurus Pearsonii*, but not more than half the size, and with less hair on the interfemoral membrane. The so-called British species is, I believe, no other than *Vesp. mystacinus*.

Mr. Tegetmeier exhibited a collection of skins of new varieties of domestic Fowls, the property of Mr. C. Darwin.

Those from the Madras Presidency were chiefly of the Malay type, more or less resembling the gigantic Kulm Fowls that were imported some years since by Colonel Sykes, and which were formerly in the possession of the Society. The Fowls from Singapore were remarkable for the recurved character of the plumage. The interior of Persia furnished a very beautiful steel-black variety, perfectly distinct from any known in this country, and which was stated to be the Common Fowl of the district. Good specimens of the black-skinned, white silky-plumaged Fowl with black periosteum were forwarded both from Singapore and Madras. Mr. Tegetmeier called attention to the fact, that all the specimens shown differed in a much greater degree, than our common English Game Fowls, from the *Gallus Bankiva*, so frequently asserted to be the origin of our domesticated species of the genus *Gallus*.

March 10, 1857.

Dr. Gray, F.R.S., in the Chair.

The following papers were read :—

1. Characters of some apparently New Species of American Ant-Thrushes. By Philip Lutley Sclater, M.A., F.L.S., &c.

1. Formicarius trivittatus.

Supra fusco-cinnamomeus, subtus clarior, gula pallidiore : alis caudaque nigris cinnamomeo tinctis, illarum tectricibus minoribus et majoribus fascia terminali et remigibus ipsis fascia mediali alba præditis, itaque alis trifasciatis : oculorum ambitu seminudo : rostro et pedibus nigris.

Long. tota 7·0, alæ 3·4, caudæ 2·5.

Hab. In ripis fl. Amazonum.

Mus. Brit.

The only individual of this species which I have yet seen is that in the British Museum. It is easily recognizable among its congeners by its thrice-banded wings. I am now acquainted with seven birds which I consider to be probable members of this genus, viz.—(1.) cayanensis, Bodd. ex. Pl. Enl. 821 (*colma*, Gm. et Bodd., *tetema*, Licht., *fuscicapilla*, Vieill., *ruficeps*, Spix), ex Guiana et Brasilia. (2.) analis (Lafr. et d'Orb.), Voy. d. l'Am. Mér. Ois.

pl. 6*. f. 1, ex Bolivia, Cayenna et ins. Trinitatis. (3.) NIGRIFRONS, Gould, P. Z. S. 1855, p. 68, ex Nov. Grenada et fl. Amazon. (4.) MONILIGER, Sclater, P. Z. S. 1856, p. 294, ex Mexico. (5.) TRIVITTATUS. (6.) ERYTHROPTERUS, Gould, P. Z. S. 1855, p. 69. (7.) NIGROMACULATUS (Lafr. et d'Orb.), Voy. d. l'Am. Mér. pl. 6*. f. 2, ex Bolivia et fl. Amazon, sup.

The last three birds have the space round the eyes more or less denuded, and would form the subgenus *Phlegopsis*, Reichb., of which, I believe, *F. nigromaculatus* is the type. In that very peculiar member of this family *Pyriglena nudiceps* (*Myiothera nudiceps*, Cassin, Pr. Ac. Sc. Phil. v. p. 106. pl. 6), this formation is developed to a still greater extent, the whole top of the head being naked.

2. CONOPOPHAGA CASTANEICEPS.

Conopophaga ardesiaca, Tsch. Faun. Per. p. 179, et Sclater in P. Z. S. 1855, p. 145, nec Lafr. et d'Orb.

Supra olivascenti-brunnea ; pileo castaneo, frontem versus lætiore : lateribus capitis et gula nigricanti-cinereis : penicilla post-oculari alba : subtus cinerea, abdomine medio albescentiore : lateribus olivaceo indutis : mandibula superiore nigra, inferiore flava, pedibus brunneis.

Long. tota 4·4, alæ 2·9, caudæ 2·7.

Hab. In Nova Grenada, Bogota et in Peruvia Orientali (*Tsch.*).

Mus. Brit. et P. L. S.

This is a typical *Conopophaga*, with the characteristic white pencil of feathers on the sides of the head. Trusting to Tschudi's identification of a specimen collected by him, which is now in my collection, I had considered it to be d'Orbigny's *C. ardesiaca*. But upon examining the type of that species in the French National Collection I found such was not the case. That bird does not possess the chestnut-brown cap or darker cinereous colour of the throat belonging to the present species, but is more uniform in its colouring both above and below.

There is a specimen of this bird in the British Museum from Bogota.

M. O. des Murs, in the Ornithology of the Voyage of Castelnau and Deville, has described and figured another *Conopophaga*, somewhat resembling the present *C. peruviana*, pl. 16. f. 1. But this bird has spots upon the wings and a varied back.

3. HYPOCNEMIS ELEGANS.

Hypocnemis ——?, Sclater, P. Z. S. 1855, p. 147.

I have lately seen other specimens of this bird, and have one in my own collection—a Bogota skin. Though closely allied to *H. melanosticta*, I cannot consider it otherwise than specifically distinct, and therefore propose a name for it: I have already given its characters in these Proceedings for 1855.

4. Myrmeciza hemimelæna.

♂. *Castaneus: dorsi medii pennis basi albis, inde nigris, apice castaneis: capite toto undique et corpore subtus ad medium pectus nigris: ventre medio albido: campterio summo et maculis tectricum alarium apicalibus albis: rostro nigro, pedibus flavis: cauda rufo-castanea unicolore.*

♀. *Obscure olivacea rufo tincta: interscapulii pennis basi albis: dorso postico, alis et cauda rufis: alarum tectricibus nigris, sicut in mari albo aut fulvescenti-albo guttatis: subtus læte ferruginea, pectore et ventre medio pallidioribus: lateribus et crisso rufescenti-olivaceis.*

Long. tota 5·0, alæ 2·4, caudæ 1·7.

Hab. In Bolivia (*Bridges*).

Mus. Brit.

There are single specimens of both sexes of this bird in the British Museum, which are the only examples I have yet seen. It may be best arranged near *Myrmeciza loricata*, the type of the genus, with which it agrees generally in form, although the tail is comparatively much shorter.

5. Formicivora hæmatonota.

Supra brunnea, dorso medio rubro, hoc colore uropygium versus dilutiore: alarum tectricibus nigris, omnibus macula terminali pallide cervina præditis, secundariarum externarum apicibus eodem colore obsolete terminatis: subtus cinerea, gula nigra maculis triangularibus albis aspersa: ventris lateribus et crisso pallide brunneis: cauda unicolore brunnea: rostro nigro, pedibus brunneis.

Long. tota 4·0, alæ 2·0, caudæ 1·2.

Hab. Chamicurros in ripis fl. Huallaga in Peruv. Orient. (*Hauxwell*).

Mus. Brit.

Obs. Similis *F. gulari* (Spix, Av. Bras. ii. t. 41. f. 2) sed dorso medio rubro nec cinnamomeo, et colore subtus dilutius cinereo dignoscenda.

2. On the species of Crocodilus inhabiting the rivers Kwóra and Bínuë (Niger and Tsadda) in Central Africa. By Dr. Balfour Baikie, F.R.Geog.S. &c.

Among the Zoological collection which I made during my visit to the rivers Kwóra and Bínuë in 1854, were several skulls of Crocodiles, varying in length from 14 to 26 inches. A careful comparative examination of these shows them all to be possessed of similar characters; but on attempting to refer them specifically, I have experienced considerable difficulty, their proportional measurements not agreeing with any hitherto described. Two African species of *Crocodilus* are already known,—*C. vulgaris*, the Nilotic or Egyptian

Crocodile, and *C. marginatus* of Southern Africa. Of these, according to the best recent authority, namely Dr. Gray, the characters are,—

C. vulgaris.—"Head elongate, triangular, flat, smoothish above, narrow, tapering at the sides, nearly twice as long as the width of the head behind; muzzle at the notch nearly two-thirds the width of the forehead, at the ninth tooth as wide as half the distance between the eyes and nostrils; forehead flat, with nearly parallel sides."

C. marginatus. — "Head elongate, triangular, rather convex, rounded, sides slightly swollen behind the notch, half as long again as the width of the head behind; muzzle at the first notch as wide as the forehead, and at the ninth tooth as wide as two-thirds the distance between the eyes and nostrils; forehead deeply concave, with the sides high, prominent and nearly parallel; dorsal plates very strongly keeled."

I shall now describe generally the skulls which I brought home, giving the measurements of four of them; from which it will be seen, that while in various prominent points they more resemble the latter, yet in proportional measurements they approach more nearly to, while not altogether agreeing with, *C. vulgaris*, thus showing that in many characters they are intermediate, and thus either lowering these two into mere varieties, or what is, I believe, more probable, establishing for themselves specific characters.

"Head elongate, oblong, somewhat triangular, rather convex, especially posteriorly, rounded, upper surface rough, sides distinctly swollen behind the notch; length more than twice the width of head behind; forehead slightly concave, sides not prominent, converging anteriorly; muzzle at notch nearly two-thirds the greatest width of forehead; at the ninth tooth more than two-thirds the distance between the eye and nostrils."

Measurements.

	No. 1. in.	No. 2. in.	No. 3. in.	No. 4. in.
Extreme length	26	$24\frac{1}{2}$	$22\frac{1}{2}$	21
Greatest width behind	$12\frac{3}{4}$	12	$11\frac{1}{8}$	$10\frac{1}{4}$
Distance from eye to nostril	$10\frac{3}{4}$	10	9	$8\frac{3}{4}$
Breadth at ninth tooth	$7\frac{3}{4}$	$6\frac{1}{2}$	$6\frac{1}{4}$	$5\frac{3}{4}$
Breadth at notch	$4\frac{1}{4}$	$3\frac{3}{8}$	$3\frac{5}{8}$	$2\frac{3}{4}$
Width of forehead, anteriorly	5	$4\frac{1}{2}$	$4\frac{1}{8}$	4
Width of forehead, posteriorly	$6\frac{1}{2}$	$5\frac{3}{4}$	$5\frac{1}{4}$	5
Extreme length of lower jaw	29	27	$24\frac{1}{2}$	—

The proportions of all these correspond almost exactly, and I have ascertained the proportional measurements of a smaller one to be the same, although from its being in pieces and not yet put together, I have not time to take the exact dimensions. They show the Crocodile from the Bínuë to be proportionally longer than *C. vulgaris*, and much more so than *C. marginatus*, to be in form of upper surface and of forehead near the latter, but without the prominent sides to

the forehead,—also in breadth at the ninth tooth to agree with *C. marginatus*, while the converging shape of the forehead differs from both.

I shall add some few other general characters derived from these skulls:—Cranial fossæ somewhat oblong and ear-shaped, converging anteriorly, and almost touching by their inner and anterior margins, the outer side being nearly straight. Orbits with a slight notch anteriorly. Nasal foramen broadly pyriform, and almost quadrilateral. Foramina for the two anterior teeth converted in old specimens into deep notches. Articulating extremities of lower jaw much curved inwards.

I have compared these skulls with twelve others of Indian and American species, from all of which they are quite distinct.

The ninth upper tooth of Crocodiles is said to be enlarged like a canine, but this is not strictly correct. I have examined the dentition in eighteen skulls of various species; in the lower jaw there are always nineteen teeth, but in the upper jaw the number in the adult is seventeen on either side, while in the young it is eighteen. This is owing to the second incisor being deciduous, and in old skulls the socket is completely obliterated by the enlargement of foramen for the two anterior teeth. Thus in old animals there are only four teeth in each intermaxillary bone, while in younger individuals there are always five. So, more strictly, it is the tenth and not the ninth upper tooth which is enlarged.

The characters which I have above enumerated seem to me distinctive, and possibly on further investigation, when the entire animal is examined, and its external characteristics determined, it may prove a new species. The Crocodiles which I saw on the mud banks, or swimming about in the river, appeared of a dark green colour. Adanson mentions two apparently from the upper parts of the Niger, which he distinguished—"Crocodile vert du Niger" and "Crocodile noir du Niger." Whether either of these resembles my specimens I have no means of ascertaining; but Cuvier speaks of African Crocodiles "qui ont la tête un peu plus allongée à proportion de sa largueur," though he adds, "et un peu plus plate, ou plutôt moins inégale, à sa surface." If this prove to be separate I would suggest for it the specific designation *C. Binuensis*, from the name of the river whence I obtained the specimens.

3. Descriptions of Four undescribed species of Bats. By Robert F. Tomes.

1. Scotophilus pachyomus, n. s.

Muzzle rather obtuse; ears ovoid; tragus short, of nearly uniform breadth, and round at the end. Wing-membranes extending to the base of the toes. Fur bicoloured. Size rather larger than S. noctula.

This species appertains to the same division of the genus as *S.*

pipistrellus, S. Kuhlii, S. marginatus, S. minutus, and perhaps *S. Carolinensis*; but it is to the *S. discolor* of Europe that it bears the greatest apparent resemblance, owing in some measure to the similarity in the quality and colour of the fur.

In size it little exceeds the Noctule Bat, being much the largest species of the restricted group to which it belongs.

The muzzle is somewhat obtuse, the nostrils rather prominent, and opening sublaterally. The ears are rather long, ovoid, and narrowed towards their tips. The tragus is scarcely half the length of the ear, of nearly uniform breadth, round at the end, and slightly curved towards the head.

The wing-membranes extend to the base of the toes; the latter are a little longer than the remaining portion of the foot.

The face is moderately hairy; on the top of the nose, and about the muzzle nearly naked, but with a slight group of hairs on the gland of the upper lip, which extends to the angle of the mouth.

The fur is markedly and singularly bicoloured, very much resembling that of *S. discolor*. That of the upper parts is of a dark brown, conspicuously tipped with whitish brown. Beneath, it is brown at its base, with the terminal half yellowish brown.

The upper incisors are four in number, in pairs, of nearly uniform size, separated from the canines by an interval on each side, and with an interval in the middle, of very moderate extent.

	″	‴
Length of the head and body.....	2	6
——— of the tail	1	10
——— of the head.....	0	9
——— of the fore-arm	2	1
——— of the longest finger	3	9
——— of the fourth finger	2	7
——— of the tibia.....	0	10
——— of the foot and claws.....	0	$5\frac{1}{2}$
Expanse of wings	13	6

Hab. India. In British Museum, collected by Capt. Boys.

2. SCOTOPHILUS PUMILOIDES, n. s.

Muzzle tumid; ears small, broadly ovoid, not emarginate, with their tips directed a little outwards. Tragus of nearly uniform breadth, round at the end, and curved inwards. Wing-membranes extending to the base of the toes.

In its general character this species bears considerable resemblance to the smaller Australian species of Bats, such as *S. picatus*, Gould, *S. Greyii*, Gray, and *S. pumilus*, Gray, all having the forms of the *S. pipistrellus* of Europe, with some slight modifications. As its name indicates, it is most closely affined to *S. pumilus*, but it differs from it in being somewhat larger.

The muzzle is short and rather tumid; the nostrils and lips present no variation from what is usual in the restricted group to which

the species belongs, being in fact similar to the same parts in the common *Pipistrelle*.

The ears are small and very short, being scarcely longer than wide, and are of a tolerably regular ovoid form, but with their extreme tips brought to a blunt angle directed somewhat outwards.

The tragus is about half the length of the ear, of nearly uniform breadth, with a rounded tip, and a slight inward curvature.

As in all the species above enumerated, the wing-membranes extend as far as the base of the toes. The extreme tip of the tail is exserted, and the interfemoral membrane is marked with twelve transverse dotted lines.

The fur of the whole of the body is very thick and close, that of the back extending on to the interfemoral membrane for nearly a fourth of its length. In one example, the fur of the pubes also extends on to the membrane around the root of the tail; but this appears to be an exception.

On all the upper parts the fur is bicoloured, dark at its root, with the terminal third yellowish-brown; beneath it is similar, but the tips are pale brown with a slight olive-yellow cast, which is most conspicuous on the pubes and flanks.

The cutaneous system is of a medium brown colour.

The dentition has not been examined.

	″	‴	″	‴
Length of the head and body	1	6	1	6
——— of the tail	1	0	1	3
——— of the head, about	0	7	0	$6\frac{1}{2}$
——— of the ears.....	0	$3\frac{1}{2}$		
——— of the tragus.....	0	2		
——— of the fore-arm.....	1	$3\frac{1}{4}$	1	3
——— of the longest finger	2	4	2	3
——— of the fourth finger	1	9	1	9
——— of the thumb, about.....	0	$2\frac{1}{2}$		
——— of the tibia	0	6	0	$5\frac{3}{4}$
——— of the foot and claws.....	0	$3\frac{1}{4}$	0	$3\frac{1}{2}$
Expanse of wings	9	0	9	3

Hab. China.

3. Vespertilio Chinensis, n. s.

Top of the head very slightly elevated; muzzle rather thick; ears narrow, ovoid; tragus narrow, nearly straight and pointed; wing-membranes extending to the base of the toes; toes longer than the remaining portion of the foot.

In its general forms this species bears considerable resemblance to *V. murinus* of Europe, but the ears are much narrower. It is also somewhat larger; and if we except the *V. maximus* from South America, is the largest true *Vespertilio* known*.

* The specimens of *V. murinus* that I have made use of for comparison with this species, have been received from various parts of the continent of Europe, from

The top of the head is elevated only to a very moderate extent, and the face is rather long and thick. The nostrils are slightly tubular, and open sublaterally. The ears are of a longish oval form, not emarginate, but narrowed towards the tips. They bear greater resemblance to those of *V. Nattereri* than to those of any other species with which I am acquainted, but are relatively more narrow towards the ends. The tragus is narrowish at its base, from which it expands to near its middle, which is the widest part. From this it tapers to an acute point, having a slight inward tendency.

The wing-membranes extend to the base of the toes, and the latter are longer than the remaining part of the foot, just as in *V. murinus* and *V. formosa*, Hodgs.

The forehead is hairy, and the hair extends nearly to the end of the nose. On the upper lip is a thick moustache, the space around the eye being the only part of the face which is naked.

The fur is longish, fine in texture, and rather cottony, but not very thick. It does not anywhere encroach on the membranes.

All the upper parts are very dark brown, with the extreme tips of the hairs a little paler. Beneath, nearly similar, but the tips of the hairs are pale grey-brown on the breast and belly, whilst the sides of the body and pubal region are almost black.

The membranes are very dark.

	″	‴
Length of the head and body, about	3	9
——— of the tail	2	2
——— of the head	1	0
——— of the ears	0	8
——— of the tragus	0	$3\frac{1}{2}$
——— of the fore-arm	2	$5\frac{1}{2}$ or 6
——— of the longest finger	4	0
——— of the fourth finger	2	3
——— of the thumb	0	6 or $6\frac{1}{2}$
——— of the tibia	1	1
——— of the foot and claws	0	7
Expanse of wings, about	16	0

Hab. China, collected by Mr. Fortune.

4. Vespertilio Blythii, n. s.

Ears ovoid, somewhat pointed, their ends sloping outwards. Tragus narrow and tapering to a subacute point. Crown moderately elevated. Feet large, wholly disengaged from the wing-membranes.

In form and proportion this species resembles *Vesp. macropus*, Gould, from Australia, and in colour is somewhat like *V. ferrugineus*, Temm., from South America, both having the same subgeneric cha-

Algeria, and from Nubia. Those from Switzerland are the only ones that appear to approach it in size; but even they, although perfectly adult, are decidedly smaller, whilst the species I am describing presents indications of youth in the imperfectly ossified condition of the finger-joints.

racters as *V. Hasseltii, V. Carolii, V. Daubentonii,* and *V. dasycnemus.*

To the restricted group of which the above are representatives, Prince C. L. Bonaparte has given the name of *Cappacinius,* whilst Dr. Gray distinguishes it by the name of *Trilatitius.*

The crown is moderately elevated, and the snout is of medium length and substance. The ears are oval, somewhat pointed, and have their tips directed a little outwards. The tragus is narrow, and tapers evenly to a subacute point, which has a very slight outward tendency.

The wing-membranes extend only to the distal extremity of the tibia, leaving the feet wholly disengaged. The latter are large, and have the toes longer than the remaining part of the foot.

On the interfemoral membrane may be observed about eight strongly marked transverse lines. The tip of the tail is free for the length of its terminal joint.

The wings are ample and broad, as the length of the fingers relatively to each other, and to the other dimensions, as given below, will testify.

The fur of the forehead approaches to near the end of the nose, but around the eyes the face is nearly naked, and the upper lip is destitute of a moustache. All the membranes are naked.

The fur is long, rather soft, and inclining to silky on the upper parts. On the whole of the upper surface of the body it is dark brown at the root, with its terminal half cinnamon-brown, brightest on the rump, and tinged with grey on the head and neck. Beneath it is dark at its base, with its terminal half brownish-white. Both above and beneath, the bicoloured character of the fur is conspicuous, and, as already mentioned, bears some resemblance in this respect to that of *V. ferrugineus.*

	″	‴
Length of the head and body, about	2	3
——— of the tail	1	9 or 10
——— of the head	0	10?
——— of the ears	0	$7\frac{1}{2}$
——— of the tragus	0	4
——— of the fore-arm	2	2 or 3
——— of the longest finger	3	10
——— of the fourth finger	3	0
——— of the thumb	0	5
——— of the tibia	0	11
——— of the foot and claws	0	$6\frac{1}{2}$
Expanse of wings	15	0

Hab. A single specimen in the British Museum Collection is labelled "India, Nassenabad, from Mr. Warwick, 1848," and, I believe, was collected by Capt. Boys.

NEST AND EGGS OF BOMBYCILLA GARRULA, Temm.

March 24, 1857.

Dr. Gray, F.R.S., in the Chair.

The following papers were read :—

1. On the Nest and Eggs of the Waxwing (Bombycilla garrula, Temm.). By John Wolley, Jun., Esq.

(Aves, Pl. CXXII.)

The Waxwing, as observed in Lapland, makes a good-sized and substantial nest, but without much indication of advanced art. It is of some depth, and regularly shaped, though built of rather intractable materials. As in those of many other birds in the Arctic forests, the main substance is of the kind of lichen commonly called tree-hair, which hangs so abundantly from the branches of almost every tree. This lichen somewhat resembles a mass of delicate rootlets, or perhaps may be compared to coarse brown wool; but some of it is whitish, and in one nest there is a little of this mixed with the ordinary brown or black. This main substance of the nest is strengthened below by a platform of dead twigs, and higher up towards the interior by a greater or less amount of flowering stalks of grass, and occasionally pieces of equisetum. It is also interspersed with a little rein-deer lichen, perhaps a sprig or two of green moss, and even some pieces of willow cotton. There may also be observed a little of the very fine silvery-looking fibre of grass leaves which probably have been reduced to that condition by long soaking in water. In one of the nests examined there were several pen-feathers of small birds as an apology for a lining. Of other nests which are to be found in the same forest, it most resembles, but is considerably less, than that of the Siberian Jay, which however is less securely put together, but has many more feathers and soft materials for a lining.

The nest of the Waxwing is built on the branch of a tree, not near the bole, and rather, as one of the observers has said, standing up from the branch like a Fieldfare's or other Thrush's nest, than supported by twigs touching it at the sides, as the nests of many birds are supported. Of six nests, four were in small Spruces, one in a good-sized Scotch fir, and one in a Birch—all placed at a height of from 6 to 12 feet above the ground. The tree in several instances was unhealthy, thin and scraggy in its branches, to which there hung a good deal of hair lichen; and the nest seems generally much exposed, though from its resemblance to the lichen hanging near, it might escape the eye. The nests found were in parts of the forest considerably open, once or twice on the side of low hills, near a river, or with an undergrowth of dwarf swamp-loving shrubs. But at present we have scarcely enough examples to show that there is a preference for any particular kind of ground.

Five seems to be the ordinary number of eggs; in one nest only

there were as many as six. They have a pale salmon(?)-coloured ground, upon which are distributed pretty equally good-sized purple spots, some with more and some with less deep colour, but nearly all of them having a shade or penumbra, such as is common especially in eggs of the Chaffinch. The only very marked variety I have yet seen, has short streaks and much smaller and more numerous spots than usual, of which markings a considerable proportion are of a pale yellowish-brown. The eggs may be about an inch in length, but hardly enough have been obtained to determine the average dimensions. Marked differences in size in the eggs of the same nest have not yet been observed; but, as with other birds, we find that one nest may have all its eggs considerably larger than those of another nest.

In the backward and cold spring of 1856, Waxwings had their full complement of eggs about the 12th of June.

The writer abstains for the present from offering any remarks on the distribution of this bird in the breeding season, hoping that upon this subject, as upon the habits of the Waxwing in the summer, he may hereafter have some more complete observations to communicate.

Young of the Waxwing.

A young bird caught on the 5th of August, as it fluttered from the nest, had a general resemblance to the adult, though all the colours were more dull. The wax-like ends to the wing-feathers, the yellow tip to the tail, the black patch between the eye and the beak are all there, whilst the rich mahogany of the under tail-coverts is of a quieter brown; the blooming vinous colour of the head and back has not yet emerged from a homely neutral, and the crest is but just indicated by the longish feathers of the crown. The most marked difference between the adult and young is in the throat and under surface generally. There is at present scarcely a trace of the deep black patch of the chin, and the delicate tint of the general under surface of the adult is replaced by mottled neutral and white. This upon examination is found to owe its appearance to those longer webs, which arising towards the root of each feather, extend as far outwards as the webs which arise nearer its tip, being very pale or white, and thus relieving, on both sides, the last mentioned darker webs.

Lapland Owl. *Strix lapponica*, Temm.

Two nests of the Lap Owl were found in Finnish Lapland in 1856. In one near Sodankyla there were two eggs, and when one of the birds was shot, a third egg was found ready for exclusion. They were placed on the jagged end of the stump of a large Scotch fir, about 12 feet from the ground, at which spot the tree had been snapped across by some storm, the upper part not yet entirely separated, but sloping downwards till the greater part of its weight was supported by the ground.

The other nest was near the Aunasjoki, at the top of a lowish Scotch fir. Some time previously in the same year a bird had

been shot at this spot, which was found to be a female with eggs inside. The nest was not observed until after the shot was fired. At the second visit on the 28th of May, there were two eggs in the nest, and again a bird was shot, which turned out to be a new female with a fully-formed egg inside, through which the bullet had passed. The skin is now in England. The birds seemed on both occasions remarkably fearless.

The eggs are smoother, and, as might be expected, considerably smaller than those of the Eagle Owl. The dimensions of the two in the last-mentioned nest are 2 in. × 1·6 in. and 2·1 in. × 1·65 in.

At the meeting of Scandinavian naturalists in Christiania last summer, before I heard of these two nests having been found, I was able to announce that the Lap Owl generally makes its nest on the top of a stump. I had received several reliable accounts from different woodsmen, but had never found a nest myself, or been able to get the eggs, which indeed have, I believe, hitherto been unknown to ornithologists. It appears that three is the ordinary number of eggs.

Tengmalm's Owl. *Strix Tengmalmi*, Gmel.,

lays its eggs in holes of trees and occasionally in egg-boxes. When once established it cannot easily be made to leave its quarters, and it can, as it is said, keep possession against a much larger bird; yet from the present nest (the only one I have had the good fortune to meet with), after having laid four eggs, the mother was ejected by a Golden Eye. The dimensions of the egg accompanying this paper are 1·32 in. × 1·05.

Muoniovara, February 2nd, 1857.

2. On the Skull of a species of Mecistops inhabiting the River Bínuë or Tsádda, in Central Africa.

By Dr. Balfour Baikie, F.R.Geogr.S., etc.

The genus *Mecistops*, from the fewness of its numbers and the retired localities which it inhabits, is but little known, scarcely any mention of it being found in zoological writings. It was first distinguished as a species of *Crocodilus* by Cuvier, from a specimen still preserved in the Museum of the Royal College of Surgeons in London, and which he named *C. cataphractus*. Since that time two other species have been described, *M. Bennettii* or *M. leptorhynchus* from Western Africa, and *M. Journei*, said to be from New Guinea. With the exception of this latter species it is quite an African genus, inhabiting the various rivers falling into the Atlantic. In the 'Proceedings of the Zoological Society' for 1835, p. 128, the *C. leptorhynchus* of Bennett is said to have come from Fernando Po; but I should think that this, except established on undoubted authority, must be incorrect, chiefly because in that island the physical conditions requisite for its existence are wanting. Fernando Po is a small volcanic island, totally without the muddy rivers delighted in by

Crocodilidæ, and possessing nothing beyond streams which, during the rainy season, are tumultuous mountain torrents with rocky beds. It is much more likely that the specimen alluded to was obtained from some of the numerous rivers opening into the Bight of Biafra, opposite to Fernando Po, and that it came to England *viâ* Fernando Po, that island being a common point of call for vessels on their way home.

In August 1854, while at the town of Ojogo on the river Bínuë, my assistant procured from a native the skull of a *Mecistops*; and as this was the only occasion on which I met with its remains, and as I never saw one in the river, I conclude that it is there a comparatively scarce species. I have since described the animal to Dr. Barth, who informs me that during his lengthened wanderings he never remembers to have met with it. Crocodiles again were everywhere to be seen, and in many places most abundant.

The skull seems from its appearance to be that of an adult animal. Its extreme length is $22\frac{1}{4}$ inches, the greatest breadth being $9\frac{1}{4}$ inches, or nearly in the proportion of $2\frac{1}{2}$ to 1. From this it may be inferred to be most probably *M. cataphractus*, that being the proportion of the length to the breadth in that species, while in *M. Bennettii* (if distinct) it is said to be as 3 to 1. It has seventeen alveolar sockets on each side of the upper jaw, and fifteen in the lower, in which particulars it agrees with the characters originally given by Cuvier in the 'Ossemens Fossiles,' "la longueur de sa tête étant comprise deux fois et demie dans sa largeur," * * * "On lui compte dix sept dents de chaque côté à la máchoire supérieure et quinze à l'inférieure," 4 ed. tom. ix. p. 116. In each are intermaxillary sockets; but for various reasons I am inclined to believe that this is the case only in the adult, and that in the young animal there are five intermaxillary teeth on each side. The ninth remaining upper tooth is the most prominent, and it is distant from the extremity of the snout $7\frac{1}{2}$ inches.

In all essentials the skull of the *Mecistops* shows it to be properly a member of the family *Crocodilidæ* rather than the *Gavialidæ*. The teeth are irregular, the sides of the jaws are not parallel, there is a distinct swelling opposite the ninth remaining upper molar, and the lower canines are received in notches in the upper jaw.

The skull is considerably depressed, much produced anteriorly, and the extremity of the snout somewhat enlarged. Upper surface smooth. Forehead nearly flat, pitted, sides not raised, converging anteriorly. Cranial fossæ nearly circular, resembling those of the Gavial. Orbits rather more convergent than in the Crocodiles, and the nasal aperture more circular. Nasal bones more prolonged than in *Gavialis*, yet not reaching, as in the *Crocodili*, the nasal opening, but distant from it an inch and a half. Anterior spine of middle-frontal very long, slender, tapering, and pointed. Lacrymal bones lengthened and narrow. Notch for lower canines about an inch beyond posterior edge of nasal foramen, and about half an inch from the anterior extremity of the nasal bones. Anterior palatine foramen small. Palatine bones tapering and pointed anteriorly.

Extreme length of lower jaw 24½ inches, suture 5¾ inches in length, extending to opposite the seventh tooth on each side. Narrowest portion of lower jaw between fifth and sixth teeth, where it does not exceed an inch and three-eighths. Tenth and eleventh teeth nearly equal, the latter being rather the larger, but by no means exceeding the others in the same proportion that it does in *Crocodilus*. Its attenuated snout, narrow jaws, and small teeth would seem to indicate that it lives principally on fish.

Thus while it offers some analogies with the *Gavialidæ*, its true affinities are undoubtedly with the *Crocodilidæ*, though it may be held to represent the former in the African and other rivers which it inhabits.

April 28, 1857.

John Gould, Esq., F.R.S., V.P.Z.S., in the Chair.

The following papers were read :—

1. Observations on the Species of the Genus Manatus. By Dr. J. E. Gray, F.R.S., F.L.S., V.P.Z. & Ent. Soc. etc.

Dr. Balfour Baikie having requested me to examine the skull of the Manatee from Africa, which he described at a preceding meeting, I am induced to send you the following observations.

There appears to be considerable confusion respecting the nomenclature of the skulls of these animals.

M. Cuvier and De Blainville figure the skeleton and skull of the American Manatee (*M. australis*) from the same specimen sent from Cayenne in the Paris Museum. This animal differs essentially from all the four skulls from the American coast which are in the British Museum Collection, in the great elongation of the front of the lower jaw, and the comparative length and narrowness of the nasal opening. A copy of the front part of Cuvier's figures is given by Dr. Harlan as that of *M. americanus*. On the other hand, the four skulls (two of which come from the West Indies and one from Cuba) in the British Museum all agree with the skull figured by M. Cuvier as the *Lamatin du Sénégal* *, and also with that (which is probably from the same specimen as Cuvier's in a more imperfect state) which De Blainville figures under the name of *M. latirostris* of Harlan, in the short rounded form of the front end and the prominence of the gonyx on the under side of the lower jaw, and in the shortness and breadth of the nasal opening; and this appears to be different from the skull which De Blainville figured under the name of *M. Senegalensis*. The skeleton of a young female

* The front part of this figure is copied by Dr. Harlan for comparison with that of his *M. latirostris*.

specimen from Jamaica is figured by Sir Everard Home (Lectures, iv. t. 54), and the head of this skeleton is copied under the name of *M. australis* by Wagner (Saugeth. t. 381. f. 4), and the animal is figured from a drawing by Mr. Gosse in the Figures of Animals published by the Christian Knowledge Society, as the *Manati*.

The more adult of the Museum skulls exactly agree with Dr. Harlan's figures of the skull on which he founded *M. latirostris* from the coast of East Florida.

I am inclined to believe that all the skulls from America in the British Museum, and that of a very young specimen in the same Collection, belong to one species, though they vary considerably in the height of the intermaxillary bones, in the comparative length and breadth of the nasal opening, the extent of the bending down of the front of the upper jaw, the completeness and incompleteness of the orbit, and in the smoothness, roundness, or angularity and rugosity of the gonyx of the lower jaw; but I think that all these differences may be referable to the age and sex of the specimens, the upper jaw being more deflexed and lengthened as the animal increases in age. All the older specimens have a small, conical, rugose, bony prominence in the middle line of the front of the lower jaw, and the apex of the coronoid process truncated and expanded into an angle behind and before, as represented in De Blainville and Cuvier's figures of *M. australis* and *M. latirostris*. This is even the case in the skull of a very young animal with only the milk teeth.

On the other hand, in Dr. Baikie's skull of *M. Vogelii*, and in M. De Blainville's figure of *M. Senegalensis*, the coronoid process of the lower jaw is narrow above, with the hinder upper part obliquely rounded off, and with a slight angle in front; so that this is probably the character of the African species. I may also remark, that the front of the lower jaw of Dr. Baikie's specimen is produced and very differently shaped from that of any of the American skulls, and in this character it differs from M. De Blainville's figure of *M. Senegalensis*; but this difference may be only in consequence of its youth.

Dr. Harlan observes:—"Cuvier estimates the teeth at 36, nine on each side; in both my specimens they do not exceed 32, eight on each side."

In the very young skull above mentioned, which has holes for the rudimentary upper cutting or canine teeth, there are only 24, viz. six on each side; and the two hinder on each side must have been hidden in the gums. In the older skulls some have eight and others nine on each side, but in most of them only six on each side are perfect; as the anterior one on each side drops out as the new ones are formed behind, and in each of the skulls two hinder on each side are in the process of development.

But the question of the permanent specific difference between the *M. australis* from Cayenne, the *M. latirostris* from East Florida, Jamaica and Cuba, and between *M. Senegalensis* of Blainville (not of Cuvier, which is like the first) and *M. Vogelii*, must wait for

solution until a larger series of skulls of these species can be procured, and until the other parts of the skeleton can be compared; it being always borne in mind, at least according to my experience, that the skulls and other parts of the skeleton of the animals are quite as liable to vary in form and structure as any of the external soft parts by which they are moulded.

2. On the Genus Necturus or Menobranchus, with an Account of its Skull and Teeth. By Dr. John Edward Gray, F.R.S., F.L.S., V.P.Z. & Ent. Soc. etc.

Dr. Kaup lately sent to me the skull of the *Proteus of the Lakes, Necturus maculatus*. As it presents some peculiarities, I am induced to lay a figure and some observations on it before the Society.

1. It is the general belief of the inhabitants of Lake Erie that the bite of the *Proteus of the Lakes* is poisonous.

Dr. Holbrook observes that the fishermen regard these animals "as poisonous, and are consequently seldom taken in hand."

The Hon. Miss Amelia Murray in her 'Letters' mentions this animal as caught in a net at Detroit, under the name of *Fish Lizard* (vol. i. p. 172), and observes: "The fishermen said its bite was very poisonous, and it had the yellowish-brown lurid look which seems to appertain to venomous reptiles; but Dr. Kirtland says it is perfectly harmless."

And this latter opinion appears to be the almost unanimous impression of the naturalists of America.

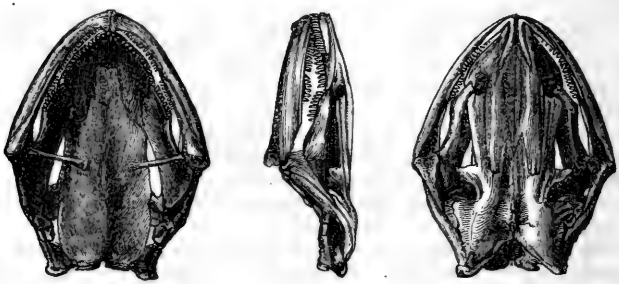
Yet the examination of the teeth will almost justify the popular belief, and at least render it very desirable that the animal should be examined in its living state, and that its bite be submitted to careful experiment.

The upper jaw of the skull is furnished with two series of small, acute, uniform, nearly transparent, conical, slightly curved teeth, the outer series being placed on the narrow intermaxillary bone, the inner series on the front edge of the vomer and on the outer edge of the lateral processes of the pterygoid bone. The lower jaw has a single series of similar teeth, which lock between the two series above described.

All these teeth have a conical cavity on the hinder part of their base, with a short linear slit on the middle of the inner side, and an oblong perforation above the slit in the middle of the inner side of the tooth. The form of these teeth is exactly similar to the fang of poisonous Serpents; that is to say, the cavity is not a hollow in the substance of the tooth itself, but is formed by the sides of the teeth being produced and folded together, leaving a conical cavity in the inner side of the base, as is easily proved by the examination of the teeth, which shows that the cavity is lined with enamel; and the junction of the two lateral expansions is rarely complete, but marked by a more or less distinct or continued slit between the basal notch and the subcentral foramen. In the poisonous Snakes the duct of

the poison occupies this cavity; and the similarity of the form and structure leads to the idea that it may be used for the same purpose in the *Proteus of the Lakes*.

The chief difference between the teeth of the *Proteus of the Lakes* and the fangs of Serpents, is, that in the former the upper aperture of the cavity is nearer to the centre of the tooth, some distance from the apex, while in the fang of the Serpent it is generally near to the tip.



I know of no other instance of a Batrachian having this structure of its teeth, nor do I know any instance, except in the Mexican Lizard, called *Heloderma horrida*, in which *all the teeth* are uniformly furnished with a basal cavity and foramen; and this Lizard is said to be noxious, but the fact has not been distinctly proved.

2. When Dr. Barton, in his paper on the *Siren*, first described the Hell-bender (*Protonopsis horrida*), he considered the *Proteus of the Lakes* as the young state of the latter species.

The skull bears more affinity to the skull of that animal than to any other Batrachian, and the difference between them is just such as one might expect between the larva and adult of other similar animals; and it will be observed that the *Proteus of the Lakes* is only known in its larva-like state, and *Protonopsis*, as far as I know, only in its adult form.

The first great, and indeed almost insurmountable, argument against regarding the *Proteus of the Lakes* and the *Hell-bender* as two states of the same species, is the geographical distribution of the animals as given by the American herpetologist.

Thus Holbrook, for example, states, "The *Menopoma Alleghaniensis* (Hell-bender) is found in the Alleghany river and its tributaries, and doubtless inhabits many of the branches of the Ohio and Mississippi rivers;" and *M. fusca*, "the waters of the mountainous regions of North Carolina and Georgia;" while the Proteus of the Lakes (*Menobranchus maculatus*) has as yet been found only in Lake Champlain and Lake Erie and their tributary streams.

It is true that a second species of the genus, *Menopoma lateralis*, according to Dr. Holbrook, "has a wide range, it being found in many of the rivers and streams that open into the Mississippi on its eastern

side; but I am not aware of its existence west of that river. Say found it as far north as Pittsburg in Pennsylvania, and Troost as far south as Cumberland river in Tennessee:" and further, "the *Menobranchus lateralis* was first described by Say from a specimen taken by a hook in the Alleghany river." He proceeds: "At first I was disposed to believe that the *M. maculatus* and *M. lateralis* were one and the same animal, but I am now convinced that the latter is at least a well-marked variety, if not a distinct species; it is more slender in proportion, its colours and markings different; it is found only in the western waters that run into the Mississippi, while the former inhabits the rivers and streams that flow into the northern lakes, and all the tributaries of the St. Lawrence river."

From these remarks on the observations of other American herpetologists, one may conclude, that though one species or variety of *Menobranchus* is found in the same system of waters as the *Menopoma*, the *Menopoma* has not hitherto been observed in the same lakes, or indeed in the same district of country, where one variety or species, viz. the *Menobranchus maculatus*, is alone found, and where it is abundant.

But an experienced American naturalist, Dr. Baird, has observed, that "the non-discovery of the adult is no argument against its existence. I had caught hundreds of the very remarkable larva of *Pseudotriton Salmoneus* near Carlisle, before I found an adult." (Journ. Acad. N. Sci. Philad. 1849, 292.)

Dr. Holbrook observes, that "the *Menobranchus maculatus* is seldom taken except in the months of April and May, which is their spawning season. Their eggs are about the size of peas, and as many as one hundred and fifty have been counted in a single female."

This would lead one to believe that they are adult animals; but eggs have been equally found in the *Axolotl* of Mexico, which is regarded by most naturalists as a *larva*.

3. It is to be observed, that though the *Proteus of the Lakes* (*Necturus*) has a more distinct and separate opercular flap, united by a distinct fold under the throat, than either the *Proteus* of Carniola or the *Siren*, and in this respect more nearly resembles the *Axolotl* of Mexico and the larva of *Tritons*—yet, that, like the *Proteus anguinus* and the *Siren*, it has only two slits on each side of the neck, with a single free ray between them, the anterior and posterior cartilaginous ray being united to the skin, as in those genera; while the *Axolotl* and the larva of *Tritons* have the gill flat, quite free from the gill-rays, and there are three slits between the gill-rays as well as the larger anterior one, making four slits on each side, and the inner edge of the rays being toothed as in fishes.

From these considerations I am inclined for the present to consider the *Proteus of the Lakes* as a distinct kind of Batrachian, which is arrested in its development and never reaches the perfect state.

The skull is much more developed than in the other genera of *Meantia*, and in its outline and disposition of its teeth it resembles that of the genus *Protonopsis* as figured by Cuvier (Oss. Foss. ii.

409. t. 26. f. 3, 4, 5), but there are no maxillary bones, and the nasal and frontals are more developed.

The exterior nostrils are on the upper surface of the margin of the nose, above the first third of the upper lip; and the inner nostrils are large, and, as in the other *Meantia*, not on the palate, but on the side of the mouth between the lips and the outer edge, near the hinder part of the series of vomerine teeth, nearly as they are in the genus *Axolotl*, well figured by M. Bibron (Herpet. t. 95. f. 2 *a*).

4. I may observe, that we have specimens both of *Necturus maculatus* and *N. lateralis* in the British Museum, the latter from the Ohio; and I cannot discover any difference between them, except that the one named *N. lateralis* has two broad, pale, dorsal streaks, and is about half the size of the other specimens; and I doubt if these dorsal streaks are not the result of youth, and vanish as the animal increases in size, as is the case with the *Siren*.

5. While on these animals, I may observe, that Dr. Garden's specimen of *Siren* that was originally described by Ellis, which is now in the British Museum, shows a number of lines of mucous pores on the chin and on the head, the latter not being so distinct as the former, and a very distinct series of oblong white spots, forming an interrupted line along the upper part of the sides of the body, and continued to the middle of the sides of the tail; the spots on the hinder part of the body and tail being larger, more distinct, and closer. These spots evidently represent the lateral lines in *Tritons* and fish, and I have seen them mentioned in the modern descriptions of the animal.

3. Descriptions of three new and very beautiful species of Birds, from Guatemala and from the Island of Lombock. By John Gould, Esq., F.R.S., V.P.Z.S. etc.

(Aves, Pl. CXXIII.)

Cotinga amabilis. (Pl. CXXIII.)

Male. Head, lores, line beneath the eye, all the upper surface, lesser wing-coverts, upper tail-coverts, sides of the chest, band across the breast, flanks, vent and under tail-coverts fine verditer blue; wings dull black, the greater coverts, spurious wing and the secondaries margined with verditer blue; tail dull black, margined externally with dull verditer blue; chin, throat and centre of the abdomen very rich purple.

Female. Upper surface greenish-brown, each feather tipped with greyish-white; under surface greyish-white, with dark brown centres to the feathers of the breast, upper part of the abdomen, and flanks; vent and under tail-coverts dull white.

Total length, 8 inches; bill, $\frac{3}{4}$; wing, $4\frac{1}{2}$; tail, $2\frac{3}{4}$; tarsus, $\frac{7}{8}$.

Hab. Guatemala.

Remark.—The *Cotinga amabilis* forms one of the most beautiful

members of this lovely genus of birds, and affords the first instance of a species being discovered to the northward of the Isthmus of Panama. It is allied to *Cotinga cincta* and *C. Maynana*; the chest being crossed by a band as in the former, which it also resembles in the black colouring of the under surface of the wing, while it assimilates to the latter in the peculiar tint of the verditer blue of the upper surface and flanks.

For a knowledge of this lovely species we are indebted to the researches of George Ure Skinner, Esq., than whom no one has done more towards making us acquainted with the rich ornithological and botanical treasures of the fine country to which this bird belongs.

HALCYON FULGIDUS.

Head, cheeks, back of the neck, back, wings, flanks and under tail-coverts deep black, washed with rich ultramarine blue on the back of the neck, back and wings; rump-feathers glaucous or chalky white, with black bases, and with a narrow line of blue between the black and the white portion, which alone is seen; tail deep ultramarine blue; chin, breast, and abdomen white; bill and feet coral-red.

Total length, 12½ inches; bill, 2¼; wing, 5¼; tail, 5; tarsus, ¾.

Hab. The Island of Lombock.

Remark.—This is an exceedingly fine species, of which I have not been able to find a description. I am therefore induced to believe that it is new: still it may be contained in the Leyden Collection; but on this point I have consulted Mr. Frank, who is well acquainted with its rich stores, and he tells me that he has no recollection of it.

PITTA CONCINNA.

Head, back of the neck, cheeks, chin and stripe down the centre of the throat velvety black; from the nostrils over each eye a broad mark of deep buff, posterior to which is a narrower one of pale glaucous blue; back, tail and wings dark grass-green; lesser wing-coverts and a band across the rump glossy verditer blue; primaries and secondaries black, the fourth, fifth and sixth of the former crossed by a band of white near their base, and all the primaries tipped on the external web with olive-grey; upper tail-coverts black; under surface delicate fawn-colour, becoming much paler where it meets the black of the cheeks and throat; centre of the abdomen black; vent and under tail-coverts fine scarlet; bill black; feet fleshy.

Total length, 6 inches; bill, 1; wing, 4; tail, 1½; tarsus, 1⅜.

Hab. The Island of Lombock.

Remark.—This bird ranks as one of the smaller species of this particular section of the group, it being even less than the *Pitta brachyura* of authors, to which it bears a general resemblance, but from which the black colouring of its throat will at all times distinguish it.

For this and the preceding species we are indebted to the researches of A. R. Wallace, Esq.

4. Description of a New Tanager of the genus Euphonia. By Philip Lutley Sclater, M.A., F.L.S. etc.

(Aves, Pl. CXXIV.)

Mr. Gould having placed in my hands for examination some specimens of *Euphonia*, which he has lately received from Guatemala, I am enabled to exhibit to the Society examples of both sexes of what I believe to be a hitherto uncharacterized species of that genus. I am no friend to the too frequent practice of calling animals after individuals, but I feel that I shall meet with approbation in this instance if I confer on the present bird the name of one of the most eminent naturalists of the day, to whom moreover I am indebted for numerous acts of kindness from the period when I first had the pleasure of his acquaintance. I therefore propose to call this species

Euphonia Gouldi.

♂. *Supra olivacea, æneo induta : pileo usque ad oculos cum fronte flavis : subtus, gula et cervice flavescenti-olivaceis, abdomine medialiter castaneo, hoc colore flavo utringue marginato ; lateribus olivaceis flavo mixtis : crisso castaneo : rostro et pedibus nigris.*

♀. *Supra mari similis sed dilutior, fronte et pileo antico rubris : subtus flavescens, abdomine medio cum crisso dilute castaneis, lateribus flavido-olivaceis.*

Long. tota 4·1, alæ 2·2, caudæ 1·0, tarsi 0·7.

Hab. In Guatimala et Mexico Meridionali.

Gould's *Euphonia* does not sufficiently resemble any other of the known members of the group to render it liable to be confounded with them. It may, I think, be most naturally placed at the head of the section containing *Euphonia pectoralis, E. rufiventris* and others (which has been denominated *Iliolopha* by Prince Bonaparte), and will serve to connect them with the yellow-headed species which precede them in my arrangement. I have suspected its existence for some time, but these examples are the first good ones I have seen of it. I have had for several years in my possession a bird which I now find to be an immature individual of this species ; and M. Sallé's collection comprised a single specimen not in very good condition, which he obtained in Southern Mexico. I gave a short description of the latter bird without naming it in my list of his collection (see P. Z. S. 1856, p. 303), but was mistaken (as I now see) in considering it a female.

This *Euphonia* is the fourth additional Tanager I have met with since completing the synopsis of these birds given in the Proceedings for last year ; the others being *Calliste rufigena* (P. Z. S. 1856, p. 311), *Saltator melanopterus* (Pr. Ac. Sc. Phil. viii. p. 361), and *Pyranga roseigularis* (P. Z. S. 1857, p. 6). The latter bird was long ago described by Dr. Cabot, but at the time of completing my synopsis I had not seen specimens of it.

EUPHONIA GOULDI, Sclater.

5. Review of the species of the South American Subfamily Tityrinæ. By Philip Lutley Sclater, M.A., F.Z.S., F.L.S. etc.

The birds of the old genus *Tityra* of Vieillot constitute a very natural and well-defined group peculiar to tropical America, which has been quite rightly, as I think, raised to the rank of a subfamily by Mr. Gray and succeeding writers. They seem to me to form a link between the two great South American families *Tyrannidæ* and *Cotingidæ*—the true *Tityræ* pointing rather towards the latter of these groups, and the genus *Pachyrhynchus* to the former. In anatomical characters, however, according to Müller, they rather agree with the Fruit-eaters, and for the present therefore, until this part of the subject has been further worked out, I am inclined to think they should be arranged within the confines of the family *Cotingidæ*.

The great diversity of plumage which occurs in the different sexes and ages of these birds (another character which betrays their Cotingine affinities) has occasioned the creation of many nominal species; and Mr. George Gray, in his 'Genera of Birds,' where merely a list of described species is given without any attempt at reduction of the synonyms, notices no less than forty-six supposed members of the subfamily. Dr. Cabanis, in his 'Ornithologische Notizen' (Wiegmann's Arch. f. Nat. 1847), was the first who undertook a critical examination of the subject, the result of which was to reduce the number of species from forty-six to sixteen. With his views I am disposed for the most part to agree. I should merely observe, that in one or two instances he has united species that have some claim to be considered distinct, and that it is to be lamented that in so difficult a group he did not give scientific distinctive characters for the males and females of every species.

In the 'Proceedings' of this Society for 1851 (p. 45 *et seq.*) are some remarks by Dr. Kaup on the birds of this subfamily, which are worthy of much attention. But of the species considered there as undescribed, one at least has been already previously named, and the others are such as, after examination of the type-specimens, I should hardly be inclined to regard as really new. Prince Bonaparte's arrangement of this group in his 'Conspectus' is adopted from Cabanis' article. In what follows I have attempted to make a careful review of the members of the subfamily *Tityrinæ*, giving short descriptions of the sexes of each species, when I have been successful in meeting with them, and the most necessary synonyms, particularly where my views on this latter point differ from those of Dr. Cabanis. Although no species is inserted of which I have not personally examined specimens, I have the satisfaction of recording the existence of twenty-two species instead of sixteen—the number assigned in the last general account published; and I have been very particular about localities, a point much too generally overlooked by writers on ornithology; so that, although my subject is not quite a new one, I shall hope to have contributed some fresh information upon it.

Dr. Cabanis has recognized three different genera in the present group of birds. About the first of these—the true *Tityræ*—there can, I think, be no question. The strong somewhat compressed beak, the want of bristles at the base of the bill, the peculiar scimitar-like shape of the second abnormal primary in the adult male, and the absence of any strong dissimilarity in the coloration of the two sexes, render the six birds composing it readily distinguishable from the rest of the group, and eminently entitle them to generic distinction. A group of rather less value appears to be that of the black-plumaged species, which naturally follow next in order. Here the rictal bristles are present, although not so well developed as farther on in the subfamily; the second abnormal quill of the males is broad and acuminated as in the true *Pachyrhamphi*; the females are clothed in a nearly uniform brown. These birds form the commencement of Dr. Cabanis' genus *Pachyrhamphus*. But I confess I cannot agree with Dr. Cabanis in separating generically the type of his genus *Bathmidurus* from *Pachyrhamphus Cuvieri* and *atricapillus*, and I therefore think it best for the present to employ one term as a generic name for the whole of the residue of the species—after removal of the true *Tityræ*—leaving the name *Bathmidurus* and other terms lately coined to mark out the divisions of subgeneric value.

Fam. Cotingidæ.

Subfam. Tityrinæ.

Rostrum brevius quam caput, basi dilatata, lateribus ad apicem plerumque compressis, culmine leniter incurvo, apice uncinata, gonyde ascendente: nares rotundæ, fere nudæ, rictus nudus aut setis paucis præditus: alæ elongatæ e primariis decem, secundariis novem; remigibus tertia et quarta primam superantibus et longissimis, remige secunda in maribus adultis abnormaliter brevi, falciformi aut apice acuminata: cauda e rectricibus duodecim, modica, lata: tarsi modici, acrotarsiis regulariter scutatis; paratarsiis squamulis numerosis obovatis obtectis: digiti fortes, horum exteriore cum medio ad basin conjuncto et interiorem longitudine paulo excedente, posteriore elongato, unguibus acutis.*

* Mr. G. R. Gray, in his 'Genera of Birds,' says that "*the wings are sometimes furnished with a spurious quill beneath the first quill.*" That this so-called spurious quill is the true second primary abnormally shortened is easily demonstrated by a comparison of the wings of the adult male and female; by which it will be seen that the second primary of the latter, which is of the usual length, corresponds in position to the reduced feather in the male bird. And, unless this reduced feather be taken into calculation, the males will be found only to have *nine* primaries, whereas the females have *ten*.

Genus I. Tityra.

Tityra, Vieill. Analyse, p. 39, 1816.
Psaris, Cuv. Règn. An. i. p. 340 (1817).
Erator, Kaup, P. Z. S. 1851, p. 47.

1

Rostrum forte, dilatatum, ad apicem compressum, uncinatum, rictu non setoso : alæ elongatæ, marium remige alari secunda brevi, falciformi : cauda breviuscula, quadrata : ptilosis marium albo-nigra, fœminarum obscurior haud valde dissimilis.

a. *Tityra* (loris nudis).

1. Tityra cayana.

Lanius cayanus, Linn. S. N. i. p. 137.
Tityra cinerea, Vieill. Enc. Méth. p. 859.
Psaris virgata, H. Smith (♀).
Psaris cayanensis, Sw. Class. B. ii. 255.
Psaris guianensis, Sw. An. in Men. p. 286.
Psaris nævius, Less. Tr. d'Orn. p. 379.
Tityra cayana, Vieill. Gal. Ois. pl. 134; Cab. Orn. Not. p. 238; Schomb. Guian. iii. 697; Bp. Consp. p. 179.
Piegrieche grise de Cayenne, Buff. Pl. Enl. 304 (♂).
Piegrieche tacheté de Cayenne, Buff. Pl. Enl. 377 (♀).

♂. *Cinerascenti-albus subtus pallidior : mento summo, pileo alis et cauda nigris : secundariis ultimis dorso concoloribus : loris nudis et cum rostro rubris : hujus apice nigra : pedibus nigris.*
♀. *Cinerascens, subtus dilutior ; dorso et corpore subtus nigro longitudinaliter striatis : pileo, alis caudaque nigris, secundariis ultimis dorso concoloribus.*

Long. tota 7·5, alæ 4·6, caudæ 2·6.

Hab. Cayenne (*Buff.*); Brit. Guiana (*Schomb.*); Trinidad (*Robin*); Venezuela, Cumana (*Beauperthuy*); New Grenada, Bogota.

Mus. Brit., Paris., P. L. S.

The woodcut represents (fig. *a*) the first and (fig. *b*) the second primary of the adult male of this species.

2. TITYRA BRASILIENSIS.

Pachyrhynchus cayanus, Spix, Av. Bras. ii. pl. 44. f. 1. p. 32.
Psaris cayana, D'Orb. Voy. p. 301.
Psaris brasiliensis, Sw. An. in Men. p. 286.
Tityra brasiliensis, Cab. Orn. Not. p. 239; Bp. Consp. p. 179.

♂. *Cinerascenti-albus subtus pallidior: pileo, mento, alis et cauda nigris: secundariis ultimis dorso concoloribus: loris minus denudatis cum ipsa basi rostri rubris, hujus reliqua parte nigra: pedibus nigris.*

♀. *Cinerascens, subtus dilutior, nigro longitudinaliter striata: alis caudaque nigris, secundariis ultimis dorso concoloribus.*

Long. tota 8·5, alæ 5·1, caudæ 3·2.

Hab. Brazil, prov. Piauhy (*Spix*); Rio de Janeiro; Corrientes (*D'Orb.*); Bolivia (*D'Orb.*); Paraguay (*Azara*).

Mus. Brit., Paris., P. L. S.

This bird may be distinguished from the *T. cayana* by its larger size and nearly entirely black bill.

3. TITYRA SEMIFASCIATA.

Pachyrhynchus semifasciatus, Spix, Av. Bras. ii. pl. 44. fig. 2. p. 32.
Psaris semifasciata, D'Orb. Voy. p. 301; Tsch. Faun. Per. p. 146.
Tityra semifasciata, Cab. Orn. Not. p. 239; Bp. Consp. p. 180.

♂. *Subcinerascenti-albus, subtus purior: facie antica cum mento alisque nigris: secundariis ultimis dorso concoloribus: cauda alba, rectricibus omnibus, nisi unæ utrinque extimæ pogonio interno, nigro late transfasciatis: loris nudis et cum rostro rubris, hujus ipsa apice nigra: pedibus nigris.*

♀. *Mari similis sed supra magis cinerascens et brunneo tincta: pileo nigricanti-brunneo.*

Long. tota 8·75, alæ 5·0, caudæ 3·0.

Hab. Eastern Peru, Wood-region (*Tsch.*); Bolivia, S. Cruz de la Sierra (*D'Orb.*).

Mus. Paris., P. L. S.

4. TITYRA PERSONATA.

Tityra personata, Jard. & Selb. Ill. Orn. i. pl. xxiv.
Psaris mexicanus, Less. R. Z. 1839, p. 41.
Psaris tityroides, Less. R. Z. 1842, p. 210.
Tityra mexicana, Sclater, P. Z. S. 1856, pp. 141 & 297.

♂. *Simillimus speciei præcedenti, sed caudæ rectricibus omnibus in pogonio utroque nigro transfasciatis.*

♀. *Supra brunnescenti-cinerea, uropygium versus dilutior: subtus alba, mento concolore.*

Hab. S. Mexico, Vera Cruz (*Sallé*); Xalapa (Mus. Berol.); Guatimala (Mus. Brit.); Nicaragua (*Delattre*); Chiriqui (*Bridges*); S. Martha, New Grenada (*Verreaux*).

Mus. Brit., P. L. S.

Whether this bird is really distinct from the preceding is perhaps not quite certain. I have had hardly a sufficient number of examples for comparison. But, as far as I have observed, the difference in the coloration of the tail-feathers appears constant.

b. *Erator* (loris plumosis).

5. Tityra inquisitrix.

Lanius inquisitor, Licht. Doubl. p. 50.
Psaris erythrogenys, Selby, Zool. Journ. ii. p. 483; Sw. Nat. Lib x. pl. 3 (♀).
Psaris selbii et *natterii*, Sw. An. in Men. p. 286.
Psaris inquisitor, D'Orb. Voy. p. 302.
Psaris jardinii, Sw. Zool. Ill. n. s. pl. 35 (♂).
Tityra inquisitrix, Cab. Orn. Not. p. 239; Bp. Consp. p. 180.

♂. *Albus, supra cinereo tinctus : pileo, alis et cauda nigris ; secundariis ultimis dorso concoloribus : rostro et pedibus nigris.*
♀. *Alba, supra cinerascens : fronte et lateribus capitis rufis : pileo, alis et cauda nigris : rectricum basi et ipsa apice albidis : secundariis ultimis dorso concoloribus.*

Long. tota 6·75, alæ 3·9, caudæ 2·5.
Hab. Brazil, S. Paolo (*Licht.*); Bolivia (*D'Orb.*); Cayenne; New Grenada; Bogota.
Mus. Brit., Paris., P. L. S.

6. Tityra albitorques.

Tityra albitorques, DuBus, Bull. Ac. Brux. 1847, xiv. pt. 2. p. 104; Rev. Zool. 1848, p. 244; Sclater, P. Z. S. 1855, p. 150.
Psaris fraseri, Kaup, P. Z. S. 1851, p. 47. pl. xxxvii. (♂), xxxviii. (♀).

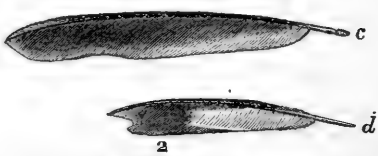
♂. *Albus, supra cinereo tinctus : pileo et alis nigris, secundariis ultimis dorso concoloribus : cauda alba, fascia subapicali lata nigra : rostro pedibusque nigris.*
♀. *Supra magis cinerascens et dorso brunnescente tincto : fronte albida : pileo reliquo nigro : lateribus capitis rufis.*

Long. tota 6·75, alæ 3·6, caudæ 2·4.
Hab. Eastern Peru (*DuBus*); New Grenada; Bogota.
Mus. Brit.
This species is easily distinguishable from *T. inquisitrix*, which it generally closely resembles, by its white tail banded with black.

Genus 2. Pachyrhamphus.

Pachyrhynchus, Spix, Av. Bras. ii. p. 31 (1824).
Pachyrhamphus, G. R. Gray, List of Gen. (1838).
Bathmidurus, Cab. Orn. Not. in Wiegm. Arch. 1847, p. 243.
Chloropsaris, Kaup, P. Z. S. 1851, p. 45.

Platypsaris, Bp. Ann. d. Sc. Nat. 1854.
Callopsaris, Bp. Ann. d. Sc. Nat. 1854.



2

Rostrum magis conicum, minus dilatatum et ad apicem minus compressum; apice minus uncinata; rictu plus minusve setis obsito: alæ elongatæ, marium remige secunda brevi, lata, deinde emarginata et apice acuminata: cauda elongatior quam in genere præcedente: ptilosis sexuum valde diversa, marium albo-nigra, fœminarum brunnea.

a. *Platypsaris.*

1. PACHYRHAMPHUS NIGER.

Lanius niger, Gm. S. N. i. p. 301.
Pachyrhynchus aterrimus, Lafr. R. Z. 1846, p. 320.
Tityra leuconotus, Gray's Gen. pl. 63 (♂ et ♀); Gosse, B. Jam. p. 187.
Pachyrhamphus nigrescens, Cab. Orn. Not. p. 241; Bp. Consp. p. 180.

♂. *Niger subtus paulo dilutior: scapularium macula basali alba: rostro et pedibus nigris.*
♀. *Brunnescenti-cinerea, pileo, alis et cauda brunneis: subtus albescenti-cinerea: gutture et pectore rufo tinctis.*

Long. tota 7·0, alæ 4·0, caudæ 3·0.
Hab. Jamaica (*Gosse*).
Mus. Brit., Berol., P. L. S.

Mr. Gosse has written a very interesting account of this species in his 'Birds of Jamaica,' giving details as to its habits, food, nidification, &c., which is really almost the only reliable information we possess concerning these points in respect of any bird of the group.

2. PACHYRHAMPHUS VALIDUS.

Tityra atricapilla (♂) et *rufa* (♀), Vieill. Nouv. Dict. iii. p. 347–8, et Enc. Méth. 859.
Lanius validus, Licht. Doubl. p. 50.
Pachyrhynchus cinerascens, Spix, Av. Bras. ii. pl. 46. f. 1. p. 34 (?).
Psaris cristatus, Sw. Zool. Ill. ser. 2. pl. 41 (♂).
Tityra pileata, Jard., Selb. Ill. Orn. i. pl. 17 (♀).
Psaris strigatus et *megacephalus,* Sw.?
Pachyrhamphus validus, Cab. Orn. Not. p. 240; Bp. Consp. p. 180.

♂. *Niger, semicristatus, uropygium versus paulo dilutior: scapu-*

larium macula basali alba : subtus fusco-cinnamomeus, gula albicantiore : rostro corneo : pedibus nigris.

♀. *Supra læte rufa, pileo nigro : subtus fusco-cinnamomea, rufo tincta : cauda unicolore rufa.*

Long. tota 7·5, alæ 3·8, caudæ 2·8.

Hab. South-eastern Brazil, S. Paolo (*Licht.*).

Mus. Brit., P. L. S.

3. PACHYRHAMPHUS PECTORALIS.

Querula minor, Less. Tr. d'Orn. p. 363.

Psaris roseicollis, Jard. & Selb. Ill. Orn. iv. pl. 28.

Pachyrhynchus pectoralis, Sw. An. in Men. p. 288.

Pachyrhamphus minor (partim), Cab. Orn. Not. p. 241 ; Bp. Consp. p. 180.

Psaris pectoralis, Kaup, P. Z. S. 1851, p. 46.

♂. *Supra niger, semicristatus : scapularium macula basali alba : subtus paulo dilutior, fascia subgutturali angusta rosea : macula primariarum basali interna alba : rostro et pedibus nigris.*

♀. *Rufa, pileo nigro, subtus dilutior* (?).

Long. tota 6·0, alæ 3·5, caudæ 2·5.

Hab. Cayenne ; New Grenada ; Bogota.

Mus. Paris., P. L. S.

The white exterior margin of the second abnormal primary, which Dr. Kaup relies upon as the specific character of this species, is not sufficient to distinguish this bird from *P. aglaiæ*, in some specimens of which I find the same peculiarity. But it may be easily recognized from the latter bird by its nearly uniform sooty-black colouring above and below, and the narrow rosy bar on the throat. I have a Bogota skin apparently referable to this species.

4. PACHYRHAMPHUS ROSEICOLLIS.

Psaris roseicollis, Lafr. et D'Orb. Syn. Av. in Mag. de Zool. 1837, p. 42 ; D'Orb. Voy. p. 302.

♂. *Cinerascenti-niger, pileo intensiore et nigro : scapularium basibus albis : subtus cinerascenti-niger, vitta subgutturali rosea : primariis ad basin interne albo maculatis : rostro et pedibus nigris.*

Long. tota 8·0, alæ 3·8, caudæ 2·75.

Hab. Bolivia (*D'Orb.*).

Mus. Paris.

Though I have seen a type of this species in the Magazin du Jardin des Plantes at Paris, I have never had an opportunity of comparing it with examples of its two near allies. My impression is, however, that it is distinct from *P. pectoralis* (than which it seems larger and of a more cinereous tinge below) and also from *P. aglaiæ*. M. de Lafresnaye has remarked upon the differences between it and the latter species in the Rev. Zool. 1839, p. 98.

5. Pachyrhamphus aglaiæ.

Pachyrhynchus aglaiæ, Lafr. R. Z. 1839, p. 98.
Psaris aglaiæ, Kaup, P. Z. S. 1851, p. 46.
Pachyrhamphus aglaiæ, Sclater, P. Z. S. 1856, p. 297.

♂. *Niger, subcristatus, uropygium versus schistacescentior: subtus pallide cinereus, collo antico toto roseo, mento albescente: scapularium utrinque basi et remigum macula basali interna albis: remige secunda brevi nigricante, margine externa angustissima et macula parva ad ipsam basin albis: rostro et pedibus nigris.*

♀. *Rufescens: alis intus nigris; harum marginibus et cauda tota læte rufis: pileo subcristato, nigro: subtus albescenti-cinnamomea, tectricibus subalaribus cinnamomeis.*

Long. tota 6·5, alæ 3·5, caudæ 2·6.

Hab. Mexico, Coahuila (*Lieut. Couch*); Vera Cruz; Cordova (*Sallé*); Xalapa (*Mus. Ber.*).

Mus. Derbiano et P. L. S.

This Mexican species is easily distinguished from *P. pectoralis* by its lighter ash-coloured plumage and distinct black head, as well as by the throat being wholly of a rosy red. M. Sallé's Mexican collection (of which an account is given, P. Z. S. 1856, p. 290 *et seq.*) contained five examples of different sexes and ages.

6. Pachyrhamphus latirostris.

Pachyrhamphus latirostris, Bp. Compt. Rend. 1854, et Notes Orn. p. 87.
Platypsaris latirostris, Bp.

♂. *Cinerascens, pileo nigro; subtus dilutior gula et ventre medio albicantibus: alis caudaque nigrescenti-cinereis: interscapulii pennis basi niveis: rostro et pedibus nigris: illius ipsa apice albida.*

♀. *Rufa, subtus albo-rufa, pileo nigro: remigibus intus et apice nigris: cauda rufa* (Bp.).

Long. tota 5·6, alæ 3·2, caudæ 2·3.

Hab. Nicaragua (*Delattre*).

Mus. Brit.

I have seen but one example of this species, which was received by the British Museum from Parzudaki of Paris. It is marked "Nicaragua," and there is no doubt, from the peculiar make of the skin, that it is one of Delattre's specimens. This bird I consider to be a strict congener of the last species *P. validus*. It is, as appears from Mr. Gray's 'List of Genera,' the type of Prince Bonaparte's genus *Platypsaris*, and I have therefore placed that term at the head of this section of the present group.

7. Pachyrhamphus surinamus.

Muscicapa surinama, Linn. S. N. i. p. 325?
Tityra surinama, Strickl. Contr. Orn. 1848, pl. 11. p. 62 (♂).
Bathmidurus surinamus, Bp. Consp. p. 181.

Pachyrhamphus dimidiatus, De Filippi, Cat. Mus. Mediol. p. 31 (1847).

♂. *Supra nitenti-niger, capite subcristato : scapularibus interne niveis : subtus candidus : cauda nigra, rectricibus extimis macula parva apicali alba : rostro nigro-plumbeo : pedibus nigris.*

♀. *Castanea, loris et corpore subtus albidis ; pectore rufescente induto : remigibus intus nigricantibus : cauda unicolore castanea.*

Long. tota 5·3, alæ 3·1, caudæ 2·3.

Hab. Surinam (*Linn.*); Cayenne.

Mus. P. L. S. (♂ et ♀ ex Cayenne).

b. *Pachyrhamphus.*

8. Pachyrhamphus viridis.

Tityra viridis, Vieill. Nouv. Dict. iii. p. 348 (1817), et Enc. Méth. p. 860.

Psaris cuvieri, Sw. Zool. Ill. i. pl. 32 (1820).

Platyrhynchus duponti, Vieill. Enc. Méth. p. 843 (1823).

Muscicapa nigriceps, Licht. Doubl. p. 56 (1823).

Muscipeta nigriceps, Max. Beitr. iii. 914.

Pachyrhynchus cuvieri, Spix, Av. Bras. ii. pl. 45. f. 2.

Tityra vieilloti, Jard. & Selb. Ill. Orn. pl. 10. f. 1 (♀).

Pachyrhamphus cuvieri, Cab. Orn. Not. p. 242; Bp. Consp. p. 180.

♂. *Flavescenti-olivaceus ; cervice cinerea ; pileo nigro ; fronte et loris albidis ; gula albicanti-cinerea : pectore flavo : ventre crissoque albis, ochraceo tinctis : rostro nigro-plumbeo, tomiis pallescentibus : pedibus nigris.*

♀. *Olivacea, pileo concolore, cervice postica et laterali cum gula cinereis, hac pallidiore : alarum tectricibus rufis : pectore flavido : ventre crissoque albidis : rostro pallido : pedibus nigris.*

Long. tota 5·8, alæ 2·8, caudæ 2·0.

Hab. Brazil, Bahia (*Licht.*).

Mus. Brit., Paris., P. L. S., &c.

The woodcut given with the generic character of the genus *Pachyrhamphus* represents (fig. *c*) the first and (fig. *d*) the second primary of the adult male of this species.

9. Pachyrhamphus cinereus.

Manakin cendré de Cayenne, Buff. Pl. Enl. 687. f. 1 (♂).

Pipra cinerea, Bodd. Table d. Pl. Enl.

Pipra atricapilla, Gm. S. N. i. p. 1003.

Gobemouche roux, &c., Buff. Pl. Enl. 831. f. 1 (♀).

Muscicapa eques, Bodd. Table d. Pl. Enl.

Muscicapa aurantia, Gm. S. N. p. 932.

Lanius mitratus, Licht. Doubl. p. 50.

Pachyrhynchus leucogaster et albifrons, Sw. An. in Men. p. 289?

Pachyrhamphus atricapillus, Cab. Orn. Not. p. 242; Schomb. Guian. iii. 698; Bp. Consp. p. 181.

♂. *Supra cinereus : alis nigris, primariis strictissime secundariis et tectricibus anguste albo marginatis : pileo nigro : frontali linea inter oculos et corpore subtus albis, lateribus in cinereum trahentibus : cauda nigricanti-cinerea, rectricibus intus anguste albo limbatis : rostro et pedibus nigris.*

♀. *Rufescens : cauda et alis extus rufis : subtus rufescenti-alba.*

Long. tota 4·7, alæ 2·7, caudæ 1·8.

Hab. Cayenne (*Buff.*, &c.); Surinam (*Cab.*); Venezuela; Trinidad; S. Martha (*Verr.*); Bogota.

I have not quoted *Psaris parinus*, Kaup, P. Z. S. 1851, p. 48, as a synonym of this species, since I have not had an opportunity of comparing the type with my specimens; but I have very little doubt that the two birds are identical.

c. *Callopsaris.*

10. PACHYRHAMPHUS VERSICOLOR.

Vireo versicolor, Hartl. R. Z. 1843, p. 289.

Pachyrhynchus squamatus, Lafr. 1843, p. 291.

Pachyrhamphus versicolor, Cab. Orn. Not. p. 243; Bp. Consp. p. 181.

♂. *Supra nitenti-niger, uropygio olivascente : alis nigris, tectricibus et secundariis albo limbatis : subtus olivaceo-viridis; pectore flavido tincto, lineis angustis nigricantibus ommino transfasciato : rostro nigricanti-plumbeo : pedibus fuscis.*

♀. *Olivacea, pileo nigricanti-cinereo : alarum tectricibus et secundariarum marginibus rufis : subtus dilutior, ventre medio flavicante, lineolis paucis vix apparentibus nigris.*

Long. tota 4·6, alæ 2·6, caudæ 1·9.

Hab. New Grenada, Bogota.

Mus. Brit., Berol., P. L. S.

d. *Bathmidurus.*

11. PACHYRHAMPHUS NIGRIVENTRIS.

Pachyrhynchus niger, Spix, Av. Bras. ii. pl. 45. f. 1. p. 33 (1824); Sw. An. in Men. p. 290.

Psaris niger, Sw. Zool. Journ. ii. p. 356 (1825).

Bathmidurus niger, Cab. Orn. Not. p. 243; Bp. Consp. p. 181; Schomb. Guian. iii. 698.

♂. *Fuliginoso-niger, pilei pennis æneo nitentibus, uropygio et corpore subtus paulo dilutioribus et cinereo tinctis : scapularium, tectricum alarium et secundariarum marginibus externis cum rectricum apicibus albis : rostro et pedibus nigris.*

♂. *Rufa, pileo intensiore, subtus valde dilutior, ochracescens.* (?)

Long. tota 5·5, alæ 2·9, caudæ 2·2.

Hab. Cayenne; North Brazil; Venezuela; Trinidad; New Grenada.

Mus. Brit., P. L. S.

12. PACHYRHAMPHUS POLYCHROPTERUS.

Platyrhynchus polychropterus, Vieill. Nouv. Dict. xxvii. p. 10; Enc. Méth. p. 835; Puch. Arch. d. Mus. vii. 357.
Pachyrhynchus variegatus, Spix. Av. Bras. ii. pl. 43. f. 2?
Muscicapa splendens, Max. Beitr. iii. p. 906.
Pachyrhynchus Spixii, Sw. An. in Men. p. 289.
Bathmidurus variegatus, Cab. Orn. Not. p. 244; Bp. Consp. p. 181.

♂. *Niger, pilei plumis æneo nitentibus : uropygio et corpore subtus cinereis : scapularium, tectricum alarium et secundariarum marginibus externis cum rectricum apicibus albis : rostro plumbescenti-nigro : pedibus nigris.*

♀. *Rufa, pileo ferrugineo : subtus dilutior, ochraceo induta* (?).

Long. tota 6·0, alæ 3·1, caudæ 2·3.

Hab. South-eastern Brazil; Rio de Janeiro; Rio Grande do Sul (*Plant*).

Mus. Brit.

Whether this and the preceding bird are really distinct, or merely local varieties of each other, it is difficult to say until a comparison can be made between a series of specimens of both sexes of each of them. I am not confident that the birds described as their respective females are really such. Dr. Cabanis has kept the two birds distinct, and I have followed his example—proposing to call the first *nigriventris*, as *niger* is preoccupied. In fact the whole difference of this species from the preceding consists in its cinereous uropygium and under plumage, and rather larger size. In the *nigriventris* the belly is nearly as black as the back. Spix's figure seems most like the northern species. Swainson has well distinguished the two birds in his 'Animals in Menageries,' pt. 2, under the names *niger* and *spixi*.

13. PACHYRHAMPHUS MARGINATUS.

Lanius atricapillus, Gm. S. N. (♂).
Todus marginatus, Licht. Doubl. p. 51 (♀).
Pachyrhynchus swainsoni, Jard. & Selb. Ill. Orn. et Sw. An. in Men. p. 288.
Muscipeta marginata, Max. Beitr. iii. p. 909.
Pachyrhynchus marginatus, D'Orb. Voy. Ois. pl. 31. f. 2. p. 303.
Pachyrhynchus albifrons, Sw. An. in Men. p. 289.
Bathmidurus atricapillus, Cab. Orn. Not. p. 245.
Psaris marginata, Bp. Consp. p. 181.

♂. *Cinereus, pileo nigro, fronte et loris albidis : interscapulio partim nigro : subtus cinerascenti-albus, ventre clariore : alis caudaque nigris : tectricum et secundariarum alarium marginibus externis cum rectricum apicibus albis : rostro plumbeo : pedibus nigris.*

♀. *Olivacea, pileo rufo : alis caudaque nigricantibus, illarum marginibus et rectricum apicibus pallide rufis : subtus flavicanti-olivacea.*

Long. tota 5·75, alæ 2·8, caudæ 2·2.

Hab. Brazil; Bahia (*Licht.*); Bolivia (*D'Orb.*); Eastern Peru; Rio Napo.

Mus. Brit., Paris., &c.

The back of the male of this bird is always varied with black; but I have one specimen in my possession, otherwise not varying much in plumage, in which the whole interscapulium is black. This is perhaps Dr. Kaup's *Ps. marginatus minor* (P. Z. S. 1851, p. 48).

14. PACHYRHAMPHUS MAJOR.

Bathmidurus major, Cab. Orn. Not. p. 246.
Psaris major, Bp. Consp. p. 181.
Pachyrhamphus marginatus?, Sclater, P. Z. S. 1856, p. 298.

♂. *Supra cinereus: dorso medio nigro aut nigro mixto: torque cervicali postico albo-griseo: pileo nitenti-nigro, linea frontali albida: scapularibus albis: alis nigris, tectricibus et secundariis albo limbatis: subtus albus cinereo tinctus; cauda nigra rectricibus lateralibus late albo terminatis: rostro nigro-plumbeo: pedibus nigris.*

♀. *Supra castanea, pileo nigro: alis nigris castaneo marginatis: subtus pallide viridi-flavicans, lateribus rufo tinctis; cauda nigra, rectricibus duabus mediis et ceterarum apicibus rufis.*

Long. 6·0, alæ 3·3, caudæ 2·4.
Hab. S. Mexico, Xalapa (*Cab.*) (*Sallé*).
Mus. Heineano et P. L. S.

This Mexican representative of *P. marginatus* may be easily recognized by its large size and the grey cervical collar between the black nape and the back. M. Sallé's specimens were procured near Xalapa, whence Dr. Cabanis's type, which was a female, also came. No description of the male bird has hitherto appeared.

15. PACHYRHAMPHUS ALBO-GRISEUS, sp. nov.

♂. *Supra cinereus, pileo cum nucha nitenti-nigris: linea frontali inter oculos alba: alis nigris, tectricibus et secundariis extus late albo marginatis: subtus albus, præcipue apud latera cinerascente tinctus: cauda nigra, rectricibus omnibus, sed harum extimis præcipue, late albo terminatis: rostro plumbeo: pedibus nigris.*

♀. *Saturate castanea, subtus valde dilutior, cinnamomescenti-ochracea.* (?)

Long. tota 5·5, alæ 3·0, caudæ 2·4.
Hab. New Grenada, Bogota.
Mus. P. L. S.

I possess an adult male specimen, and what, I think, is probably the female of this Becard, which is a close ally of the two preceding species. It is, I suppose, the New Grenadian representative of the form; and, I confess, it is not without hesitation that I separate it specifically from *P. marginatus*. The differences are the further extension of the black over the nape of the neck, the entire want of black on the back, the more purely white colouring below, and the much deeper white terminations of the outer rectrices in the present species.

16. PACHYRHAMPHUS RUFESCENS.

Gobemouche roux de Cayenne, Buff. Pl. Enl. 453. f. 1 (?).
Muscicapa rufa, Bodd. Table d. Pl. Enl. (?).
Muscicapa rufescens, Gm. et Lath. (?).
Pachyrhynchus rufescens, Spix, Av. Bras. ii. pl. 46. f. 2.
Tityra castanea, Jard. & Selb. Ill. Orn. pl. x. f. 2.
Muscipeta aurantia, Max. Beitr. iii. p. 911 (♂ et ♀ descr. opt.).
Pachyrhynchus ruficeps, Sw. An. in Men. p. 288.
Bathmidurus melanoleucus (!), Cab. Orn. Not. p. 244 (partim).
Psaris melanoleucus, Bp. Consp. p. 181.

♂. *Rufo-castaneus, subtus dilutior, cinnamomeus : pileo subcristato intensiore : vitta nuchali oculos utrinque jungente cinerea : primariarum apicibus nigricantibus : cauda unicolore castanea : rostro corneo : pedibus nigris.*

♀. *Mari similis, sed paulo dilutior, pileo magis cinereo et remige secunda, sicut semper in fœminis hujus generis, integra.*

Long. tota 5·5, alæ 2·9, caudæ 2·5.

Hab. Brazil, Para (*Spix*) ; South-eastern provinces (*P. Max.*).

Mus. Brit., Paris., &c.

I believe this Becard to present one of those exceptional cases (which not unfrequently occur in natural groups) of both sexes of a species, otherwise typical, having the characteristic colouring of the females of the other members of the genus. Like Dr. Cabanis, I for some time supposed that the present bird, which is by no means uncommon in collections, was the female of some black and white species. Dr. Cabanis has even gone so far as to prognosticate from a specimen which he supposed to be a young male in process of change, what the plumage of the adult male would be, and has named it *melanoleucus*. But having lately found that several specimens of these birds in supposed female attire have the second primary abnormally short (as is invariably the rule in the adult males of *Pachyrhamphus*), I am induced to believe that there is little difference in the coloration of the two sexes of this bird, and that Dr. Cabanis was in error. I may remark, that I have that accurate observer, Prince Maximilian of Neuwied, in my favour, for he describes the male and female of this species as nearly alike.

Vieillot's *Saltator melanoleucus*, identified by Prince Bonaparte and others with the supposed male of this species, is a *Lamprospiza*!

SCHEMA GEOGRAPHICUM AVIUM TITYRINARUM.

	Antilles. 1.	Mexico. 2.	Central America. 3.	New Grenada. 4.	Venezuela and Trinidad. 5.	Cayenne and Guiana. 6.	Eastern Peru. 7.	Bolivia. 8.	Paraguay. 9.	S.E. Brazil. 10.	N.E. Brazil. 11.
I. TITYRA.											
a. *Tityra.*											
1. cayana	...	...	...	*	*	*	...	...	...	...	...
2. brasiliensis	...	...	...	...	...	...	...	*	*	*	*
3. semifasciata	...	...	...	...	...	...	*	*	...	...	...
4. personata	...	*	*	*	...	...	...	...	...	...	...
b. *Erator.*											
5. inquisitrix	...	...	...	*	*	*	...	*	...	...	...
6. albitorques	...	...	...	*	...	...	*	...	...	...	...
II. PACHYRHAMPHUS.											
a. *Platypsaris.*											
1. validus	...	...	...	...	...	...	...	...	*	*	*
2. niger	*	...	...	...	...	...	...	...	...	...	...
3. pectoralis	...	...	...	*	*	*	...	...	...	...	...
4. roseicollis	...	...	...	...	...	...	*	*	...	...	...
5. aglaiæ	...	*	...	...	...	...	...	...	...	...	...
6. latirostris	...	...	*	...	...	...	...	...	...	...	...
7. surinamus	...	...	...	...	...	*	...	...	...	...	...
b. *Pachyrhamphus.*											
8. viridis	...	...	...	...	...	...	...	...	*	*	...
9. cinereus	...	...	...	*	*	*	...	...	...	...	...
c. *Callopsaris.*											
10. versicolor	...	...	...	*	...	...	...	...	...	...	...
d. *Bathmidurus.*											
11. nigriventris	...	...	...	*	*	*	...	...	...	...	...
12. polychropterus	...	...	...	...	...	...	...	...	...	*	...
13. marginatus	...	...	...	...	...	...	*	*	...	*	*
14. major	...	*	...	...	...	...	...	...	...	...	...
15. albo-griseus	...	...	...	*	...	...	...	...	...	...	...
16. rufescens	...	...	...	...	...	...	...	...	...	*	*
	1	3	2	9	5	6	4	5	3	6	4

Mr. Tegetmeier laid before the members specimens illustrating the differences produced in the hens of the Common Pheasant and Domestic Fowl by disease or degeneration of the ovary.

The late Mr. Yarrell noticed that disease of the ovary in the hen Pheasant resulted in the assumption of the male plumage and voice. Mr. Tegetmeier exhibited a specimen of a game hen, that had become sterile from age, in which the plumage was completely changed to that of the male.

In cases of disease of the ovary in domestic hens, a different alteration ensues. The plumage remains perfectly unchanged, but the comb and wattles become extraordinarily developed, in many cases even surpassing those of the male bird in size. The birds crow like the males, and are popularly known as Hen-cocks. The alteration had been observed as resulting from melanosis of the ovary from cartilaginous degeneration, and from a generally diffused inflammation arising from the escape of an ovum from the oviduct.

May 12, 1857.

Dr. Gray, F.R.S., in the Chair.

The following papers were read:—

1. On Parus meridionalis and some other species mentioned in the Catalogue of Birds collected by M. Sallé in Southern Mexico. By Philip L. Sclater, M.A., F.L.S., etc.

In the Catalogue of Sallé's Mexican Collection, given in these Proceedings for last July, I described a new species of Titmouse under the name of *Parus meridionalis*. Not having at that time within my reach specimens of *Parus atricapillus* of the United States, it was not without hesitation that I separated the Mexican species from that bird. I am now, however, able to exhibit to the Society specimens of *Parus atricapillus* which I obtained in North America last autumn, and I think that a comparison of them with the type of my *Parus meridionalis* (which M. Sallé has again kindly placed in my hands) leaves no doubt that these two *Pari* are, as I had anticipated, really distinct, although closely allied species. In its upper plumage *Parus meridionalis* differs from *P. atricapillus* in having the back deeper cinereous without any tinge of brown—the narrow outer edgings of the secondaries are brownish and not white, and the black does not extend so far down the nape. Below, the plumage is also much darker; the whole abdomen and crissum being of a nearly uni-

form rather mouse-coloured cinereous, with a pale whitish medial line. In *Parus atricapillus* the whole middle of the belly is much lighter and more white, and the sides are deeply tinged with pale rufous.

There is not much difference in the size of the two species, but the tail of *Parus meridionalis* is slightly longer.

Mr. Gould's collection contains an example of *Parus meridionalis* also from Mexico.

With regard to other species contained in the same catalogue, I have to state that *Cyanocitta floridana* (sp. 135) is probably an immature bird of *C. ultramarina* (Temm.).

I have compared specimens of *Passerculus zonarius*, Bp. (sp. 187) with examples of *Peucæa lincolni*, which I obtained in the United States, and can discover no difference between them, and I consider these two names to be synonymous.

The bird named *Coturniculus henslowii* (sp. 187), upon further comparison does not seem distinct from the ordinary *C. passerinus*, of which I also possess specimens from Guatimala.

2. On Three New Species of the genus Todirostrum. By Philip Lutley Sclater, M.A., F.L.S., etc.

(Aves, Pl. CXXV.)

Sir William Jardine has kindly lent me some specimens of birds of the genus *Todirostrum* out of a collection received by him a short time ago through Professor Jameson of Quito from the Rio Napo. They were obtained in that locality, as I have reason to believe, by Don Villavicencio, a Naturalist who was some time resident at Porto del Napo, on the Upper Rio Napo, where the Italian traveller Osculati mentions having seen him in 1847. Two of them appear to be certainly undescribed. The third is not in a very good state of preservation, but I think it may possibly be referable to Dr. Hartlaub's *T. rufilatum*.

1. Todirostrum calopterum, n. s. (Pl. CXXV. fig. 1.)

Supra flavescenti-olivaceum; pileo et cauda nigris: alis nigris, harum tectricibus læte flavis, campterio intense badio; secundariis ultimis extus flavicante limbatis: subtus flavum; gutture albo: tectricibus subalaribus flavidis: rostro nigro: pedibus pallidis.

Long. tota 3·6, alæ 1·9, caudæ 1·2.

Hab. In rep. Equatoriana in ripis fl. Napo.

Mus. Gul. Jardine, Baronetti.

This is a typical *Todirostrum*, but with the beak rather shorter and broader than in *T. cinereum*. The only known species which it at all resembles in colouring is *T. nigriceps*, mihi (P. Z. S. 1855, p. 76. pl. 84. fig. 1), from which it may be at once distinguished by the fine deep chestnut colouring of the bend of the wing. It is, I think, the most beautiful species of this group yet discovered.

F, lith.

M & N. Hanhart, Imp.

1 TODIROSTRUM CALOPTERUM. *Sclater.*
2 ..... CAPITALE. *Sclater.*
3 ..... EXILE. *Sclater.*

2. Todirostrum capitale, n. s. (Pl. CXXV. fig. 2.)

Supra olivaceum, pileo rufo ; alis caudaque nigris extus olivaceis, secundariis ultimis et caudæ rectricibus lateralibus in pogonio externo lactescenti-albo late limbatis, hoc colore extus tenuiter olivaceo marginato : subtus cinerascenti-album, medialiter albescens, ventre medio et tectricibus subalaribus flavicantibus : rostro superiore nigro, inferiore flavido, pedibus fuscis.

Long. tota 3·7, alæ 1·8, caudæ 1·2.

Hab. In rep. Equatoriana in ripis fl. Napo.

Mus. Gul. Jardine, Baronetti.

The rufous crown of this species distinguishes it from every one of its congeners except *T. ruficeps*, from which it may be separated by the want of the dark pectoral band, and other easily perceived characters.

The shape of the bill is typical, but rather broader and flatter than in *T. cinereum*.

I have also lately obtained two specimens of another species of this genus, not quite so typical in form or striking in plumage as the two last, but hardly to be placed without the limits of the group. This I propose to call

3. Todirostrum exile, n. s. (Pl. CXXV. fig. 3.)

Supra olivaceum, alis caudaque fusco-nigris ; illarum secundariis et tectricibus flavicanti-olivaceis, hujus rectricibus olivaceo extus marginatis : loris et capitis lateribus fusco-albidis : subtus margaritaceo-album, lateribus flavido tinctis ; gutture et pectore striis paucis elongatis fuscis obsoletissime flammulatis : rostri nigri basi pallida, tarsis gracilibus et cum pedibus colore carneis.

Long. tota 3·5, alæ 1·7, caudæ 2·6.

Hab. In Nova Grenada.

The first example of this species that came under my notice was received from MM. Verreaux of Paris in 1854. It is labelled "New Grenada." I purchased a second not quite mature from Mr. Hurst of Albany in the State of New York. A third is in the British Museum, and is evidently a Bogota skin. The bill of this *Todirostrum* is smaller than in the ordinary run of the species, but of nearly the same form, though not quite so flat. The tail is proportionately rather longer, the tarsi very slender.

Besides the three lastly described, I am acquainted with sixteen other species commonly referred to the genus *Todirostrum*, namely—

1. Tod. cinereum (L.). — *Todus melanocephalus*, Spix, Av. Bras. ii. pl. 9. f. 2 ; Desm. Tod. pl. 68 : ex Boliv. Bras. Sept. Or. et Mer. ; Guiana, Cayenne ; Venezuela ; ins. Trinit. ; Nov. Grenada ; Bogota ; S. Martha ; America Centrali et Mexico Meridionali !

2. Tod. maculatum (Desm.), Desm. Man. et Tod. pl. 70 (*Todus cinereus*, Spix) : ex Guiana, Cayenne, et Brasil. Sept.

3. Tod. auriculare (Vieill.), ex Brasil. Or.

4. Tod. granadense, Hartl. (*pectorale*, Kp.), ex Bogota.

5. Tod. ruficeps, Kp. (*multicolor*, Strickl.), ex Bogota.

6. Tod. poliocephalum (Max.), Beitr. iii. p. 964 (*flavifrons*, Lafr.), ex Brasil.

7. Tod. gulare (Temm.), Pl. Col. 167. f. 1, ex Brasilia.

8. Tod. squamicristatum, Lafr., R. Z. 1846, p. 363, ex Bogota.

9. Tod. nigriceps, mihi, P. Z. S. 1855, p. 66. pl. 84. f. 1, ex S. Martha.

10. Tod. gracilipes, mihi, P. Z. S. 1855, p. 149, ex Bogota.

11. Tod. cinereigulare, mihi, P. Z. S. 1856, p. 295, ex Mexico.

12. Tod. chrysocrotaphum, Strickl. Contr. Orn. 1850, p. 48. pl. 49, ex Peruv. Orient.

13. Tod. galeatum (Bodd.) (Pl. Enl. 391. f. 1.—*Mot. cristata*, Gm.; *Euscarthmus cristatus*, Bp.; *Tod. spiciferum*, Lafr. et P. Z. S. 1855, pl. lxxxiv. f. 2), ex Cayenne et fl. Amazon.

14. Tod. sylvia (Desm.), Man. et Tod. pl. 69 (Mus. Paris.).

15. Tod. fumifrons, Hartl. Journ. f. Orn. 1853, p. 35, ex Brasil.

16. T. rufilatum, Hartl. Journ. f. Orn. 1855, p. 98, ex Brasil.

Besides these, the following species have been described, and appear to rest on good authority, but I have not yet met with specimens of them :—

1. T. ecaudatum, Lafr. et D'Orb., ex Bolivia.

2. T. margaritaceiventre, Lafr. et D'Orb., ex Bolivia.

3. T. furcatum, Lafr., ex Brasil.

4. T. palpebrosum, Lafr., ex Brasil. (?).

5. T. striaticolle, Lafr., ex Bahia.

6. Triccus crinitus, Burm. Syst. Ueb. ii. 496, ex Brasil.

3. Notes on the Habits of some Birds observed in the plains of N.W. India, in 1849. By the Rev. T. Philipps, Baptist Missionary. Communicated by Frederic Moore*.

Part I.

1. Milvus Govinda, Sykes. The common Indian Kite.

This bird, like all the Kites, soars at various heights in most graceful circles, but generally looking out for prey. When it alights on a wall or house, it utters a tremulous shrill cry. It is very cowardly, for though it will carry off parrots and young chickens, it is afraid of the crow, sparrow-hawk, &c. It will allow crows to pull to pieces a bit of meat before it, which it evidently is desirous to obtain.

2. Aquila imperialis, Bechst. Native name, *Jumbiz*.

I shot a specimen of this Eagle in a lonely tree, where it was perched with its mate. When killed, it had a half-digested rat in its stomach. The tendons of the skin were so extremely strong as to make its skinning a very slow and difficult process.

I once saw this bird fly off with a partridge which I was on the point of shooting, and after a while managed to bring both down, and found that whilst flying, it had gutted the partridge and partly devoured its entrails. It sometimes seizes hares, with which, if very large and heavy, it can only rise about a yard from the ground; it then flies very slowly off; frequently some of the farmers may be seen running after and frightening it to relinquish its prey.

The Jumbiz will kill and eat half-grown peafowls. They often take away a grown fowl. I once observed it seize a tame half-grown peafowl which was flying down from a tree, and almost at the same moment the captor was attacked by another Jumbiz, and the whole fell to the ground together; running up, I found that the first bird had its wing broken, and could not fly away.

3. Hæmatornis cheela, Daudin.

I shot a specimen that was sitting on the top of a tree on the outskirts of a grove, and quietly surveying the country in a motionless posture. In the rainy and cold seasons it may be seen skimming over the corn-fields in search of reptiles and field-mice. It was called Sikra by the natives.

4. Haliastur Indus, Bodd. The Brahminy Kite.

"This bird is amongst the first objects which attract the eye of a stranger, for they swarm about the shipping at Calcutta, and are useful in removing any offal which may be thrown away; but though their usual food is carrion, yet they kill fish, and not unfrequently carry off a snipe which the sportsman has levelled."—*C. W. Smith's Notes.*

* The names of the following birds have been determined by comparing the descriptions made in India by Mr. Philipps with specimens in the Museum of the Hon. East India Company.—F. M.

5. Baza lophotes, Cuv. The Cohy Falcon.

The Cohy Falcon is one of the most beautiful of the Falcon race, and is a high caste bird. Its posture is erect, its plumage glossy, form compact, and manner dauntless; while the crest on the head adds much to its grace and beauty.

Mr. C. W. Smith in his 'Notes' says, "This is a scarce bird, and a specimen was sent to me by a native gentleman, and who acquainted me that it had not been seen more than once by the oldest Shikari."

6. Athene Brama, Temm. Native name, *Khukhusat*.

At a village a small distance from Muttra, a pair of these birds had taken up their abode in some low bushy trees growing at the entrance of the village, and were seen hopping and flying about in broad daylight and quite able to see us; which indicates their diurnal habits and familiarity.

I have seen this bird in various places in broad daylight at sunrise. I once observed it fly down from the top of a tree on the high road, and, picking up an insect, fly up again; this insect it held in its claws to eat, like a parrot; seeing me, it bent down its head, as all owls do; and though I frightened it once or twice, it would not leave the tree, but only flew to another bough. Its hunting in daylight shows it to approach the diurnal Owls.

At Brindabun I observed a pair huddled together at the end of a bough exactly over the tent. They slept the greater part of the day. One let fall its dung, which was as hard as a pellet, on my arm. Towards the decline of the sun, or between four and five o'clock, they woke up, and on perceiving that they were observed, gave one good stare and flew to another bough; and on being again looked at some short while afterwards, they flew to a low tree at some distance off. Its hoot is a plain single sound of *hoo*, not very loud, but very distinct.

7. Athene cuculoides, Vigors.

I once shot a specimen of this Owl in a garden, where a pair had taken up their abode in a dense and lofty tree. In the stomach I found a small lizard, two centipedes, a whole beetle, and fragments of two others.

8. Bubo Bengalensis, Franklin.

This species is very common in the plains, and is heard wherever there are tall dense trees, at night. A pair had taken up their abode in the ancient tamarind trees behind the Kazi's garden. Having been once fired at, they are rather shy on perceiving that they are noticed.

This Owl looks exactly like a huge cat when seen in a tree; the first one that I saw was sitting in a low tree in an orchard, and allowed us to gaze at it in the dusk for some time. We could hardly tell until it flew whether it was a cat or owl.

Its voice is very different from the other owls here, being *hū*, *hū*,

hŭ, ŭŭŭŭŭ. This is generally replied to by its companion. When looking down from a lofty tree, it points its ears forward, just like a cat or horse gazing intently on anything.

9. Strix jananica, De Wurmb.

This Owl lives in long grass, and is to be found in abundance some miles from Hodul. They may often be put up and chased by hawks. They fly but a very short distance.

10. Merops viridis, Linn. Native name, *Hurrial* or *Putringa*.

This bird abounds in the neighbourhood of Muttra. Its flight consists of short rapid jerks, and a quick gliding motion, and it generally returns to the same twig from whence it set out. Sometimes several of them may be seen wallowing in the dust on the high road on a sunny morning. It feeds on insects, and builds its nest in the high banks of the neighbourhood. Its nest is in a very deep horizontal hole in perpendicular banks of hard earth, but often so low as to be within reach of the hand. From this it appears, that whilst they guard against other birds, snakes, and squirrels effectually, they fear not man. These nests are generally on the high road-side, and the birds fly in and out unhesitatingly.

11. Merops Philippinus, Linn.

This bird utters a sharp whistle whilst flying, and also when perched. It flies for a much longer period and in a different manner to *M. viridis*, by taking several kite-like sweeps round and above its tree, and keeping on the wing for nearly a minute. It builds its nest in the same manner. There is a pair now (May 31st) near my house. [June 29th, 1849, killed one of a flock which are breeding in an old rampart opposite my house, fronting the high road. Irides vermilion.]

Referring to the Urdoo names of the different species of the Bee-eater of India, it may be remarked, that the natives class them under two heads:—*Putringas* and *Hurewahs* (Hurrials), each consisting of two descriptions of birds; the first of *Chota* and *Bura Putringa*, and the second of *Chota* and *Bura Hurewah*. The *Bura Putringa* is also called *Goolal*. The *Putringas*, it is to be observed, are common all over India; while the *Hurewahs* are confined entirely to Bengal, and never seen above Barilly in a wild state.

The *Hurewahs* are of a size between the two *Putringas*, and the two species are distinguished from each other by a slight difference in size, and by the larger one having a yellow spot on the top of the head. The *Hurewahs* are considered good singing birds, and are brought up as such by the native bird-fanciers of the Lower Provinces, and who occasionally bring them up to Muttra for sale. These birds must be taken very young from the nest; and they require as much care as most cage-birds do in their rearing and education as singing birds. The *Putringas*, on the other hand, are not good singing birds, and are therefore never caged or brought up as such.

The *Putringa* is also a very watchful bird. On the approach of a hawk, he immediately mounts into the air and utters a shrill muttering noise, which is well understood and taken up by all the other birds, who immediately fly to cover.

12. Hirundo filifera, Stephens.

I have seen this beautiful Swallow in my own compound after rain, and also sporting over a stagnant part of the Jumna at Brindabun. Its nest was under a projecting part of the building overhanging the water.

13. Cypselus affinis, J. E. Gray. Native name, *Ababil.*

Very common in the neighbourhood of Muttra. I have caught many specimens by simply standing at the bottom of a staircase in which were numbers of their nests, and waving the hat as they flew out, when they were instantly entangled. They appear half-blind or stupid after daylight. They quite fill up with feathers, &c., any hole in the wall for their nest, but when they build in the corner of a building they make a very thin cup-shaped nest. These nests they fasten one to another. The materials in the latter case appear glued together. Their claws are excessively sharp, and hold on to the flesh with desperate tenacity.

14. Caprimulgus ——. Native name, *Chapka.*

These secrete themselves during the day at the roots of bushes, and fly out at dusk. They take such short and quick turns in the air, that a hawk can only with great effort catch them. The Sparrow-hawk alone is successful in this case. The natives believe that if it settles on a cow she becomes ill, and her milk dries up.

15. Halcyon Smyrnensis, Linn. Native name, *Kilkila.*

This is found near ponds and small streams. Sometimes it may be seen sitting solitary on the top of a tree or the corner of a cottage, and at short intervals utters a shrill tremulous sound of seven or eight syllables, *kililililili*, like a wire which, having been struck, continues to vibrate. It often utters this cry before break of day, and sometimes during the night.

In the dry weather it sits near the water-courses in gardens, and watches for insects of any sort in the damp ground beneath dense fruit trees. I have seen it twice alight and devour an insect in such places.

I have found this species breeding in the Kazi's garden, and observed the female feeding her full-grown young one near the hole where the nest was. It waited for its food on the bough of a tree.

June 1st.—Observed the male treading the female, which is done in a similar manner as in the ducks. The habits of this bird bear comparison with aquatic birds only in a few instances. Its organization is, according to ornithologists, that of land birds, though the moderns have classed it with water birds, because perhaps they fre-

quent water, which however seems only because they draw their food from that element. The *Kilkila* is very common throughout the N.W. Provinces, attaching itself generally to pools of water, but frequently also to other places. I have often seen a pair attach themselves to my compound, and sit watching for hours at a time on some stick projecting from a "chopper" or the branch of a tree in the compound, for lizards and mice, which I have seen them fly at and catch, and swallow after killing them by beating them against the stick they perch on.

This bird becomes very familiar where it is not molested. It is easily caught with lime-twigs baited with a mouse or a mole-cricket.

16. CERYLE VARIA, Strickl. Native name, *Sufid Kilkila*.

This Kingfisher is very numerous, and is evidently a more retired bird than the preceding, and is only to be seen over rivers and large lakes, and seldom, if ever, near the habitations of men; over the former it may be seen hovering with its wings in rapid motion, balancing itself in the air whilst watching the fish, on which it plunges with the swiftness of lightning. If successful, it flies to the nearest bank and eats its prey at leisure; if not, it flies on a short distance, with its eyes fixed on the water till another fish attracts its attention, when it repeats its former manœuvre. *Koureealah* is another name applied by the natives to this bird.

17. TCHITREA PARADISI, Linn. Native name, *Taklah*.

Dr. Murray says that the chestnut and the white bird are the same species in different stages of growth; that the chestnut is the colour of the young one, and that when they moult they become white. The proof he gives is, that he has shot specimens during their moult, when they are partly clothed in their old chestnut, and partly in the new white dress.

I saw a pair, one white and the other cinnamon, following each other, and I should say they were male and female.

This bird can elevate its crest at pleasure. In general it is recumbent.

18. PERICROCROTUS SPECIOSUS, Lath. Native name, *Shah-Sakhi-Kapi*.

These birds are very restless, and frequent the tops of high trees, and ever chasing their prey. They generally fly in pairs. The natives assert that the male has seven females in his train, whence it has the above name, and also *Shah Saheli Ka-jhumka*.

19. RHIPIDURA ALBO-FRONTATA, Frankl. Native name, *Shamchiri*.

Extremely common in Brindabun, and I have seen it on the banks of the Jumna. It is very volatile and agile. It has a loud clear-chanting whistle.

20. DICRURUS MACROCERCUS, Vieill. Native name, *Bojunga.*

This bird may be seen everywhere flitting about trees, and on the backs of cattle. They abound in great numbers at the commencement of the high land on the Brindabun road. It is sometimes seen contending with the Hoopoe for the same insect. I saw one deliberately pulling to pieces a large insect which it held tight to the branch with its claw; the remaining piece it took in its bill and by a slight effort swallowed it. I once heard, about four o'clock in the morning and whilst yet dusk, several *Bojungas* making a great whistling noise and replying to each other, and was informed upon inquiry, that they are accustomed to have great fun at this hour, flying about in antics. I would remark that the *Bojunga* and the *Bhringraj* (*D. paradiseus*) are different species of the same genus of birds; the latter is an inhabitant apparently of the Nepal Hills, whence only it is brought down as a singing bird and sold at a fair near Bulubhut held in January every year. The *Bhringraj* is never to be seen in the plains, at least of the N.W. Provinces, in its wild state: it may easily be distinguished from the *Bojunga* by its having a crest of feathers on its head, and being more than double the size of the former, though the shape, plumage (except the top-knot), and perhaps habits are the same. The *Bojunga* probably inhabits the mountainous parts of the country as well as the plains, but certainly the *Bhringraj* confines itself entirely to the hills. The *Thampal*, which is another native name for the *Bojunga*, is unquestionably common enough in the N.W. Provinces, being found wherever there are large trees. It is fond of positions commanding extensive views: the top of a high tree is a favourite perch, where it performs the part of a sentinel in watching and giving notice of the approach of an unwelcome visitor. It has some peculiar loud notes of alarm, which are well understood by the less watchful but more peaceable portion of the feathered race. The *Thampal* has an innate dislike to the vicinity of all Raptorial birds, and will, without any apparent provocation, attack and drive these away from its immediate neighbourhood; but it is not until the breeding season arrives, which is from May to July and August, that this aversion and its natural pugnacity come out in full force. From the moment the nest is built, the male bird becomes extremely jealous of any encroachments upon the precincts of his dwelling, and during incubation his vigilance and ferocity are extreme. No sooner does he perceive the advance of a hawk, &c., than, starting from his high perch, he launches into the air to meet it. As all birds seem to dread an encounter with this dauntless little champion, the hawk is often seen to alter its course immediately on observing this challenge; but should it have the hardihood to continue the original direction of its flight, it certainly pays the penalty of its temerity; for the *Thampal*, mounting into the air a short distance above it, inflicts such smart blows, sometimes fixing on its back with his claws and beak for some seconds, as compels the hawk to beat a hasty retreat to some cover. Occasionally the female will turn out to assist the male in beating off a bird that approaches too near her nest. The following instance

of cunning in the *Thampal* is worthy of record:—Riding slowly across the country one fine morning in pursuit of game, I perceived a *Thampal* on a projecting dry branch of a large tree, while at a short distance were a number of different kinds of birds in a field in search of food. Presently I saw a "Chehee" or "Gilgilla" spring up and catch a locust in the act of flying away; the insect was too large to be easily subdued by the bird, and struggled hard to get away; it did escape once or twice from the bird, but was as often retaken. The *Thampal* had evidently observed the locust's struggles, and had once or twice tried to take it on its escape from the bird, but in vain. After one of these attempts he returned quietly to his perch, to all appearance giving up the idea of another similar trial. He had not, however, been there a few seconds, when—perhaps having revolved in his *mind* that the morsel was too nice a one to be relinquished without one more attempt—he suddenly uttered some of those shrill notes which indicate the approach of a hawk. So sudden was the alarm, and given with an intensity denoting imminent danger, that it sent the poor birds screaming with fright to a covert hard by; the locust, being abandoned in the panic, was taken off as *lawful* booty by the *Thampal*. I satisfied myself that no hawk had been or was in the vicinity, before I left the spot; and am confident the alarm was a *ruse* on the part of the *Thampal* to get at the locust.

21. Lanius Lahtora, Sykes. Native name, *Sufid Latora*.

This Shrike is common enough throughout the N.W. Provinces, and is one of the sentinels which watch and give notice of the approach of Raptorial birds, hawks in particular. I have never seen it attempting to attack any large bird, but I have on one or two occasions seen it pursue and capture small birds in the fields. It flew after them round and into the bushes before it could effect the capture. A friend of mine (Mr. Blewitt) tells me he has also seen the same thing done by a Latora once or twice, and I mention this here because I believe it has been doubted if this bird preys thus on the smaller birds. This, however, I am inclined to believe it does but seldom, and only from extremity of hunger; its more usual food being crickets, lizards, &c., when they abound. I have heard that this Shrike has been trained, but could never be made to catch a bird larger than a sparrow. It is, however, used in another curious way for the purpose of catching other birds. The bird-catcher takes a Latora, and running a string through its nostrils, runs the same string through those of a common starling, and drawing the string so as to bring the beaks of the two birds nearly together, joins it in a knot. In this state one of the two birds is fastened to a peg on the ground in a field, round which spot a circle of lime-twigs is set up. As soon as the man withdraws himself, these two birds try to extricate themselves, thus making a great noise, which attracts all sorts of birds, and which try to separate the supposed belligerents, but who in flying about come in contact with the lime-twigs, and are caught. The Latora is considered among the birds of omen with the Hindoos.

22. Lanius erythronotus, Vigors. Native name, *Pila Latora*.

Is common about Muttra, seated on the top of the castor-oil tree, and screams with a shrill single sound, generally repeated with one high and one low note, like *Qeek, qeek*. It utters various cries, apparently in imitation of other birds. It always seats itself on the highest or outermost branch, so as to command a wide view. This bird is inferior in courage to the *Sufid Latora*, and has never been known to attack live birds as prey, it living entirely on insects, &c.

23. Tephrodornis pondicerianus.

Takes very short flights, and is not shy; hops from twig to twig, and takes surveys around the tree by twisting its head in every direction. Having spied an insect of a soft kind, it seized it, then laying it down, deliberately ate it.

I observed a specimen hunting in various trees. It was very tame, and though often seated quietly for some seconds, it was never idle, its eyes and head being always on the look-out for insects. It hunts for insects in and under leaves, and with its very sharp bill picks these out with ease. Having discovered the chrysalis of some insect in its web attached to a leaf, it tugged vigorously at it till it was detached; it then devoured it. It did not attempt to catch flies.

24. Malacocercus canorus, Linn. Native name, *Ghanghai*.

This is most fearless in attacking the hawk. I once observed a friend fly his hawk at a partridge, and as it passed by a flock of these birds, they spied and attacked it after it had secured the partridge. They so severely treated the bird with their beaks, that it was glad to relinquish its prey and fly for its life. It was so frightened, that having once taken shelter in a tree, it was with the greatest difficulty brought back again to the fist. Its head remained swollen for a week, and afterwards it dreaded the sight of one of these birds.

On another occasion I observed a number of these birds actually kill a sparrow-hawk.

25. Malacocercus (? caudatus, Dum.). Native name, *Peng*.

This bird is very common here. Its habit, size and colour distinguish it from the *Bara Podna*. The *Podna* lives in the trees, and there feeds on insects; the *Peng* hunts only on the ground. The first has the lively motions of the small *Podna*; the other intently surveys the ground before he pecks, then hops a little distance with several great bounds, and then pecks again. The colour of the belly of the first is pure white, of the second only the chin. The *Peng* is also by far the larger of the two. The voice of the *Peng* is very peculiar, and at once distinguishes it from all other birds: it is a low under-toned warbling whistle, which it very often utters. A pair I have in confinement are all day long jumping from side to side of their aviary and responding to each other. They bear confinement very well, and feed on grain. One of them has a malformation of his upper mandible, which is bent down on one side of the lower; he manages, however, to eat and thrive.

When alarmed and retreating from an intruder, they run by a succession of long rapid hops; and when they have retreated some distance, their appearance is very much like that of a large field-rat, both as to waddling, motion, colour and shape; the long tail always dragging on the ground, very much favours the deception. When they fly to a distant part of the same field, they go so very near the ground, that if their wings were not seen in motion you might fancy them running or skimming the surface very swiftly. It generally frequents the bottoms of hedges and open fields, in the morning and evening.

26. PYCNONOTUS PYGÆUS, Hodgson.

Syn. *Pyc. bengalensis*, Blyth. Native name, *Bulbul*.

Common in the neighbourhood of Muttra. It is sold in great numbers in Delhi, and kept both for singing and fighting; the latter it is taught to do in the following manner:—The birds are placed on a string, to which they are tied, having a small range, in sight of each other. They are thus fed. When they wish to teach them to fight, they are kept hungry, and then are brought so near, that at the extent of their tether their beaks almost touch; the keeper then places a little food on his finger between the two birds. As both are hungry, they become indignant at the chance of each other getting the food, and of course show fight, and if let loose will immediately commence.

This bird is also taught to perch on the finger. A string is tied round its body and under its wings, and is thus kept prisoner without a cage.

The Bulbul sits on a solitary branch early in the morning, and keeps uttering a cry, consisting of two sounds, thus *Kee kua*. I have seen them hunting in pairs over the branches of large trees. Sometimes it feeds on the ground. I have found the nest of this bird in June, in an orange-bush, 4 feet from the ground. The nest was small, round, and contained four brown-spotted eggs.

It is remarkable that these birds are attracted by any very bright red or scarlet-coloured fruit. I have seen them occasionally caught by boys with a ripe cherry hung up near a lime-twig or other trap, to which a Bulbul has been enticed by the colour of the fruit.

Another native name given to these birds is *Gul-doom*, with reference, no doubt, to the scarlet patch under the tail.

I saw a specimen of this bird perfectly white all over, excepting the scarlet patch under the tail. It was brought in a cage from Barilly, and the owner gave the history of the bird thus:—He was one day going about the gardens near Barilly in search of young birds (being a bird-fancier), when he saw a crow fly across his path with a young unfledged Bulbul, followed close by the parent birds; as the crow flew close over his head, the man raised his hands and made a noise, which frightened the crow; the young bird was dropped, and being picked up was afterwards reared, when to the astonishment

of all that saw it, the young bird put forth white plumage, which it renewed, of the same snow-white colour every moulting season.

Query. Could any fright received by the nestling on being carried off by the crow have produced this effect on the plumage?

27. Pycnornis sinensis, Gmel.* Native name, *Bara Podna.*

This is an elegant little bird, which I have often observed in my garden. It lives on insects, and spreads out its tail like a fan when flying. Mr. C. J. Davis of Agra remarks that "this is the bird said to support the heavens by its legs, lest it fall." (See Shakespeare.) It generally builds in the Banyan tree.

28. Oriolus Kundoo, Sykes.

Breeds here in the rainy season, and may frequently be observed frequenting the gardens in the neighbourhood.

29. Copsychus saularis, Linn. Native name, *Dayer.*

This pretty singing bird is much prized by the Mussulmen, who cover up its cage, and feed it with expensive delicacies. Its food is made of roast grain-meal, ghi and spices. It frequents the lower branches of trees, and catches flying insects. I have observed it hunting on the ground in the shade of trees and bushes for soft insects, flying or creeping.

30. Kittacincla macroura, Gmel. Native name, *Shámá.*

May be observed early in the morning perched on walls, low trees and mounds, singing very sweetly. It builds in old walls, holes in houses, &c.

Mr. Davis says that the Shámá will sometimes imitate other birds, and that one in his compound, which had her nest near his poultry yard, used to imitate exactly the crowing of the cock, the call of a partridge, a kite and the Tuti (*Loxia rosea*). When caged it will imitate any other singing bird placed near it. It lays its eggs in the hot weather.

31. Thamnobia fulicata, Linn. Native name, *Kalchiri.*

Feeds on insects, as black and white ants. It constantly utters its sharp pleasant twitter when jumping about. Its note is *twi a twi a twi,* ending in *queck.* It builds in holes in walls, &c. When the male is courting, he swells himself out, and especially his red under tail-coverts, and erects his tail perpendicular. He then flies with a whirring sound.

32. Pratincola caprata, Linn. Native name, *Pidha.*

This bird abounds here at the close of the rains, and may be seen perched on the tops of the *bajra* and *joar* when nearly ripe. It utters a sharp rapid *whirr,* and has a song also. They answer each other.

* Syn. *Timalia hypoleuca,* Frankl.

33. Orthotomus longicauda, Gmel.

May often be observed on low bushes and on the ground, but also often to be seen in the tops of low thorny trees. It feeds on small tender caterpillars and grasshoppers, with which, when obtained, it flies to a tree above to eat. If it notices any person watching, it will hop down and return the compliment by inquisitively looking, first with one eye, then with the other, at the stranger, and at a very short distance, uttering at the same time a loud chirp. Having satisfied itself, it flies to another tree. This I have repeatedly observed.

34. Budytes viridis, Gmel. Native name, *Pila Mamola*.

This is a much rarer bird than *Motacilla luzoniensis*, and is not so active when on the ground; it remains more in one place, and does not wag the tail so much. I have never observed more than one pair together.

35. Nemoricola indica, Gmel. Native name, *Mamola*.

This may be observed in abundance at Brindabun in flocks of six or eight. They prefer hunting in damp grass in the open fields in the morning.

36. Calandrella brachydactyla, Temm. Native name, *Bhagera*.

Observed here in the cold season only.

37. Alauda Chendoola, Frankl. Native name, *Chandūl*.

This bird is highly prized by bird-fanciers in India, and great care is taken of it, as it has a very fine voice, and is taught to sing for a greater portion of the night. A faqir, near the mosque in the centre of the city, keeps all kinds of Larks in neat brass-wire cages. The Chandūl rises into the air and sings all night till daybreak during the rains.

38. Mirafra assamica, M'Clelland. Native name, *Bhatul*.

Common here, and may be observed in the morning and evening perched on a naked bank, and there pouring forth for a long time its song, which consists of about eight notes, the first six very quickly repeated and the two last slowly, thus—*twĕe twĕe twĕe twĕe twĕe twĕe twēēē twēēē*. It breeds here, as I have found the young but just fledged. It runs crouching very near the ground, and hides itself behind anything that offers.

39. Pyrrhulauda grisea, Scop. Native names, *Dabuk Chari* and *Duila* (Davis).

This bird builds its nest on the ground under a tuft of grass. The birds are nearly of the same colour as the ground, and they sit motionless until you almost put your foot on them. In running about they crouch and go a few inches at a time, whence their name

of Crouchers. The female bird on the nest is only discoverable by the eye.

40. Passer indica, J. et S. Native name, *Gourya.*

Lays four eggs, white speckled with brown. The nest is composed of grass, hemp, and lined inside with large soft feathers. I have observed them throwing out their dung from the nest with their beaks.

41. Ploceus Baya, Blyth. Native name, *Baya.*

The Baya arrives in the neighbourhood of Muttra in the hot weather, and begins to build during the rains. It would seem that they preferred those trees which, from any cause, are most inaccessible. Thus, in this neighbourhood, they suspend their nests from the Babul (*Mimosa arabica*), the terrible thorns of which keep all intruders at a distance; but, however, where palm-trees abound, they always select them, as being quite inaccessible, especially at the extreme tips of the leaves, where they generally suspend their nest. The nest is generally commenced from the top, the birds forming a circle like a hoop, on which they sit and swing while working; the top of the hoop is gradually widened, so as at last to form a dome with two supports; and thus the work goes on, till the whole dome has come to the length of the bottom of the hoop: there the nest begins to be formed into two compartments; on one side of the hoop the nest itself is placed, the other side being formed into an entrance.

They build the nest with one kind of dry grass, and during its formation you may observe them walking over the outside of the nest, prying about in every direction, and here and there tightening a fibre by seizing it with their beak and moving their head to and fro. They do not seem in any great hurry to complete the nest, but are very anxious to have it the proper shape, and, I suppose, sufficiently water-tight: indeed, no form could be better devised for a bird which builds only in the rainy season. I have observed them suspend the making of the nest for a month after the first few showers till the heavy rains begin to descend. They often take the liberty to hop on to a neighbour's nest and look about it, but never rob it of materials. Sometimes the high wind shakes down the nest, if not attached sufficiently strong. One bird I observed commencing its nest from the bottom, resting it on a twig having plenty of leaves.

The Bayas are very tame, and will allow you to stand under the tree whilst they are making their nests.

42. Munia Amandava, Linn. Native name, *Lál* or *Lal Munia.*

This is sold here during the rainy season for about two annas each. Many Rajahs keep men to teach these little creatures to fight. Their note is very pretty, when caged. They pass the winter with difficulty, and often die of cold. The only way to preserve them is to provide them with the nest of the Baya (*Ploceus*), into which they creep and huddle together. They are very easily caught in traps in which a Lal is confined.

43. Carpodacus erythrinus, Pallas. Native name, *Tuti*.

This comes from the hills in the spring, and feeds on the mulberry. It is caught by the natives in nets, before which two or three decoys are tied.

44. Sturnia pagodarum, Gmelin. Native name, *Pabiya Pawi*.

A very common bird. Elegant in shape and colour. Sings sweetly and is often caged. It is docile and hardy, and will imitate any other bird placed near it. It talks like a *Munia*, but with a shriller note. I observed it on May 31st building its nest in the hole of a tree close to a bridge.

45. Sturnus vulgaris, Linn. Native name, *Telia* or *Nakhshi Telia*.

Generally appears in great flocks in the neighbourhood of Muttra in the cold weather.

The name Telia given to this bird and the *Pastor roseus* is most likely derived from Til (oil seed), which they are very fond of.

46. Sturnopastor contra, Linn. Native name, *Ablaka*.

This builds a rather large nest in a conspicuous situation on trees of moderate height. It is somewhat shy.

47. Acridotheres tristis, Linn. Native name, *Maina*.

May be observed in the cold weather crowding together on the Babul trees. They have several notes: one is *praikh, praikh*, another when flying is *twee, twee*. They may be seen of a morning feeding in the open fields upon white-ants. It is frequently caged and taught to talk, which it does tolerably well.

48. Corvus splendens, Vieill.

The sagacity and vigilance of this predatory bird is too well known to require much in illustration of its habits; but I have too often myself been amused by witnessing the tricks, to think some short account of the manner in which this exceedingly cunning bird is caught by the natives, would not prove uninteresting to the reader of these notes. To any one conversant with the customs of this country (India) I need not say that Crows, as well as several other kinds of birds, are in great request at large cities for "Sudga" or "Ootarus" (ransoms) for the sick. Hence the necessity with bird-catchers of having a constant and well-regulated supply on hand, and as a Crow can seldom be tricked twice in the same manner, the bird-catchers have recourse to various methods of entrapping him. One of them is this:—Feeding Crows on certain occasions forms part of a religious ceremony with the Hindoos, and this share of the business is generally taken up by the women, with whom, accordingly, Crows become very familiar, nay, sometimes so bold as to take the food from their hands. Taking advantage of this familiarity with the women of the country, I have frequently seen a bird-catcher attire himself

in the garb of a Hindoo female, and closely veiling his face and beard with the "Chadir," issue forth with a *Thaler* loaded with sweet rice in his hand to invite Crows to a (supposed) feast! This invitation consists of throwing a few grains of the rice to every Crow met on the way, and thus a flock is soon collected round the supposed woman, when the bird-catcher proceeds to his net, still throwing out a few grains of rice now and then to the Crows, who now follow him close. Reaching his net—which, by-the-bye, must be set at night and carefully concealed under dust and sand, otherwise the whole plan would fail,—he heaps the rice on a spot surrounded by the hidden net, walks to the end of a string attached to the net, and as all the Crows are now very busy at devouring the feast, he suddenly draws the net over his victims. I need hardly remark that in the manner of laying the net, and in concealing his person, the bird-catcher must be exceedingly cautious, for should the least suspicion be created by any discovery, the farce would be at an end. The very arms and feet of the man must be concealed, and the sight of a beard would most certainly send all the Crows flying in a moment. There are several other ways of catching these birds.

49. Corvus culminatus, Sykes. Native name, *Pahari-kawa*.

The habits of this are tolerably well known.

50. Dendrocitta rufa, Scopoli. Native name, *Dhanes* or *Maha Lat*.

The *Maha Lat* is a sociable, bold bird, found in all extensive groves and forests. It has several curious notes. They are generally found in pairs. Sometimes two or three pairs assemble on the same tree and begin to talk and quarrel, with a very singular sound of two syllables, thus—*Kakak* or *Kekekek* several times repeated in a guttural tone. It is not much unlike the sound of the peacock, but not so loud. When not quarreling it has another note more agreeable. Perhaps this is a note of love? This too is a compound sound, and is generally uttered when there is only one pair on a tree. One of the birds utters the note and the other responds with a low purring sound. To utter the full sound the bird lifts up its body from the tree, or shoots it forward, without rising from its legs. The *Maha Lat* takes very short flights from tree to tree, and does not often alight on the ground.

51. Coracias indicus, Linn. Native name, *Sulzuk* and *Nilkhant*.

"Though gifted with so brilliant a plumage, much cannot be said in praise of its shape. Its appearance on the wing is lovely, yet when perched we observe a large head, thick neck, prominent breast, and a pinched body, which is rendered more conspicuous by a long tail. It is a very common bird, is little afraid of man's approach, and is pugnacious, driving away the crow without much effort; it is a very noisy screaming bird, and in this respect is frequently very

troublesome. With the Hindoos it is esteemed sacred; they consider it propitious if seen upon the day which concludes the Dasserah or Doorg-a-pooja festivals, and discharge their matchlocks to put it on the wing. The Birmahs commonly send parties to procure the feathers of this bird."—*C. W. Smith's Notes.*

This bird often shoots up perpendicularly into the air, screaming as it goes, and then with as sudden and nearly as steep a descent plunges towards the earth, but only to shoot up again. This it often continues for some minutes, till it settles on a bough.

When attacked by a hawk it shows great agility by twisting itself at the moment of the hawk's stoop, and when caught with its powerful beak it often seriously wounds the legs of its captor. The natives say that it sometimes breaks its legs. At any rate it has done this in the case of the Shikra (*Micronisus badius*).

I once observed this bird flying steadily forward, when presently an insect some yards beneath attracted its attention, after which it dived with a sudden twist, seized it, and pursued its course.

52. Buceros ginginianus, Lath. Native name, *Lamdor* or *Dhanmar.*

Is very shy, especially towards roosting-time. A specimen killed at Hasanpur on the Ganges received two shots and died after repeated attempts to strangle it. It uttered a shrill sound like *kīk* while on the tree and when wounded. In its belly was found a hard lump the size of a pigeon's egg, which on being cut open was found filled with the fruit of the Peepul and other trees.

53. Palæornis torquatus, Briss. Native name, *Gallar.*

Abounds in every part of India. They fly in great flocks to the fields and gardens, screaming as they fly. When perched on a tree, the Kite will sometimes swoop down on them and carry one off in its talons. The rest do not attempt a rescue, but fly in circles, screaming loudly. They destroy much more fruit than they eat, biting it off and letting it fall; this is generally unripe fruit. The owl attacks these birds by night, and their feathers may sometimes be seen in the morning strewing the ground. They make their nest in holes of walls and trees.

On a journey in Rohilcund I observed one fly out from a tree with a scream, and, taking a circuit in the air, sweep back to the tree, when, just seizing the tip of a branch far too slender to bear its weight, it swung round and round as if for amusement, and thus turned several summersaults, till by a spiral motion it ascended to the firm part of the branch.

54. Palæornis cyanocephalus, Linn. Native name, *Tuia Totá.*

This Parrakeet is found feeding on the fruit of the Peepul tree.

55. Palæornis Alexandri. Native name, *Pahari Totá.*

56. MEGALAIMA INDICA, Lath. Native name, *Bassunta Lasora.*

Abounds in Rohilcund, and is also a visitant in the neighbourhood of Muttra. They generally occur in pairs, and I have seen them in all high trees.

The voice of this bird is certainly very remarkable: it begins in a low tone, and gradually increases its pitch and its power until the whole tree seems vocal with one full rich sound. This ubiquity of sound much deceives a person endeavouring to see the bird which causes it, as he may look to any part of the tree, and his ear will never guide his eye. Another deception is the smallness and green colour of the bird, which hide it among the foliage; and the last is its immobility, for it remains fixed to one spot all the time it utters its note. When not thus engaged, it runs up and down the tree like a Woodpecker, displaying its beautiful yellow and green clothing.

57. BRACHYPTERNUS AURANTIUS, Linn. Native name, *Sat-Ranga.*

This Woodpecker is rather scarce here, but abundant in Bareilly. It breeds once a year, in Asarh, laying three or four eggs of a light-green colour in the hollows of trees.

58. CENTROPUS RUFIPENNIS, Illiger. Native name, *Mahúka.*

I have shot this bird in Muttra. Its flesh is good eating. It is a very shy bird, and must be shot from an ambush. It moves by hopping and sometimes walking stately as a crow.

The *Mahuka* utters a cry in the morning so like that of an owl, that I was long deceived by it. The only difference is, that the *kook, kook, kook,* is pronounced a little more rapidly, and does not end in a run like that of the owl. The *kook* is uttered in a very guttural tone, and one bird answers the other—male and female. The cry is uttered on trees: it makes it with some effort, by swelling out its throat and bending its head.

On opening the stomach of a specimen shot, a lizard about the length of the hand was found. This lizard was beautifully marked with black bars, and is said to be intensely poisonous. My Bhustie, a very respectable trustworthy man, said that he once knew of a buffalo that died from the bite of this lizard, in its tongue.

59. COCCYSTES MELANOLEUCOS, Gmel. Native name, *Chātāk* or *Popiya.*

Visits the neighbourhood every hot season, and is now (May 22nd) in the garden. It has been observed to rise high in the air long before day, and utters its notes, which are very loud. I once shot a specimen as it was sitting one evening on the bare ground, pecking at some insects, while its mate sat on a low bushy tree close by. It is not at all shy, for though my man and family stopped before it, and though his gun flashed in the pan the first time, it did not fly away. I have been informed that they go out for the day into the jungle and return by evening.

Mr. C. J. Davis of Agra informs me that this bird lays its eggs in the nest of *Malacocercus*, and that it brings up the young bird.

This bird makes a great figure in Hindu poetry under the name of *Chātāk*.

60. EUDYNAMYS ORIENTALIS, Linn. Native name, *Koël*.

This is common in the neighbourhood. It is a very fickle bird, not staying many moments on any one tree. It jumps about all the time it is on the tree in search of food, apparently uttering various cries besides *Koël*. It begins with *kik, kik, kik*, then *koël, koël, koël*, and often talks low to itself *ku, ku, kā, kā*, like a crow, but in softer tones.

On June 4th, 1849, I observed a female *Koël* feeding her full-grown young one with pipul fruit. The young one was perfectly the same size as the mother, but its tail not so fully developed; its colour, however, was so unlike, that had I not seen it being fed by the *Koël*, and for a long time closely observed their exact similarity of shape, their similar mode of hopping from branch to branch, and the fact of the young following the female when she flew to another tree, I should have never believed it possible that they could be of the same species. The young was of a brownish colour, covered with dark brown bars all over, except the top of its head, which appeared dark brown or black; its breast was light-coloured, and the tail with broad white and brown bands.

From this fact it appears either that some *Koëls* rear their own young entirely, or that they watch till the crow turns them out of the nest, and then takes the charge of them. An intelligent native confirms the last supposition, and says that at Gwalior, in the large mango groves, the female *Koël*, from the time it has laid its egg, comes five or six times a day (although persecuted when seen by the crow), to see after the welfare of its young. This it continues till the crow drives out the fledged young one, when the mother flies off with it. This he has frequently seen.

61. UPUPA EPOPS, Linn. Native name, *Hūdhūd*.

The Hoopoe is common in India. I once saw a fight between a *Bhuj-ung* (Dicrurus) and a *Hūdhūd* (Hoopoe). This bird never feeds but on the ground, where it marches about with a bustling motion, and with its long beak hunts out all sorts of insects from holes in the ground. It is very fond of examining all the holes at the roots of large trees, where no doubt it often obtains a feast. It flies with such jerks that no hawk can catch it; even the swiftest and smallest hawks do not succeed. The Persians believe that this bird used to bring Solomon all the news of the country.

62. NECTARINIA ASIATICA, Linn. Native name, *Shakr Khora*.

This beautiful, purplish, steel-blue bird is common all over the north-west. In the winter it may be seen sporting on the sunny side of lofty trees. As soon as the Sahajna (*Hyperanthera Moringa*)

begins to blossom, it is constantly seen hovering before its white flowers, and as each forest tree begins to bloom, it rifles them of their sweets. It finds nourishment even in the Chamkra flower, and is now (May) every morning to be seen hovering over the poisonous Ak Madar Aling; with it many Humble-bees are seen feasting on the same sweets, and looking like smaller sun-birds. It is very bold, but does not like confinement, though it will suck out honey from flowers put between the bars of its cage. It sings pleasantly, *i. e.* it has two or three sharp pretty chirps. It moults in the rainy season, and at this time its whole breast is yellow, with the exception of a purple line in the middle; the back feathers are all a dull olive-green, but with one or two purple feathers appearing.

This bird often alights on the twig near the flower if smooth, and twisting its head over it, sucks out the honey.

4. Descriptions of some New Species of Lepidopterous Insects from Northern India. By Frederic Moore, Assistant Museum East India Company.

(Annulosa, Pl. XLIV.–XLV.)

1. Pieris Nama, E. Doubleday, MS. (Pl. XLIV. figs. 1, 2.)

Male.—Upper-side white; fore-wing with a narrow brown line along costal margin, curving and widening across near the middle of the wing, and again tapering to posterior angle; hind-wing tinged with black (as if from intensity of that colour on the under-side) along the outer margin, where the veinlets are dark brown.

Female.—Brown, with three longitudinal white streaks in middle of fore-wing, and two in the hind-wing: these streaks in some specimens being confluent and occupying nearly the whole of the middle of both fore- and hind-wings; under-side, along costal margin and widening to the outer margin of fore-wing, greenish-yellow, the rest white; hind-wing greenish-yellow, darker on the veins, and nearly white along discoidal cell towards anterior angle.

Expanse of wings $2\frac{1}{4}$ to 3 inches.

Hab. Darjeeling; Sylhet; Bootan. In Mus. East India Company.

Remark.—The late Mr. E. Doubleday was acquainted with the male insect only, to which he applied the above MS. name to specimens in the British Museum; both sexes I have now the pleasure of characterizing.

2. Pieris Seta, Moore. (Pl. XLIV. fig. 3.)

Upper-side blackish-brown; fore-wing with two rows of narrowish white marks, two lengthened marks between median and submedian veinlets, and four small spots within discoidal cell; hind-wing with a marginal row of whitish spots, another row from costal margin widening towards the anal angle, abdominal margin broadly whitish,

1 2. Pieris Nama. ♂♀ Moore. 3. Pieris Seta. Moore. 4. Pieris Sanaca. Moore.
5. Pieris Indra. Moore. 6. Pieris Durvasa. ♀ Moore.

G.H. Ford

W.West. imp.

Papilio Janaka Moore.

C. H. Ford. W. Westwood

the latter tinged with yellow, also a white linear mark in discoidal cell. Under-side as in the upper-side, but with all the markings on the hind-wings yellow. Wings shaped as in *P. Thestylis*. Expanse of wings 3⅞ths inches.

Hab. Bootan. In Mus. East India Company.

3. Pieris Sanaca, Moore. (Pl. XLIV. fig. 4.)

Upper-side white; fore-wing with the veins and veinlets broadly clouded with black, leaving only a row of lanceolate white spots on the outer margin, and another row of more linear-shaped marks extending across the disc; hind-wing with the veins and veinlets sharply defined with black, discoidal and median veins clouded with black, the latter broadly so; also a marginal row of angular lunate marks; anterior base and anal angle bright yellow. Under-side: fore-wing as in the upper-side, but the white markings more clearly defined, those near the anterior angle being yellowish; hind-wing with the dark colour broader, and the white spaces nearly covered with yellow. Shape of wings as in *P. Belladonna*. Expanse of wings 3¼ inches.

Hab. Darjeeling. In Mus. East India Company.

4. Pieris Indra, Moore. (Pl. XLIV. fig. 5.)

Upper-side dark brown; fore-wing with a central longitudinal space of white from the base, also two small white spots near anterior angle; hind-wing with the anterior base brownish greenish-white, also with two white spots near anterior angle. Under-side: fore-wing with a broad irregular fascia from middle of costal margin to posterior angle; anterior angle chrome-yellow, with some white dividing the two colours; basal half white, tinged with straw-yellow along discoidal cell; hind-wing chrome-yellow, and minutely irrorated with brown; anterior half of discoidal cell and space between each veinlet near outer margin white, also a dark brown dot on disco-cellular veinlet. Wings shaped as in *P. Paulina*. Expanse of wings 3 inches.

Hab. Darjeeling. In Mus. East India Company.

The nearest ally of *P. Indra* appears to be *P. Lalage*, E. Doubleday, Diurnal Lep. t. 6. f. 5, also from N. India.

5. Pieris Durvasa, Moore. (Pl. XLIV. fig. 6.)

Male.—Upper-side white; fore-wing from middle of costal margin, curving transversely, apically, and scolloped to near end of outer margin, black, and having near the apex some white marks, generally three, the outer ones being sometimes indistinct; base of costal margin and body greenish; on the middle of disco-cellular veinlets is a round black spot, and another more quadrate spot between the first and second median veinlets, the latter slightly touching at the angle the scolloped black outer margin.

Female.—Black colour broader, the quadrate spot larger and broadly confluent at the angle with the outer margin, thus forming a white spot on middle of outer margin; hind-wings of female with a marginal row of blackish spots, the extreme margin and anal angle

being yellowish-white. Under-side: apex of fore-wing pale yellow, the black colour forming only a curved transverse bar, besides the two black spots; hind-wings wholly pale yellow, and having a small disco-cellular black spot; body yellowish.

Expanse of wings $2\frac{1}{4}$ to $3\frac{3}{8}$ inches.

Hab. Darjeeling, Assam. In Mus. East India Company.

The form of the wings of *Pieris Durvasa* is the same as in *P. Paulina* and *P. Pandione*.

6. Papilio Janaka, Moore, n. sp. (Pl. XLV.)

Upper-side black; hind-wing with a white patch on the disc, which is divided by three of the veinlets, thus forming four separate patches, the outer one on each side being the shortest, and the two nearest the abdominal margin being tinged with red; three submarginal and three marginal lunules and circular mark at anal angle red; tail with two red spots. Under-side black; fore-wing with the base red; hind-wing with patch on the disc as on upper-side, but the portion nearest abdominal margin nearly covered with red, which colour is continued upwards and downwards, occupying the base of the wing and the whole space between the third median veinlet and submedian vein; lunules as above, but are larger, and a fourth submarginal one appears between the discoidal and first median veinlets; tail spotted as above; cilia between the angles white; head, neck, body beneath and sides red.

Wings shaped as in *P. Bootes*, Westw. Arc. Ent. t. 31.

Expanse of wings 5 inches.

Hab. Darjeeling. In Mus. East India Company.

Remark.—*Papilio Bootes* appears to be a near ally of *P. Janaka*.

May 26, 1857.

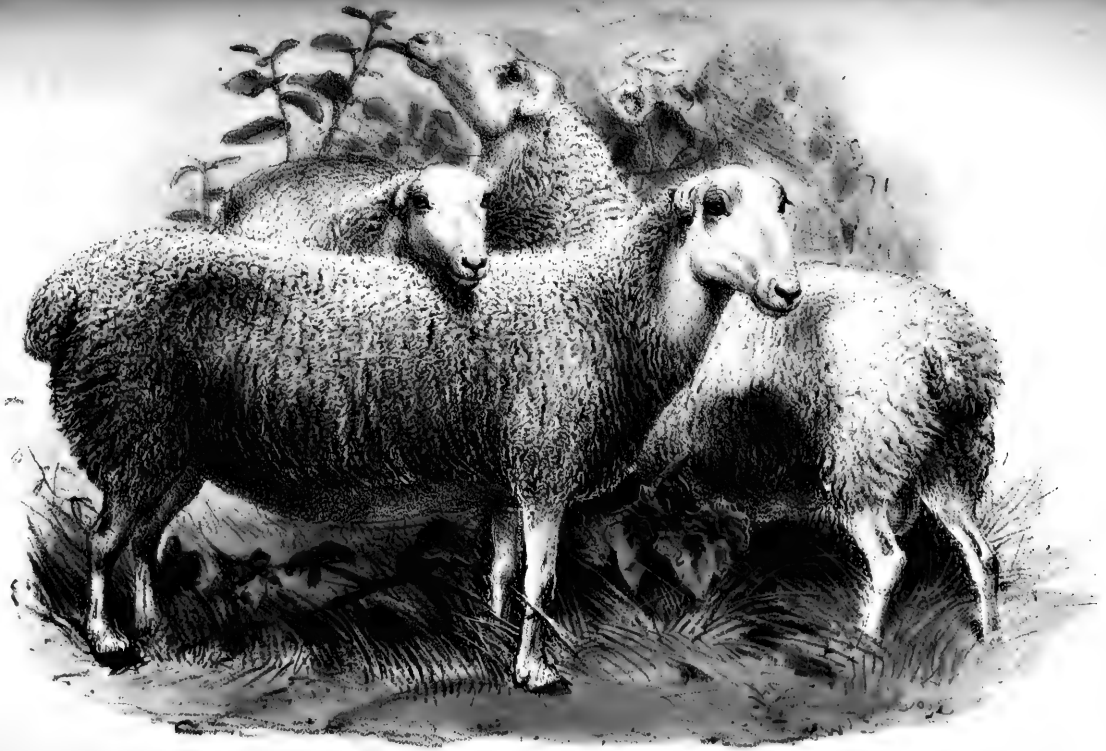
Dr. Gray, F.R.S., V.P., in the Chair.

The following papers were read:—

1. Description of Chinese Sheep sent to H. R. H. Prince Albert by Rutherford Alcock, Esq., H.M. Vice-Consul at Shanghai. Presented by H. R. H. to the Zoological Society in April 1855. By A. D. Bartlett, Esq.

(Mammalia, Pl. LII.)

These Sheep differ from all others that I have seen in not possessing external ears. In size they are equal to ordinary sheep; the wool is perfectly white, rather *coarse and mixed with long hairs*;



J. Wolf, Lith.

M. & N. Hanhart, Imp.

SHANGHAI SHEEP

the head and face are smooth, and covered with white hair; they have no horns; the tail is short, rather broad, and turned up at the tip; the profile is very convex.

My attention was first called to these sheep from the fact of their great reproductive power. I find they breed twice in a year, and produce four and sometimes five at a birth, the three ewes now in the Society's Gardens having this spring produced *thirteen lambs*. These lambs are very easily reared by hand, and are perfectly hardy. Upon referring to Miss Corner's 'History of China,' published in 1847, it appears that since the introduction of the cotton plant into China (which took place during the Ming dynasty, about 500 years ago), the breeding and rearing of sheep have been neglected, as the following extract will show:—

"The extended cultivation of cotton was one of the causes that led to the almost entire disappearance of sheep from the southern provinces, for it was found that it would take much more land to supply a certain number of persons with mutton and wool, than with rice and cotton. Then the pastures were gradually turned into rice and cotton plantations, while sheep were banished to the mountains and less fertile parts of the country. For the same reason cattle, horses, and other domestic animals are scarce; the few that are kept for the purposes of husbandry are poor and ill-fed; for there is not a common on which they can graze, so that they are tied up in stalls when not employed in the field. Dairy farms are unknown in China, where people use neither milk, butter, nor cheese."

In a recent letter from China, the writer mentions, among other matters, that in giving a good dinner to some distinguished friends, one of the choicest dishes was a leg of mutton, the cost of which was equal to 30*s*.

Having submitted specimens of the wool of this animal to my friend Dr. Price, who kindly forwarded the same to Mr. Darlington, the Secretary to the Chamber of Commerce at Bradford, for the purpose of having it examined by the most competent judges, the following report from these gentlemen was received. They say, "That the sample of sheep's wool from China enclosed in Dr. Price's letter, is a class of wool which would be extensively used by the manufacturers of this district for goods of low quality; that it appears to be wool suitable for combing purposes, and would now command about one shilling per pound."

That the wool does not appear to offer any great inducement for its introduction will be seen by the above report. I, however, think it highly probable by cultivation and judicious crossing, a great improvement may be fairly looked for. It is, however, to us a matter of the utmost importance that we should possess animals whose power of reproducing is greatest, in order to supply the increased demand for meat.

The origin of our domestic animals has been a subject of much discussion; the remote period of their domestication involves us in much doubt; and this mystery and obscurity will probably never be satisfactorily cleared up. It is, however, interesting to find in a

country whose civilization is of such ancient date as China, the most perfect of domestic animals: I mean by this, the animals that are furthest removed from their natural condition.

Now, knowing what wonderful changes can be, and are produced in the vegetable kingdom by skilful modes of propagating, cultivating and artificially treating plants, causing them completely to change their nature, producing all kinds of variety of monstrous growth, double flowers, fruit and seed in enormous abundance;—all this being done by the interference of man, may I ask, is it not probable that a people like the Chinese, whom we know to have practised these arts for ages,—is it not likely that they have by artificial means induced a similar power in these domestic animals; as we find, for example, the pigs, the fowls, the geese and the sheep of China more prolific than the same animals in any other part of the world? Instances of Chinese sows producing twenty-two at a litter have come within my own observation; their fowls are certainly unequalled for the number of their eggs, and their geese as reproducers stand unrivalled.

It is almost needless to say that the result of cultivation, whether as applied to plants or animals, has produced an unnatural and abnormal condition: instances too numerous to mention may be found, but it will be sufficient to notice the pigeons and ducks. The former in a wild state produce only two broods in a season; while in a state of domestication they continue to breed all the year. The domestic ducks not only produce a much larger number of eggs, but one drake is sufficient for a number of ducks, five or six; while in a state of nature they universally are found in pairs.

Experience has proved that by a careful admixture or crossing in the breed of the Chinese pigs, geese, and fowls, the mixed races are much improved in quality and size, while they retain the reproductive power undiminished, and the animals are more hardy. As regards poultry, I cannot admire the celebrated Cochin China breed in their pure state, but I have abundant proof of their great value for breeding and crossing; the least possible trace of the breed appears sufficient to impart all that is desirable, and by after-breeding, the improvement that may be made is as astonishing as it is undeniable. As crossing the breed in the animals before mentioned has been attended with so much success, there is no reason why crossing the Sheep should not also produce a favourable result.

It must not be supposed, because the Chinese have banished their Sheep (having found cotton and rice more suited to their climate and better adapted to their wants), that they are unworthy of our notice, taking into consideration that in this country we cannot grow cotton or rice.

Having witnessed the many attempts that have been made to reduce some of the existing wild animals to a state of domestication, and observing the utter failure in all instances of producing what may fairly be called a domestic variety of any true species, I am inclined to believe it is necessary as a means of reducing wild animals to a domestic condition, that they must be crossed with nearly allied

species; by this means the creatures are rendered unnatural, and consequently dependent on man. Different varieties would doubtless be produced, according to the manner in which they were crossed, and permanent varieties would be thus established. Such is the opinion, at which I have arrived, after a long and mature consideration of this extremely interesting subject.

2. Descriptions of Thirty-one New Species of Land-Shells, from Mr. Cuming's Collection. By Dr. L. Pfeiffer.

1. Helix subdecussata, Pfr. *Testa perforata, turbinata, tenuis, irregulariter plicato-striata, superne striis spiralibus obsolete decussata, pellucida, virenti-hyalina; spira conica, apice obtusula; anfr.* 6 *convexiusculi, ultimus non descendens, peripheria subcarinatus, basi convexior, nitidus; apertura obliqua, late lunaris; perist. simplex, rectum, marginibus remotis, columellari superne vix reflexiusculo.*
Diam. maj. 14, min. 12, alt. 9 mill.
Hab. Bombay.

2. Helix granum, Pfr. *T. perforata, turbinato-globosa, tenuis, confertissime costulato-striata, pallide cornea, rufulo irregulariter variegata; spira conoidea, acutiuscula; anfr.* $5\frac{1}{2}$ *convexi, ultimus non descendens, prope suturam turgidulus; apertura vix obliqua, late lunaris; perist. simplex, rectum, marginibus subconvergentibus, columellari vix patulo.*
Diam. maj. 4, min. $3\frac{2}{3}$, alt. 3 mill.
Hab. New Zealand.

3. Helix fatua, Pfr. *T. perforata, turbinata, tenuiuscula, irregulariter striata, vix nitidula, fulva; spira conoidea, acutiuscula; anfr.* 5–$5\frac{1}{2}$ *modice convexi, ultimus non descendens, peripheria subcarinatus, basi convexiusculus; apertura parum obliqua, lunaris; perist. simplex, rectum, margine columellari substricte declivi.*
Diam. maj. 5, min. $4\frac{1}{2}$, alt. $2\frac{1}{3}$ mill.
Hab. New Zealand.

4. Helix birmana, Pfr. *T. perforata, depressa, suborbicularis, tenuiuscula, lævigata, subdiaphana, alba, fascia* 1 *lutea supra medium ornata; spira brevissime conoidea, vertice sensim prominulo; sutura levis, marginata; anfr. fere* 7 *modice convexi, lente accrescentes, ultimus rotundatus, non descendens; apertura vix obliqua, late lunaris; perist. rectum, intus subincrassatum, margine dextro brevi, basali fere rectilineari, superne vix dilatato.*
Diam. maj. 26, min. $23\frac{1}{2}$, alt. $12\frac{1}{2}$ mill.
Hab. Mergui, Burmah.

5. **Helix decidua**, Pfr. *T. umbilicata, depresso-turbinata, tenuis, costulis membranaceis, deciduis sculpta, corneo-lutescens, rufulo obsolete et angulatim strigata; spira subregulariter conoidea; anfr. 5 convexiusculi, lente accrescentes, ultimus non descendens, peripheria subangulatus; umbilicus angustus, pervius; apertura obliqua, lunato-rotundata; perist. simplex, rectum, marginibus convergentibus, columellari vix patulo.*
Diam. maj. $3\frac{1}{2}$, min. $3\frac{1}{4}$, alt. 2 mill.
Hab. New Zealand.

6. **Helix venulata**, Pfr. *T. imperforata, depressa, tenuis, confertim plicato-striata, sericina, corneo et rufulo strigatim et maculatim variegata; spira vix elevata; anfr. $4\frac{1}{2}$ convexi, sensim accrescentes, ultimus non descendens, basi medio impressus; apertura verticalis, elongato-lunaris; perist. simplex, margine dextro recto, basali reflexiusculo, columellari declivi, subcalloso, adnato.*
Diam. maj. 6, min. 5, alt. 3 mill.
Hab. New Zealand.

7. **Helix sciadium**, Pfr. *T. umbilicata, conoideo-semiglobosa, solidula, subarcuato-striata, fulva, rufulo obsolete variegata; spira convexo-conoidea, apice acutiuscula; sutura marginata; anfr. $5\frac{1}{2}$ vix convexiusculi, ultimus non descendens, peripheria acute carinatus, basi paulo convexior; umbilicus $\frac{1}{4}$ diametri fere æquans; apertura vix obliqua, angulato-lunaris; perist. simplex, rectum, margine columellari vix patulo.*
Diam. maj. $5\frac{1}{3}$, min. 5, alt. 3 mill.
Hab. New Zealand.

8. **Helix niphas**, Pfr. *T. imperforata, globoso-conica, solida, plicato-striata, alba; spira convexo-conica, apice obtusa; anfr. $5\frac{1}{2}$ convexiusculi, lente accrescentes, ultimus non descendens, basi parum convexus; apertura obliqua, lunaris; perist. rectum, marginibus remotis, dextro brevi, simplice, basali versus insertionem sensim incrassato, tandem breviter ascendente.*
Diam. maj. 11, min. 10, alt. 8 mill.
Hab. S. Miguel, Azores.

9. **Helix lutacea**, Pfr. *T. umbilicata, conoideo-depressa, solida, striatula et striis confertissimis spiralibus decussatula, parum nitens, fusco-lutescens; spira conoidea, obtusula; anfr. $4\frac{1}{2}$ convexiusculi, sensim accrescentes, ultimus subdepresso-rotundatus, obsoletissime angulatus, antice vix descendens; umbilicus angustus, pervius; apertura diagonalis, rotundato-lunaris; perist. crasse albo-labiatum, marginibus subconniventibus, dextro expanso, basali reflexo, juxta umbilicum dilatato.*
Diam. maj. 23, min. fere 20, alt. 12 mill.
Hab. ——?

10. **Helix exarata**, Pfr. *T. umbilicata, conoideo-depressa,*

solidula, undique malleato-rugulosa, lutescens, fascia 1 *castanea cincta; spira breviter conoidea, acutiuscula; anfr.* 7 *parum convexi, lente accrescentes, ultimus latior, rotundatus, antice vix descendens, circa umbilicum mediocrem, apertum subcompressus; apertura obliqua, late lunaris; perist. leviter albolabiatum, marginibus vix convergentibus, dextro breviter expanso, columellari superne triangulatim dilatato, patente.*
Diam. maj. 30, min. 25, alt. 16 mill.
Hab. California?

11. Helix Mormonum, Pfr. *T. umbilicata, depressa, tenuiuscula, arcuato-striatula, pallide rufescens; spira vix conoideo-elevata; anfr.* 6 *vix convexiusculi, lente accrescentes, ultimus utrinque convexior, antice turgidulus, vix descendens, supra medium fascia castanea, utrinque albido-marginata cinctus, basi convexus; umbilicus mediocris, conicus; apertura perobliqua, auriformi-lunaris; perist. albo-labiatum, marginibus convergentibus, dextro perarcuato, expanso, columellari arcuato-declivi, reflexo, superne dilatato.*
Diam. maj. 29, min. 24½, alt. 12½ mill.
Hab. Mormon Island, California.

12. Helix propinqua, Pfr. *T. umbilicata, globoso-depressa, tenuis, striatula, albida vel pallide fuscula, fascia* 1 *angusta supra medium ornata; spira brevissime conoidea; anfr.* 4–5 *convexiusculi, ultimus rotundatus, antice deflexus; umbilicus angustus, pervius; apertura diagonalis, lunato-subcircularis; perist. album, sublabiatum, marginibus convergentibus, undique late expansis.*
Diam. maj. 16–19, min. 13–15½, alt. 7½–9⅔ mill.
Hab. Bombay.

13. Helix bicruris, Pfr. *T. umbilicata, depressa, tenuis, striatula, parum nitida, corneo-lutescens; spira parum elevata; sutura submarginata; anfr.* 5 *convexiusculi, ultimus antice vix deflexus, basi convexior, pone aperturam subconstrictus; umbilicus vix pervius, antice rimæformis; apertura diagonalis, lunaris, dente libero longe bicruri parietis coarctata; perist. breviter reflexum, album, margine basali bidentato: dente dextro usque ad marginem superum ascendente.*
Diam. maj. 9, min. 8, alt. 4½ mill.
Hab. Mexico.

14. Bulimus Fairbanki, Pfr. *T. anguste et compresse umbilicata, ovato-conica, tenuiuscula, conferte striata et costis irregulariter distantibus, compressis, subarcuatis sculpta, sub lente exilissime spiraliter striata, haud nitens, fulvescenti-albida; spira conica, apice obtusa; anfr.* 6 *convexi, ultimus spira vix brevior, juxta umbilicum compressus; apertura parum obliqua,*

elliptico-ovalis; perist. album, marginibus conniventibus, dextro mediocriter expanso, columellari stricto, late patente.
Long. 19, diam. 9½ mill.
Hab. Ahmednugger, India (*Fairbank*).

15. Partula Mastersi, Pfr. *T. dextrorsa, anguste umbilicata, ovato-conica, solidula, spiraliter subconferte sub lente striata, lutea, carnea vel violacea, in anfractibus superioribus interdum fusco-fasciata; spira conica, acutiuscula; anfr.* 5 *convexiusculi, ultimus spiram subæquans, deorsum turgidus; columella superne subinflata, recedens; apertura obliqua, truncato-oblonga; perist. callosum, undique subæqualiter expansum, subplanum, album vel fusco-carneum.*
Long. 18, diam. 9⅔ mill.

β. Carnea, anfr. ultimo pone peristoma striga lata violacea notato, dente parvulo albo profundo in ventre anfr. penultimi.
Hab. Isle of Guam.

16. Succinea Guamensis, Pfr. *T. conico-ovata, tenuis, rugulosо-plicata et subgranulata, semipellucida, pallide cornea, albo irregulariter eroso-punctulata; spira brevis, vertice subpunctiformi; anfr. vix* 2½, *penultimus convexus, ultimus* ¾ *longitudinis subæquans, basi vix angustatus; apertura obliqua, ubique incumbens, angulato-ovalis; perist. simplex, marginibus callo tenui junctis, columellari leviter arcuato, filari.*
Long. 12, diam. 7, alt. 5½ mill. (*Helix putris*, Fér. Hist. t. 10 A. f. 10.)
Hab. Isle of Guam.

17. Succinea Chinensis, Pfr. *T. ovato-conica, solidula, leviter plicata, semipellucida, rubello-cornea; spira mediocris, vertice subtili; anfr. vix* 3, *penultimus convexus, ultimus* ⅝ *longitudinis fere æquans, medio ventrosus; apertura obliqua, superne non incumbens, angulato-ovalis, intus submargaritacea; perist. simplex, marginibus callo tenuissimo junctis, columellari angulum obsoletum formante.*
Long. 8⅔, diam. 5⅓, alt. 4 mill.
Hab. Hong Kong, China (*Mr. Browning*).

18. Succinea Bermudensis, Pfr. *T. oblongo-conica, gracilis, striatula et impresso-punctata, parum nitida, carneo-albida, sparse pellucide strigata; spira conica, acuta; anfr.* 3½ *convexiusculi, ultimus* ⅔ *longitudinis subæquans; apertura obliqua, subregulariter acuminato-ovalis, ubique incumbens; columella leviter arcuata, superne subcallosa; perist. simplex, rectum, margine dextro superne obsolete sinuato.*
Long. 10½, diam. 5½, alt. 4⅓ mill.
Hab. Isle of Bermuda.

19. Cylindrella macrostoma, Pfr. *T. profunde rimata, fusiformi-oblonga, truncata, solida, conferte striata, alabastrina; spira ventrosa, sursum attenuata, late truncata; anfr. superst. 7 vix convexiusculi, ultimus antice ascendens, basi distincte carinatus; apertura subverticalis, oblonga, plica mediocri columellæ coarctata; perist. album, late expansum, marginibus convergentibus, callo junctis.*
Long. 19, diam. 7 mill.
Hab. Isle of Jamaica.

20. Truncatella Californica, Pfr. *T. non rimata, turrito-cylindracea, truncata, tenuiuscula, leviter striata, parum nitens, pallide rubello-cornea; spira sursum vix attenuata; sutura simpliciter marginata; anfr. superst. 4 convexi, sensim accrescentes, ultimus basi non compressus; apertura verticalis, ovalis, superne vix angulata; perist. simplex, continuum, margine dextro expanso, superne subrepando, columellari adnato.*
Long. $4\frac{2}{3}$, diam. $1\frac{2}{3}$ mill.
Hab. San Diego, California.

21. Lucidella nana, Pfr. *T. conoidea, solidula, carinata, concentrice lirata, opaca, albida; spira conoideo-semiglobosa; anfr. fere 5 convexiusculi, ultimus basi lævior, medio impressus; apertura perobliqua, subtriangularis; perist. subincrassatum, margine supero leviter, basali prope insertionem valide dentato.*
Diam. maj. 3, min. $2\frac{3}{4}$, alt. vix 2 mill.
Hab. Isle of Jamaica.

22. Helicina Sprucei, Pfr. *T. globoso-turbinata, tenuis, lævigata, diaphana, carnea vel pallide lutescens, albido interdum interrupte fasciata; spira convexiusculo-conoidea, acuta; anfr. 5 convexiusculi, ultimus rotundatus, spiram æquans; columella breviter recedens, subincrassata, basi subdentata, callum emittens tenuem, albidum; apertura obliqua, semiovalis; perist. breviter expansum, margine basali flexuoso, sinu levi a columella separato.*
Diam. maj. 9, min. 8, alt. $6\frac{1}{2}$ mill.
Hab. Tarapoto, Andes of Peru (*Spruce*).

23. Helicina Merguiensis, Pfr. *T. depresse turbinata, tenuiuscula, oblique striata et spiraliter confertissime sulcata, nitidula, carnea; spira conoidea, apice lutea, acutiuscula; anfr. $4\frac{1}{2}$ planulati, ultimus compresse et acute carinatus, basi modice convexus, callo centrali nitido, granulato munitus; columella brevissima, basi obsolete tuberculata; apertura diagonalis, triangularis; perist. album, breviter expansum, margine basali cum columella subangulatim juncto.—Operc. margaritaceum.*
Diam. maj. $7\frac{1}{2}$, min. $6\frac{2}{3}$, alt. 4 mill.
Hab. Mergui, British Burmah.

24. Cyclostoma (Leptopoma) Wallacei, Pfr. *T. perforata, globoso-turbinata, tenuis, oblique striata et carinis 5–6 subacutis, lirisque minoribus spiralibus munita, diaphana, albida, fasciis fuscis varie signata; spira elato-turbinata, acutiuscula; anfr.* 5 *perturgidi, subangulati, ultimus basi albidus; apertura obliqua, subcircularis; perist. simplex, album, breviter interruptum, margine dextro æqualiter patente, sinistro superne sinuato, tum subangulatim producto.—Operc. pallide corneum.*
Diam. maj. 11, min. 9, alt. 9 mill.
Hab. Borneo (*Wallace*).

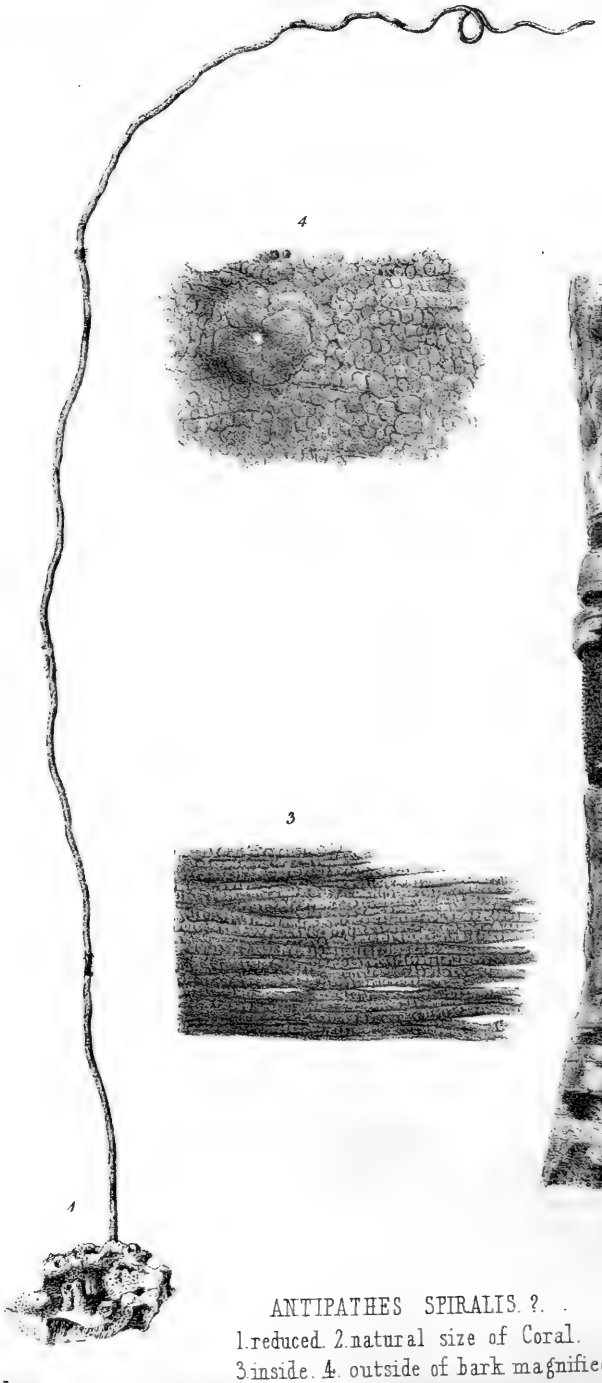
25. Cyclostoma (Cyclophorus?) æquivocum, Pfr. *T. impervie umbilicata, globoso-turbinata, solida, sublævigata (detrita) rubella, castaneo obsolete trifasciata; spira turbinata, acutiuscula; anfr.* $5\frac{1}{2}$ *convexi, ultimus turgidus, infra medium obsoletissime angulatus; apertura verticalis, circularis; perist. duplex: internum porrectum, igneo-fuscum, externum latiuscule et horizontaliter patens, ad anfr. contiguum excisum.*
Diam. maj. 28, min. 20, alt. 20 mill.
Hab. Madagascar.

26. Cyclostoma (Cyclophorus?) lignarium, Pfr. *T. anguste umbilicata, turbinata, tenuiuscula, oblique irregulariter striata, sub epidermide opaca lignaria rufa; spira conica, convexiuscula; anfr.* $5\frac{1}{2}$ *convexi, ultimus basi subplanatus; apertura diagonalis, ovali-rotundata; perist. duplex: internum album, adnatum, subcontinuum, externum, membranaceum, anguste expansum, ad anfr. contiguum excisum.*
Diam. maj. 5, min. $4\frac{2}{3}$, alt. 4 mill.
Hab. New Zealand.

27. Hydrocena Chinensis, Pfr. *T. perforata, ovato-turrita, vix striatula, nitida, livido-fusca; spira elongato-conica, acutiuscula; anfr. 7 convexiusculi, ultimus* $\frac{1}{3}$ *longitudinis paulo superans, infra peripheriam angulatus, basi subplanatus; apertura parum obliqua, tetragono-ovalis; perist. simplex, rectum, margine columellari subdilatato, patente.—Operc. membranaceum, pallidum.*
Long. 15, diam. 8 mill.
Hab. China.

28. Hydrocena vulpina, Pfr. *T. perforata, globoso-conica, solida, lævigata, rubella; spira conica, acutiuscula; anfr.* 5 *modice convexi, ultimus spiram æquans, rotundatus; apertura parum obliqua, angulato-ovalis; perist. subcontinuum, adnatum, margine dextro subinflexo, columellari calloso.—Operc. tenue, castaneum, paucispirum.*
Long. 8, diam. 6 mill.
Hab. Fox Islands.

29. Hydrocena (Omphalotropis) cerea, Pfr. *T. vix per-*



ANTIPATHES SPIRALIS. ?.
1. reduced. 2. natural size of Coral.
3. inside. 4. outside of bark magnified.

G.H.Ford. W.West imp

forata, ovato-conica, solidula, lævigata, vix nitidula, cerea; spira convexo-conica, acuta; anfr. 5½ vix convexiusculi, ultimus ⅓ longitudinis paulo superans, rotundatus, perforationem punctiformem carina callosa obtusa cingens; apertura parum obliqua, angulato-ovalis; perist. simplex, rectum, margine columellari brevissime fornicato-patente.

Long. 4½, diam. 2⅔ mill.

Hab. Norfolk Islands.

30. Hydrocena (Omphalotropis) Guamensis, Pfr. *T. perforata, ovato-conica, solidula, conferte striata, opaca, carnea, rufo submarmorata et fasciata; spira conica, acuta; sutura subcanaliculata; anfr. 5½ planiusculi, ultimus spira vix brevior, infra medium carinatus, circa perforationem carina compressa munitus; apertura parum obliqua, ovalis; perist. tenue, margine dextro expansiusculo, basali in carinam umbilicalem producto, columellari vix dilatato.*

Long. 6½, diam. 4 mill.

Hab. Isle of Guam.

31. Hydrocena (Omphalotropis) Navigatorum, Pfr. *T. anguste perforata, ovato-turrita, solidula, fusca, costis subdistantibus, albis, undulatis munita; spira elongato-conica, acutiuscula; anfr. 6 convexi, prope suturam filocarinati, ultimus ⅖ longitudinis subæquans, supra carinam impressus, circa perforationem carina compressa munitus; apertura vix obliqua, subelliptica; perist. simplex, rectum, margine columellari vix patulo.*

Long. 6⅓, diam. 3⅔ mill.

Hab. Navigators' Islands.

3. On the Animal and Bark of the genus Antipathes. By Dr. J. E. Gray, F.R.S., F.L.S., V.P.Z. and Ent. Soc. etc.

(Radiata, Pl. VI.)

In the 'Proceedings' of the Society for 1832, p. 41, I described for the first time the bark and animal of *Antipathes dichotoma* from Madeira.

It is to be observed that this species has been separated from the others of the genus because the surface of the axis is smooth and not covered with a number of minute, uniform, cylindrical spines like the true *Amtipathes*, and has been called for that reason *Leiopathes;* and it has been further stated, that though *Leiopathes* has a distinct bark and animal like *Gorgoniadæ*, this may not be the case with the normal species of the genus, some of which had been described by Ellis as having a very peculiar kind of animal.

To set this question at rest, I have carefully examined all the specimens of *Antipathes* which have come under my observation, and

have failed to discover any traces of a bark or remains of any kind of animal matter on their surface, until a few days ago, when Mr. Samuel Stevens brought to the Museum a very fine specimen of a long simple-stemmed *Antipathes* from Seychelles, which appears to be a new species, allied to *A. spiralis*, if more than a very fine straight specimen of that species.

This specimen is entirely covered from near the expanded base to the apex (except at certain parts where the surface has been accidentally abraded) with a very distinct bark or animal covering.

The bark is continuous, completely hiding the spinules of the surface of the axis, smooth, and showing a number of thicker, browner, irregular-shaped plates on the surface, which are separated from each other in some places only by narrow crack-like grooves, and at others by a considerable distance; and there is no appearance, in the dry state, as far as I can detect, of any apertures for the emission of the heads of the polypes.

The bark in its dry state is then tough and rather rigid; when soaked in water, it becomes thick, coriaceous externally, and fleshy within; when soaked in a solution of potash, the harder plates appeared to be formed of a rather convex horny plate of irregular shape and rather twisted on the surface, and the other part of the bark is scattered with groups of very small, uniform-sized, regular-shaped, oblong plates, of a somewhat similar consistence and colour.

The hard parts of the bark are quite distinct in form and appearance from the spiculæ of the *Gorgoniadæ*. They are hard and brittle, not soluble in strong muriatic acid, nor are they affected by a strong solution of caustic potass. They are most probably siliceous.

I have not been able to discover the tentacles of the animal, though I have submitted them to the same process by which I observed them in *Leiopathes dichotoma*, as mentioned in my former paper; but I have seen sufficient of the internal structure of the animal to lead me to believe that in its general character it agrees with that of the other *Gorgoniadæ*.

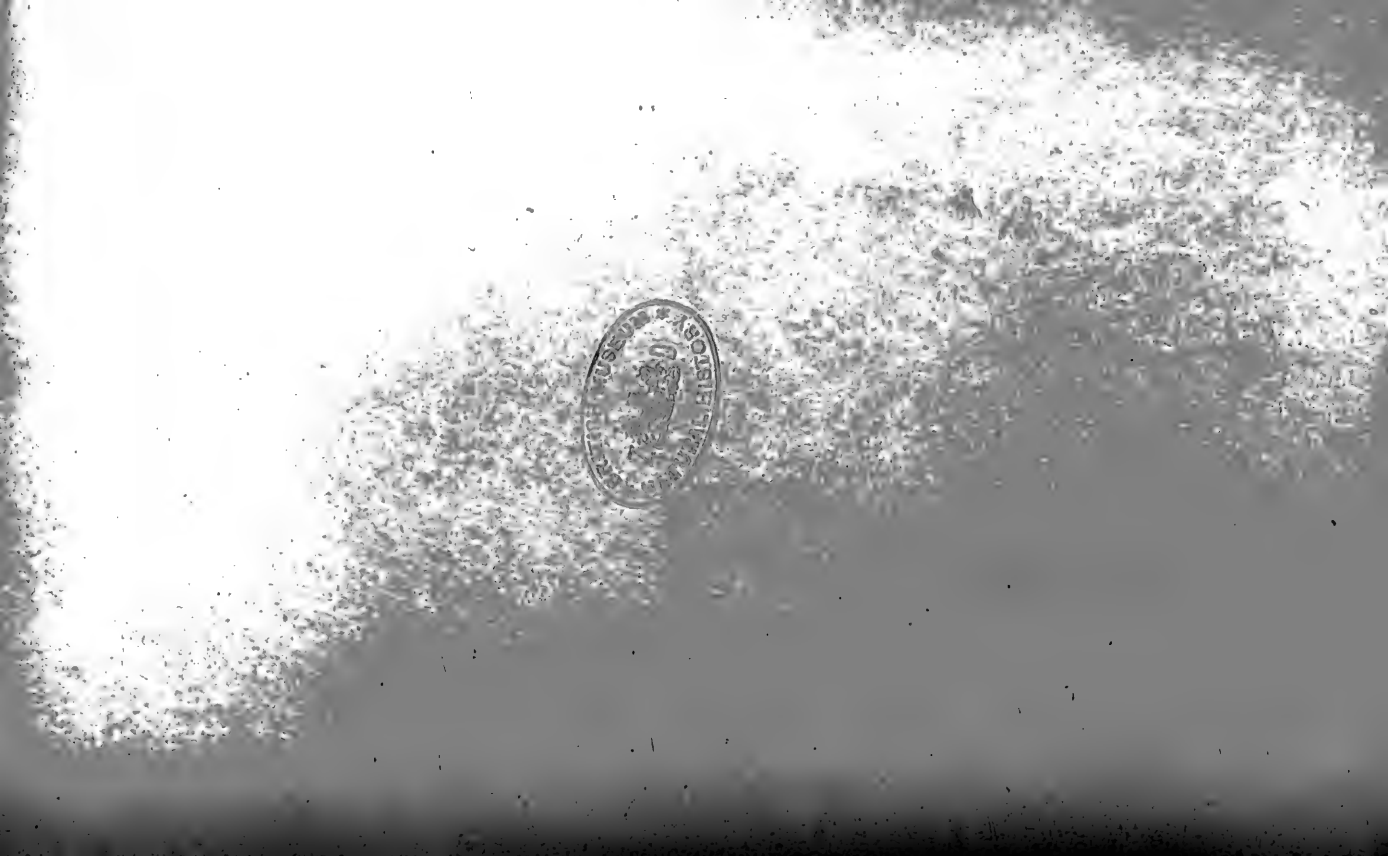


Fig. 1

Fig. 2

Fig. 3.

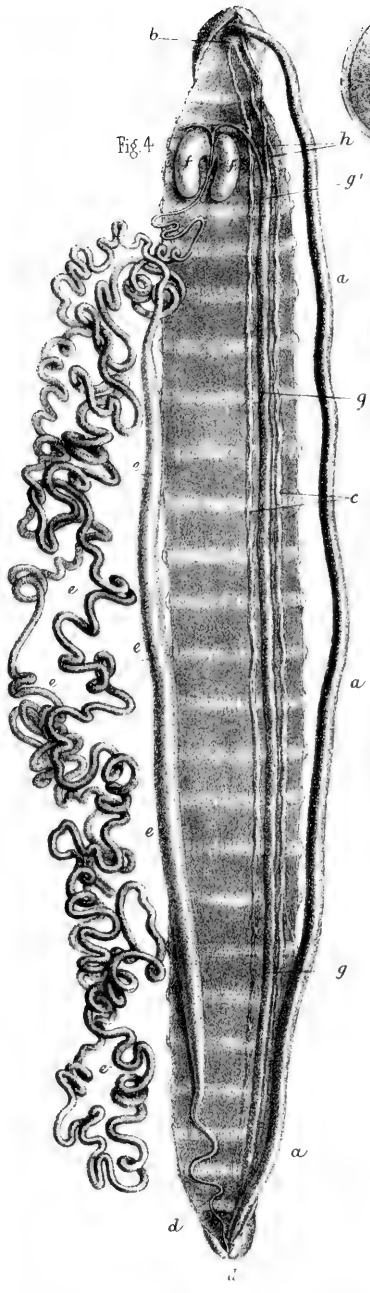
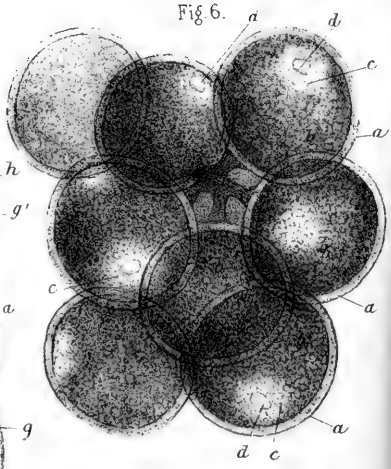


Fig. 4

Fig. 6.



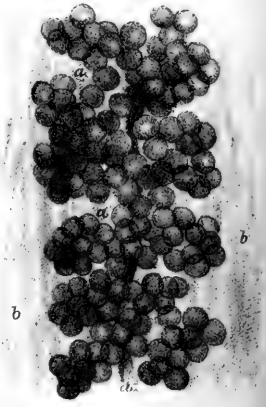


Fig. 5.

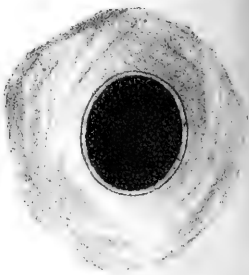


Fig. 7.

1 2 4 Pentastoma multicinctum, Harley
3. _____ polyzonum, Harley

Fig 8.

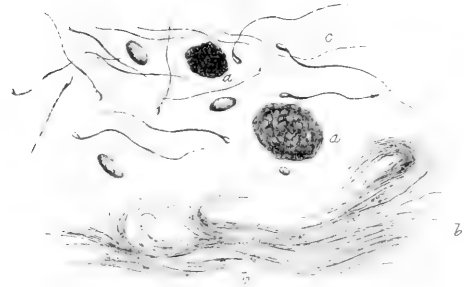


Fig 9.

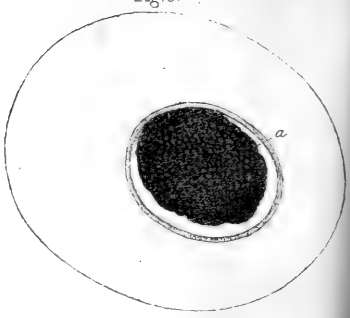


Fig 10.

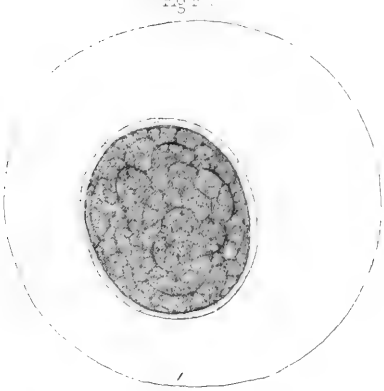


Fig 11.

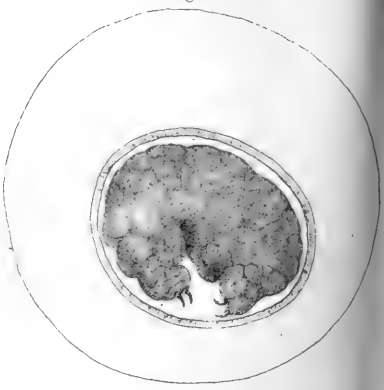


Fig 12.

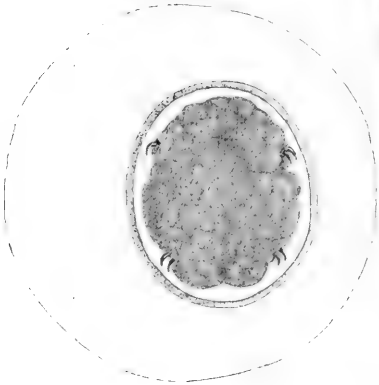
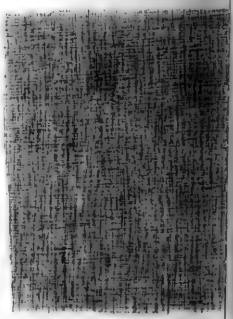


Fig 13.

Fig 14.



PENTASTOMA MULTICINCTUM Harley
Ova in different stages of development.

June 9, 1857.

Dr. Gray, F.R.S., V.P., in the Chair.

The following papers were read :—

1. On the Anatomy of a new Species of Pentastoma found in the Lung and Air-sac of an Egyptian Cobra. By George Harley, M.D., F.C.S., of University College, London.

(Annulosa, Pl. XLVI., XLVII.)

Having lately had the opportunity of dissecting a fine specimen of Entozoon, which, as far as I am aware, is an entirely new and undescribed species, a brief description of its anatomy may perhaps prove interesting to the members of the Society.

The worm which I am about to describe was found in the lung of the Egyptian Cobra, Naja Hage, kindly sent to me for examination by D. W. Mitchell, Esq. I was fortunate enough to obtain four fine specimens, nearly all of equal size, from the same animal. They measure from 4 to 5 inches in length, and from 5 to 8 lines in circumference. In external characters they seem to resemble an Entozoon found in the lung of a Cobra by Dr. Crisp, a short description of which was given in the Proceedings of the Society for 1853, p. 22, Annul. pl. 30. fig. 7, by Dr. Baird; who spoke of it as an undescribed species of *Pentastoma*, and gave it the name of *Pentastoma annulatum*. Dr. Baird's description of the specimen is, however, very short, and unfortunately incomplete, in consequence of his having seen only a small specimen, and that even imperfectly, on account of the most important fact, the head remaining imbedded, and hidden from view in the lung of the snake. I think it probable, however, that the animal which he described is one of the same species as I have obtained specimens of.

External characters.

The body of the entozoon is of a white colour, elongated, cylindrical and strongly ringed (Pl. XLVI. fig. 1). It begins with a round obtuse head, attached to the trunk by a short somewhat narrow neck. The body then gradually widens for the first three lines, where it measures in the largest specimen ($4\frac{3}{4}$ inches long) 8 lines in circumference, and from here down to within a few lines of the caudal extremity, continues of nearly the same diameter. Below this point it becomes regularly narrower the nearer we approach to the posterior end, which terminates obtusely. The caudal extremity is almost of the same diameter as the head. The rings which are, as before mentioned, very strongly marked, commence close to the posterior part of the head, and for the first three or four lines, gradually in-

crease in size and distance from each other. They then continue of the same relative size and distance apart (2 lines) till within about half an inch of the posterior extremity, when they again, however, become smaller and more closely approximated. In all the four specimens which I examined, the rings were twenty-seven in number, and where largest, projected nearly half a line from the surface of the body.

In the fresh specimen, when examined with a pocket lens, the exterior of the rings appeared mottled with faint white-coloured spots. They were and still are quite opaque, whereas the intervening tissue is so thin and transparent, that the internal viscera can be seen through it. A number of white bands or cords appear to connect one ring with another; the bands are largest in the lateral and dorsal regions. A dark-coloured line extends along the back throughout the whole length of the body: this, as I shall afterwards have occasion to show, is the digestive canal.

On the under surface, in the centre and near to the anterior margin of the head, which is slightly flattened from before backwards, is a round foramen, the mouth. On either side of this opening are two depressions, equidistant from each other, each containing a prehensile hooklet of a bright yellow colour. These hooklets in shape closely resemble a cat's claw, which can be extended and retracted at pleasure, and when completely drawn in, the points of them can be neither seen nor felt. The obtuse posterior extremity has a deep cleft across it, and on its under surface are two openings, one in front of the other: the anterior is the entrance to the vagina, the posterior the anal aperture.

Anatomy of the Entozoon.

Parietes.—The whole body is invested with a delicate, smooth, transparent cuticle, which can be readily detached by slight maceration. Beneath the cuticle are two layers of striated muscular fibres (Pl. XLVII. fig. 13), a vertical and a transverse layer;—the longitudinal fibres are by far the most developed;—the circular are in some places entirely wanting. The projecting rings, on the other hand, are not composed of striated muscular fibres, but consist of fibro-areolar tissue. They seem to serve as fixed points of action for the longitudinal muscles; appearing to supply, in fact, the place of a hard skeleton. The interior of the abdominal cavity is lined by a fine transparent membrane, on which I thought I could detect a single layer of delicate pavement epithelium.

Digestive System.—The alimentary canal, in consequence of its peculiar dark saffron tint, is readily traceable from its commencement to its termination. It begins at the mouth, and runs in an almost perfectly straight line to the opposite extremity of the body, terminating, as was before mentioned, immediately behind the orifice of the vagina (Pl. XLVI. fig. 4, *a*). Close to its commencement it is of the diameter of a fine crow-quill, and may be said to continue of nearly the same size throughout its whole course. It lies directly

in front of the ovary and great nerves, and is almost entirely concealed from view by the innumerable tortuosities of the oviduct. It has four distinct coats, an internal mucous, an external serous, and two muscular layers, one running vertically and the other horizontally; both of which consist in great part of the striated variety of muscular fibres *. The interior of the alimentary canal is marked by longitudinal rugæ, from the surface of which long pyriform villi project.

Nervous System.—The distribution of the nervous system of this highly organized Entozoon is, in some respects, identical with that found in the *Linguatula tænioides*, so beautifully described by Professor Owen. The large ganglion, or brain, is situated close to the mouth, and is intimately connected with the œsophagus, to which it seems to send two filaments (Pl. XLVI. fig. 4, *b*). I could not, however, satisfy myself of the existence of an œsophageal ring. The distribution of the large pair of nerve cords, which extend almost throughout the whole length of the body, differs very materially from that found in the *Linguatula tænioides*; for, after passing over the fallopian tubes, instead of running down the sides of the ventral aspect of the body, they continue along the dorsum, behind the alimentary canal and close to the ovary (Pl. XLVI. fig. 4, *c*). They are at last gradually lost sight of a few lines above the anus.

Organs of Reproduction.—In attempting to describe the organs of reproduction in this animal, I shall begin at the vagina and trace them gradually upwards, for it was by following this course that I was enabled, with the aid of the microscope, to distinguish the different organs, and to ascertain the function of their various parts.

The orifice of the vagina is situated immediately in front of the anal aperture (Pl. XLVI. fig. 4, *d*). The vagina itself is about the thickness of a pin, and from 3 to 6 lines in length; it gradually widens out into the oviduct, or more correctly speaking, the uterus (Pl. XLVI. fig. 4, *e*). For about the first 6 inches the uterus has a greater diameter than the alimentary canal; it then however becomes gradually narrower, till its diameter does not exceed that of a fine knitting-needle, and continues of this size till within a few lines of its termination, where it contracts still more. At its upper point of attachment, which is opposite the third or fourth ring, its diameter is not greater than that of the vagina. In two of the specimens I measured the length of the uterus, and found it to be 40 inches from the orifice of the vagina to the place of its attachment opposite the third or fourth ring. Thus it is seen to be nearly ten times the length of the entozoon in which it is coiled up. Although it conceals the alimentary canal, it is not, as in the case of the *Linguatula tænioides*, coiled round it; neither has it the ferruginous tint spoken of by Owen as belonging to the oviduct of the latter species. It is, on the contrary, of a pale straw-colour when full of ova, and almost quite colourless when empty. Its parietes are thin

* Ficinus and Valentin found indistinctly striated muscular fibres in the human stomach.

and transparent, and when viewed with the microscope are seen to be muscular, both longitudinal and circular fibres being distinctly visible. They consist of the non-striated variety of muscular fibre (Pl. XLVII. fig. 14). The fully developed ova are not attached to the parietes of the uterus by any connecting cellular substance, for on being cut across, the ova immediately flow out, and the parietes collapse. On the other hand, the imperfectly developed ova found in the upper portion of the uterus have a darker colour, and seem to be adherent by a glutinous material not only to each other, but also to the walls of the organ.

At the upper point of its attachment to the abdominal parietes are two oblong bodies of a dull white colour (Pl. XLVI. fig. 4,*ff*). These bodies open directly into the uterus. On examination they were found to be filled with spermatozoa in all the various stages of development, from the primitive granule up to the perfectly formed spermatic filament (Pl. XLVII. fig. 8). The filaments are of considerable length, and are amassed together in bundles of tolerable size (Pl. XLVII. fig. 8, *a*). Some of the fully formed spermatozoa with large heads measured $\frac{1}{40}$ mm. in length, and a few were even longer still.

A question of great interest and importance might be here raised regarding the special function of these oblong bodies, which, as I have just mentioned, contain innumerable spermatozoa in various stages of development. Are they the spermatheca or copulatory pouches of a female; or are they to be regarded as the testicles or male organs of generation of a hermaphrodite? I shall defer the consideration of this important point until after I have terminated the description of the animal.

The organs just alluded to, which, for the sake of brevity, I shall speak of as testicles, are attached to the parietes of the entozoon by strong bands of striated muscular fibres. At the upper part of their point of union, the uterus divides into two fallopian tubes, which gracefully curve round the digestive canal, pass behind the two great nerve cords, and after getting between them, reunite to form the ovary (Pl. XLVI. fig. 4, *gg*). The ovary is of a ferruginous colour, intimately attached in the mesial line to the dorsal aspect of the animal, and continued downwards between the nerve cords and behind the alimentary canal to within about 5 lines from the anus, where it suddenly terminates in a blind sac.

When viewed through a lens, the coats of the ovary are seen to be thin and transparent, and not closely surrounding their contents. They are here and there thrown into loose folds, and the ova can be distinctly observed in their interior, like a series of bunches of grapes closely strung together (Pl. XLVI. fig. 5). When the ova are highly magnified, they are recognized to be spherical bodies attached together by little peduncles, and to consist of a tunic or yelk-sac, a granular yelk and a germinal vesicle. I even detected in many of them the germinal spot (Pl. XLVI. fig. 6 *d*.).

On tracing the development of the ova, I found that the germinal spot disappeared from them as soon as they had passed out of the

fallopian tubes into the upper attached portion of the uterus,—no doubt, in consequence of the ova having been impregnated during their transit through that portion of the uterus into which the testicles open as already described. From this point downwards the progressive development of the ova can be readily followed. But as this communication has already extended beyond the limits I had marked out for it, instead of giving my readers a detailed description of the process of development, I shall take the liberty of referring them to the accompanying figures, which accurately represent the different appearances observed in the ova from the time of their exit from the ovary till their arrival in the vagina (Pl. XLVI. fig. 7, Pl. XLVII. figs. 9, 10, 11 and 12). I may here only further remark, that impregnation evidently takes place from above downwards, and that no spermatozoa in any stage of development could be detected in any part of the uterus; thus forbidding the idea of the animals having received the vivifying fluid from a separate male organ after the uterus had been filled with ova.

Having now completed my remarks upon the anatomy of the entozoon, I shall proceed to say a few words upon the important question of its sex, and I may premise these words by observing that it appears to me that some naturalists are at present running to extremes in attempting to find separate sexes in all animals, and to prove that there is no such thing as hermaphroditism in nature. Ultra views are at all times to be condemned, and I think in no case more so than the present, when the obstacles besetting the path to a definite conclusion are as complicated as they are numerous. A few years ago several members of the genus *Pentastoma* were regarded as true hermaphrodites by the most distinguished naturalists; and now since some of the species have been ascertained to have separate sexes, a recent writer has ridiculed the idea of a single example of this large genus having male and female organs of generation united in one individual. I do not intend to say that he has erred in jumping too hastily to his conclusion, but merely to remark that the entozoon which I have described in the foregoing pages, if not strictly belonging to the genus *Pentastoma*, is yet in many of its characters very closely allied to it, and that it still remains to be shown that this animal is not a hermaphrodite. As there are two sides to every question, and as it is wrong to give an opinion before both have been examined, I shall briefly state my reasons for thinking it possible that the animal we have just been considering is a female, and that the true male organs of generation are to be sought for in another individual.

The *Linguatula tænioides*, which is the nearest allied species to my entozoon, was described by naturalists of the very highest standing, such as Owen, Valentin, Von Siebold, Dujardin and others, as a hermaphrodite, in consequence of their finding that it possessed, in each individual, organs containing the female and organs containing the male reproductive materials in different stages of their development; and that these organs were not only so arranged as to allow of the vivifying contents of the one coming into contact with those

of the other; but that a common canal resulting from the union of the channels through which the ova from the female and the spermatic filaments from the male organ passed, contained the fructified result of such a reunion, as that of the opposite sexes could alone secure.

The presence of a product in an organ, however, not being sufficient to ensure that it was produced by, and not introduced into, that organ, the question naturally arose in the minds of some, whether we were justified in regarding the organs in the *Linguatula tænioides* containing the ova, as ovaries, and those containing the spermatozoa as testicles. At first some doubted, and at last others have denied, the reunion of the sexes in this species of *Pentastoma*.

Van Beneden, the champion of the latter class of naturalists, states* that in four examples of the species of "*Linguatula de Diesing*," and in two others of another kind found in the lung of a Boa, he ascertained the male and female organs of generation to be in different individuals, and that Owen, Valentin, Von Siebold and others, have erred in describing the *L. tænioides* as a hermaphrodite. He describes the testicle in the male as being about $\frac{1}{5}$ of the length of the body, and lying behind the alimentary canal, consisting of a pouch with thin parietes, terminating behind in a cul-de-sac. From the upper part of the testicle branch off two vasa deferentia, and from the end of each, floats an organ which he looks upon as a prostate. These open into round vesicles constricted in the middle, each containing a coiled-up tube, which he describes as a penis.

I have quoted Van Beneden's description of a male *Pentastoma*, because in the nasal fossa of the Cobra, from which I obtained my four specimens of entozoa, I found two small *Pentastoma* of about $1\frac{1}{8}$ inch in length (Pl. XLVI. fig. 2); and on dissecting one I found it to agree in every respect with Van Beneden's description of the male *Linguatula*. The question then occurred to me, whether or not I might look upon them as being two males and my large specimens four females of the same species. The two small entozoa found in the nasal fossa look exactly like some other *Pentastoma* which I obtained from the cellular tissue of a Morocco Cobra. Even taking into account the fact that the male is often much smaller than the female entozoon, their external characters and apparently their mode of life are so very different from those of the large worms found in the lungs, that I can scarcely believe them to belong to the same species of animal. Even admitting that they were the males of my large entozoon, I do not see how they could get their spermatozoa into the spermatheca of the large animals. Van Beneden says he found an opening for the penis to get out immediately behind the mouth, but then this organ, which he calls the penis†, is only a few lines in length, and consequently could project the seminal fluid but a trifling way up the uterus, which, as before mentioned, is 40 inches long. The pouches containing the semen are situated too at the

* Ann. des Sciences Naturelles, 3me série, tome 11–12, p. 325.

† I examined what he took for the penis, and I have some doubts if it, or rather they, for there are two, are really what he supposes them to be.

very top of this immensely long duct. It may be said that the spermatozoa could find the way up themselves. That I admit might be the case if they were fully developed, and consequently moving filaments; but it would be impossible for them to get up in the undeveloped condition in which some of them are found in the pouches. Besides this, if they were injected into the vagina, why did they not impregnate any of the ova on their passage up? Impregnation is distinctly seen to have taken place from above downwards, not from below upwards, or in any irregular manner.

The only satisfactory way of accounting for the presence of spermatozoa in different stages of development in the copulatory pouches, supposing that they were not generated there, would be to find a channel by which they might enter without having to pass through the 40 inches of oviduct. Now I have carefully searched for such a channel and can find no trace of one. Neither can I find any opening into the animal near to the spermatheca except the mouth, and I do not think any one will consider that a likely door for them to enter at.

I admit that my not being able either to detect a tube or an opening into the spermatheca does not incontrovertibly prove that no such tube or opening exists. But I think that fact taken in connexion with the others, especially that of the spermatic filaments being found in various stages of development in the pouches, is tolerable evidence in support of the idea that the organ containing the spermatozoa is the one which generated them. And until we hear some more conclusive arguments on the opposite side, we may consider ourselves justified in regarding the spermatheca as testicles, and calling the entozoon a true hermaphrodite.

In conclusion, I have a word to add regarding the habits of the entozoon I have been describing. I found two of them with their heads projecting through the air-sac of the Cobra, and firmly fixed by their prehensile hooklets to a large blood-vessel; from which I conclude that they feed directly upon the blood of the animal they inhabit. They appear to be blood-suckers in the strictest sense of the word. In order to get to the blood-vessels to which they anchor themselves by their hooks, the worm has to pierce the surrounding tissues, and the hooks are no doubt made retractile into the depression in order to enable the animal again to withdraw its head after it has finished its meal.

I found in the collection of Dr. Sharpey a fine specimen of an entozoon closely resembling the one I have been speaking of (Pl. XLVI. fig. 3); the only difference being that it is shorter and thicker, has only nineteen strong projecting rings instead of twenty-seven, and that its tail is conical and not cleft; farther, that the vagina is about a line in front of the anus. Unfortunately no history is attached to this specimen.

DESCRIPTION OF ANNULOSA, PLATES XLVI. AND XLVII.

Plate XLVI.

Fig. 1. The entozoon; natural size.
- *a.* The head; the under surface showing the mouth and four prehensile hooklets (two on either side of the buccal aperture).
- *b.* The caudal extremity, showing the cleft across it.
- *c.* The projecting rings.

Fig. 2. Small entozoon found in the nasal fossa of the Cobra; natural size.

Fig. 3. Large entozoon found in Dr. Sharpey's collection.
- *a.* Head, with the mouth and four hooklets.
- *b.* The conical caudal extremity.
- *c.* The entrance to the vagina.
- *d.* The anal aperture.

Fig. 4. Entozoon, fig. 1, dissected. Opened on the dorsum a little to the left of the mesial line.
- *a, a.* The digestive canal.
- *b.* The œsophageal ganglion.
- *c.* The great nerve cords.
- *d.* The vagina.
- *e, e.* The uterus or oviduct.
- *f, f.* The copulatory pouches or testicles (?).
- *g, g.* The ovary.
- *h.* The fallopian tubes.

Fig. 5. Portion of the ovary.
- *a, a.* The ova, resembling bunches of grapes.
- *b, b.* The homogeneous membrane loosely covering the ova.

Fig. 6. A bunch of ova highly magnified.
- *a.* The yelk-sac, consisting of a double wall.
- *b.* The granular yelk.
- *c.* Germinal vesicle: indicated by the light-coloured space.
- *d.* Germinal spot.

Fig. 7. Impregnated ovum from the upper portion of the uterus.

Plate XLVII.

Fig. 8. Spermatozoa found in the copulatory pouches or testicles (?).
- *a, a.* Granular cells.
- *b.* The imperfectly developed spermatic filaments amassed together in large bundles.
- *c.* Fully formed spermatozoa.

Fig. 9. Ovum taken from the uterus 6 inches below its upper attachment.
- *a.* The granular yelk becoming condensed and retracted from the yelk-sac.

Fig. 10. View of ovum in a more advanced stage of development.

Fig. 11. Profile view of a fully developed ovum. Two sets of hooklets are here shown.

Fig. 12. Face-view of the same, in order to show the arrangement of the four pairs of hooklets, and general form of the animal.

Fig. 13. Striated muscular fibres from the parietes of the parent entozoon.

Fig. 14. Magnified view of a small portion of the uterus, to shew its double layer of non-striated muscular fibres.

2. Description of Thirteen New Species of Paludinacea from Ceylon, in the Collection of Hugh Cuming, Esq. By H. Dohrn.

Genus 1. Paludina.

1. Paludina ceylonica. *Testa ovato-conica, perforata, solidiuscula, viridis, versus apicem fuscescens; spira magis minusve elevata, exserta; anfractus convexi, ad suturam et basin obsolete, medio acute carinati; spiraliter et longitudinaliter striata; sutura simplex, impressa; apertura ovata, intus alba, peristoma subincrassatum, reflexiusculum, nigrum.*

Long. 21, lat. 16; apert. long. $12\frac{1}{2}$, lat. 9 mill.

Genus 2. Bithynia.

1. Bithynia stenothyroides. *Testa ovata, tenera, alba vel fulva, pellucida, nitida; anfractus 4–5 convexiusculi, ultimus efflatus, ventricosus, ad basin leviter carinatus, antice descendens; sutura simplex; apertura oblongo-ovata, parum coarctata, ad basin acuta, alba. Operculum oblongo-ovatum, testaceum, crassum, concentrice striatum.*

Long. $5\frac{1}{2}$, lat. $4\frac{3}{4}$; apert. long. 3, lat. 2 mill.

Ceylon, Nilgherries.

This species has some characters of *Stenothyra*. The last whorl is unusually great, the mouth somewhat contracted, but the general aspect is that of *Bithynia*.

2. Bithynia inconspicua. *Testa oblongo-conica, tenera, alba vel fulva, pellucida; spira acuta; anfractus 4–5 convexiusculi, sub lente leviter longitudinaliter striati; apertura oblonga. Operculum testaceum, concentricum.*

Long. 5, lat. $3\frac{1}{2}$; apert. long. $2\frac{1}{2}$, lat. $1\frac{3}{4}$ mill.

In shape nearly allied to our common *B. tentaculata*, but differing in size; the whorls are rounder, broader in proportion to the height, and flatter than in *B. orcula*, Bens., and the whole form is more conic.

Genus 3. Paludomus.

1. Paludomus fulguratus. *Testa oblongo-ovata, tenera; spira elevata, apice obtuso, leviter longitudinaliter et spiraliter striata, læte olivacea, fusco fulgurata, ad suturam impressam fusco fasciata; anfractus quatuor convexi, supra medium obsolete carinati; apertura oblonga, simplex, albida, lineis fuscis, pellucentibus. Operc.?*

Long. 16, lat. 13; apert. long. 11, lat. 6 mill.

2. Paludomus nasutus. *Testa solida, oblongo-conica, apice acuto, nigrescens, versus apicem albicans, ad suturam linea valde impressa distincta, obsolete decussata; anfractus quatuor*

convexiusculi, ultimus medio leviter angulatus; apertura simplex, oblonga, albida. Operc.?
Long. 12, lat. 8; apert. long. $7\frac{1}{2}$, lat. $4\frac{1}{2}$ mill.

3. Paludomus sphæricus. *Testa solida, globosa, olivacea, parum nitida, confertim longitudinaliter et transverse striata; spira depressa, exserta; anfractus rotundati, fasciatim spiraliter nigro-maculati; sutura simplex, alba.*
Long. 18, lat. 17; apert. long. 15, lat. 12 mill.
This species is still rounder than *P. globulosus*, R., and different in the markings and sculpture: *P. globulosus* is in the upper part of the whorls slightly angulated; the whorls of *P. sphæricus* are round.

4. Paludomus solidus. *Testa ovato-oblonga, solidissima, flava, brunneo-maculata; spira exserta; anfractus convexi, spiraliter sulcati, sub lente longitudinaliter striati; sutura impressa; apertura crassa, alba, semicircularis. Operculum corneum, nigrescens, concentrice striatum, nucleo sinistro.*
Long. 19, lat. $14\frac{1}{2}$; apert. long. 13, lat. 10 mill.

5. Paludomus distinguendus. *Testa ovata, olivacea, nitida, fasciis nigris fulguratis longitudinaliter picta, spiraliter et longitudinaliter striata; spira exserta; apertura ovata, cærulescens; peristomate nigro, obsolete dentato; margine columellari planato, fasciis nigris, pellucentibus.*
Long. 25, lat. 19; apert. long. 18, lat. $12\frac{1}{2}$ mill.
Nearly allied in shape to *P. sulcatus*, but differing in the sculpture and the inside of the mouth.

6. Paludomus Cumingianus. *T. globosa, solida, olivaceo-fusca, obsolete spiraliter sulcata; spira valde depressa, exserta; anfractus ultimus ceteros superans, ad suturam in formam canalis impressus; apertura magna, obliqua, flavescens, intus albida, lineis nigris undatis longitudinaliter distincta.*
Long. 33, lat. 34; apert. long. 30, lat. 24 mill.
Belongs in the same group with *P. Gardeneri*, R.; very distinct in the deep channel-like impression on the upper part of the whorl, and in the large size of the mouth.

7. Paludomus dromedarius. *Testa oblongo-ovata, nigra, obsolete spiraliter, longitudinaliter striata; anfractus convexi, ultimus antice valde deflexus; apertura subcircularis, alba, obsolete dentata, interdum flavo-cincta. Operculum subtriangulare, corneum, nucleo laterali dextrorso.*
Long. 29, lat. 21; apert. long. $20\frac{1}{2}$, lat. 16 mill.

8. Paludomus Skinneri. *Testa ovata, nigricanti-olivacea, confertim costis squamatis spiraliter cingulata, supra medium obsolete carinata; apertura semicircularis, alba, intus cærulescens.*
Long. 35, lat. 32; apert. long. 29, lat. 21 mill.

I would rather consider this as a variety of *P. loricatus*, R.; but as Mr. Cuming, who has a particular interest for this genus, said that he was convinced it was a distinct species, I give the description of it.

9. Paludomus Swainsoni. *Testa ovata, solida, olivacea, costis nigris spiralibus ornata, obsolete spiraliter et longitudinaliter striata; spira exserta; anfractus convexi, ad suturam nigricantem depressi; apertura ovata, albida, obsolete dentata, interdum fusco-maculata.*

Long. 25, lat. 23; apert. long. 21, lat. 12 mill.

Allied to *pictus*; but differs in having black ribs.

10. Paludomus nodulosus. *Testa oblongo-ovata, læte olivacea, longitudinaliter nigro fulgurata; spira exserta; anfractus costis tuberculosis spiraliter cingulati, sutura crenulata; apertura subcircularis, nigra, intus albida, lineis nigris pellucentibus.*

Long. 27, lat. 21; apert. long. 20, lat. 16½ mill.

3. List of Birds collected by Mr. Thomas Bridges, Corresponding Member of the Society, in the Valley of San José, in the State of California. By Philip Lutley Sclater, M.A., F.L.S. etc.

Mr. Bridges has requested me to bring before the notice of the Society a series of birds which he collected in the Valley of San José, at the southern extremity of the Bay of San Francisco. There are examples only of 33 species, but many of these are interesting—the W. American forms being very little known in Europe, although the Museums in the United States are well supplied with specimens resulting from the many recent expeditions into the west. The only list of Californian birds at all complete is that published by Dr. Gambel in the first volume of the second series of the Journal of the Academy of Natural Sciences of Philadelphia. M. Cassin's beautiful work on the 'Birds of California, Oregon, &c.' has been unfortunately discontinued for the present, at the termination of the first volume. Had that been brought to a conclusion, there would have been much less still wanting to be known concerning the ornithology of the western regions of N. America.

Mr. Bridges' collection contains examples of the following species:—

1. Accipiter fuscus (Gm.).

2. Tinnunculus sparverius (L.).

3. Circus hudsonius (L.).

4. Glaucidium californicum, Sclater, P. Z. S. 1857, p. 4: *Glaucidium infuscatum*, Cassin, Birds Cal., Oreg., &c. p. 189 (nec Temminck).

This little Owl is quite distinct from the S. American *passerinoides*, as stated by Mr. Cassin himself, and from every other Mexican or S. American species with which I am acquainted. Mr. Cassin has called it *infuscatum*, imagining it to be the true *Strix infuscata* of Temminck; but I have no doubt that that name is correctly applicable to the S. American *passerinoides*. It occurs only in the first part of Temminck's 'Manuel d'Ornithologie' (p. 97), where the author says he intends to describe a Brazilian species nearly allied to the European *G. passerinum*, under the title *Strix infuscata*. It is quite evident that he afterwards changed his mind on this point, and called the same bird *passerinoides* when he came to figure it in the 'Planches Coloriées.' Under these circumstances, therefore, it is not correct to apply the term *infuscatum* to the Californian species.

5. Selasphorus ruber (L.).

6. Selasphorus anna (Less.).

7. Lanius excubitorides, Sw. Northern Zool. p. 123. pl. 34.

This appears to be the western representative of *L. ludovicianus*. It has been often united with that species by modern writers, but, I believe, erroneously, being easily distinguishable by its whitish rump. In Texas both the two species seem to be equally abundant. See Woodhouse's Appendix to Report of Zuni and Colorado Rivers Expedition, p. 76.

8. Turdus migratorius (L.).

9. Toxostoma redivivum, Gamb. Journ. Ac. Sc. Phil. i. p. 42.

There are, I believe, four species of this curious form now known to occur within the limits of the United States, (1) the present *T. redivivum* (Cass. B. Cal. pl. 42) from California; (2) *T. lecontii* (Lawrence, Ann. Lyc. N. Y.) from the Rio Hila; (3) *T. curvirostre* (Sw.) (*Pomatorhinus turdinus*, Temm., *T. vetula*, Wagl.) from Mexico and Texas; (4) an undescribed species in the collection of the Smithsonian Institution at Washington, discovered during one of the recent expeditions in New Mexico.

10. Psaltria minima (Gamb.): Cassin, B. Cal. p. 20.

11. Sitta aculeata, Cass. Pr. Ac. Sc. Phil. viii. p. 254.

Recently separated by Mr. Cassin from the eastern *Sitta carolinensis*.

12. Anthus ludovicianus (Gm.).

13. Sialia mexicana (Sw.).

14. Sayornis pallida (Sw.): *Tyrannula pallida*, Sw. Phil. Mag. 1827, p. 367; *M. saya*, Bp. Am. Orn. pl. 2. f. 3.

15. Sayornis nigricans (Sw.); *Tyr. nigricans*, Sw. Phil. Mag. 1827, p. 367.

16. Carpodacus rhodocolpus, Cab. (*C. familiaris* Americanorum.)
See my remarks on this species in P. Z. S. 1856, p. 304.

17. Pipilo fuscus (Sw.); Cass. B. Cal. pl. 122.

18. Pipilo oregonus, Bell, *Pipilo arcticus*, ex California et Oregon auct.

19. Zonotrichia gambelli (Nutt.); Gambel in Journ. Ac. Phil. i. p. 50.
It is doubtful, I think, whether this species is distinct from the eastern *Z. leucophrys*.

20. Agelæus gubernator (Wagl.).

21. Sturnella neglecta (Aud.).

22. Cyanocitta stelleri (Pallas); Gamb. in Journ. Ac. Phil. i. p. 45.

23. Cyanocitta californica (Vig.); Gamb. ibid. p. 45.

24. Melanerpes formicivorus (Sw.); Cass. B. Cal. pl. 2.

25. Melanerpes ruber (Gm.).

26. Picus harrisi (Aud.).

27. Picus gardineri (Aud.).
These two last birds seem to be the western representatives of *Picus villosus* and *P. pubescens*.

28. Picus nuttalli, Gamb. R. Ac. Sc. Phil. i. p. 259. *Picus wilsoni*, Malh. R. Z. 1849, p. 529.
This bird was erroneously united by Mr. Gambel (after describing it as new) to *Picus scalaris*, and is figured under that name, Journ. Ac. Phil. pl. 9. f. 2, 3. See P. Z. S. 1856, p. 307.

29. Colaptes mexicanus (Sw.).

30. Callipepla picta, Gould, Mon. Odont. pl. 15.

31. Callipepla californica, Gould, Mon. pl. 16.

32. Botaurus lentiginosus (Mont.).

33. Ægialites vociferus (Wils.).

4. Note on the Upland Goose.

By Philip Lutley Sclater, M.A., F.L.S. etc.

The new "Upland Goose" recently received by the Society from the Falkland Islands, is certainly the true Magellanic Goose (*Chloephaga magellanica*), Gmelin's name *magellanica* being founded on Buffon's Pl. Enl. 1006—a sufficiently recognizable representation of what seems to be the female of this species. See also Darwin's Zool. of the Beagle, Birds, p. 134, where "*Upland Goose*" is stated to be the name applied to this bird at the Falklands.

The bird, which has for several years, I believe, bred in the Society's Gardens, and is commonly called the "Magellanic Goose," is "The Ashy-headed Goose" (*Chloephaga poliocephala*) of the British Museum Catalogue of Gallinæ, Grallæ and Anseres, published in 1844.

This species is well figured in Gray and Mitchell's Genera of Birds (pl. 165), under the name *Bernicla inornata*. But it seems doubtful whether this is really the true *Anas inornatus* of King (Proc. Comm. Zool. Soc. i. p. 15).

The adults of both sexes of this Goose, which are now in the Society's Gardens, are coloured as nearly as possible alike, which is rather curious, if, as appears to be the case, in the nearly allied *C. magellanica* the male and female are quite different.

There are two other fine Geese which inhabit the southern extremity of the S. American continent—namely, *B. antarctica* (Gm.) and *B. melanoptera*, Eyton. Specimens of all these four species are in the British Museum.

5. Description of a New Genus of Gorgoniadæ. By Dr. John Edward Gray, F.R.S., V.P.Z. & Ent. Soc., F.L.S. etc.

(Radiata, Pl. VII.)

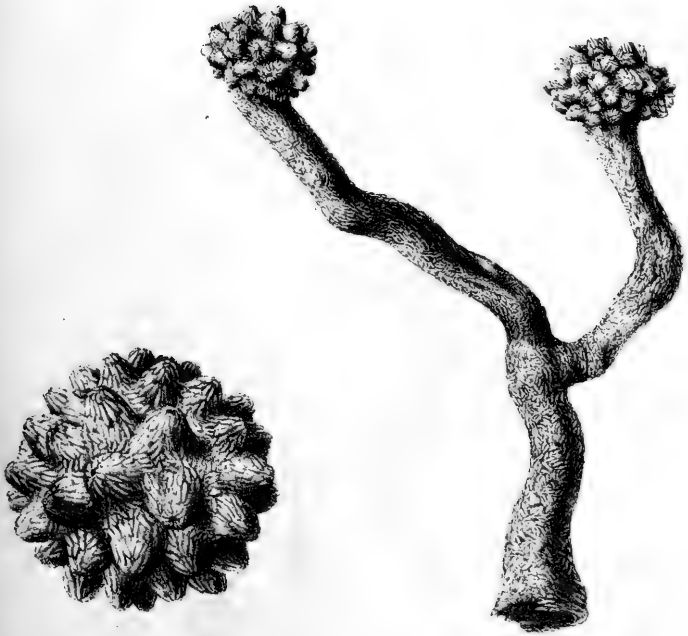
Acanthogorgia.

Coral branchy; branches free, cylindrical, slender, ~~both~~ of them almost entirely composed of transparent spicula; cells elegantly bell-shaped, contracted at the bottom, and less so rather below the aperture, spinulose, with eight equidistant lines of two or three series of diverging short spines; the mouth of the cell surrounded with numerous diverging, very slender, transparent, elongate spines, nearly as long as the cell. Axis horny black, more slender and brown near the tips.

Acanthogorgia hirsuta, Proc. Zool. Soc. 1851, Radiata, pl. 3. fig. 2.

Coral branched; branches nearly on the same plane, separate.
Hab. Unknown. British Museum.

This genus bears some relation to *Primnoa*, but the cell is armed externally with rows of short, thin, and its mouth with a series of



NIDALIA OCCIDENTALIS, Gray.

del et lith

W. West Imp.

1. POLIOCICHLA BRUNNICOLLIS *Sclater*.
2. ♂ ,, ,, HAUXWELLI *Sclater*.

delicate, elongated bristle-like spines, instead of the broad scale of that genus. From all other genera of the family it is most distinct and unlike.

The MS. description of this very curious coral was accidentally mislaid at the time at which it was read, and did not appear in the printed Proceedings of the Society. It was figured, by an error of the artist, for and under the name of *Nidalia occidentalis* in the Proceedings of the Zoological Society for 1851, Radiata, Pl. III. To rectify the error so committed, *Nidalia occidentalis* is now figured (Pl. VII.).

June 23, 1857.

Dr. Gray, F.R.S., V.P. Zool. & Ent. Soc., in the Chair.

The following papers were read:—

1. Descriptions of Twelve New or Little-known Species of the South American Family Formicariidæ. By Philip Lutley Sclater, M.A., F.L.S. etc.

(Aves, Pl. CXXVI.)

1. Grallaria ferrugineipectus.

Supra pallide brunnea, olivaceo induta: loris et regione oculari et auriculari fulvo tinctis: subtus flavicanti-ferruginea, collo antico medialiter et ventre toto cum crisso albis: alis nigricantibus pallido brunneo limbatis, tectricibus alarum superioribus omnino nigricantibus, inferioribus autem cum campterio ochraceis: rostri nigri basi flavicante: pedibus pallidis.

Long. tota 3·8, alæ 2·6, caudæ 1·2, tarsi ·85.

Hab. In Venezuela, in vicin. urbis Caraccas (*Levraud*).

Mus. Paris.

2. Grallaria loricata.

Supra olivacea: pileo castaneo: oculorum ambitu, loris et gula tota albidis, fulvo tinctis: stria duplici gutturis utrinque nigra: pectoris et ventris lateralis plumis omnibus medialiter fulvo-albidis, undique late nigro marginatis: ventre medio et crisso albis, hypochondriis brunnescentibus: rostro clare brunneo, basi flavida: tectricibus subalaribus pallide brunneis.

Long. tota 4·0, alæ 2·8, caudæ 0·8, tarsi 1·6.

Hab. In Venezuela, in vicin. urbis Caraccas (*Levraud*).

Mus. Paris.

These two *Grallariæ* are of smaller size and have shorter tarsi

than the typical members of the genus. The bill also is shorter, broader, and more flattened, and furnished with many basal bristles. Together with Lafresnaye's *Grallaria nana*, they seem to form a subordinate group pointing towards *Conopophaga*.

3. Hypocnemis melanopogon.

♂. *Cinereus, subtus dilutior, ventre medio albicante ; gula nigra : alis brunnescenti-nigris, tectricibus omnibus albo marginatis : cauda nigra rectricibus omnibus anguste albo terminatis : rostro nigro, pedibus fuscis.*

♀ *aut ♂ junr. Supra mari adulto similis, subtus gutture et pectore cinereo variegatis, gastræo albo, lateraliter cinerascentiore.*

Long. tota 4·5, alæ 2·5, caudæ 1·5.

Hab. In Peruvia Orientali, Chamicurros (*Hauxwell*).

Mus. Brit. et P. L. S.

This bird nearly resembles *H. pœcilonota* and *H. myiotherina* in style of colouring, but the bill is longer and more slender, and more like that of some of the species of *Myrmeciza*. From *H. pœcilonota* it is easily distinguished by the want of the white edgings of the interscapularies, from *H. myiotherina* by the restraint of the black colour to the throat, the want of the superciliary mark, and by the white termination of the rectrices.

I have two specimens of this species in my own collection, and there is one in the British Museum, which formed part of Hauxwell's collection from Chamicurros.

4. Formicivora melæna.

Fuliginoso-niger, subtus intensior ; lateribus plumosis cum tectricibus subalaribus albis : alarum tectricibus et caudæ rectricibus albo terminatis : rostro et pedibus nigris.

Long. tota 4·0, alæ 3·1, caudæ 2·5.

Hab. New Grenada, Bogota.

Mus. P. L. S.

Obs. Similis *F. axillari*, sed colore corporis supra nigri nec plumbei dignoscenda.

5. Formicivora urosticta. (Pl. CXXVI. fig. 1.)

Cinerea subtus dilutior et magis albescens : plaga gulari elongata nigra : alis nigricanti-cinereis extus cinereo strictissime limbatis, tectricibus autem nigris, albo terminatis : cauda nigra, rectricibus omnibus albo late terminatis ; rectricis unæ utrinque extimæ tertia fere parte apicali alba, hoc colore apud alias rectrices gradatim decrescente : rostro nigro, pedibus fuscis.

Long. tota 3·5, alæ 2·0, caudæ 1·2.

Hab. In Brasilia Orientali.

Mus. Brit. et P. L. S.

Obs. A *Formicivora axillari* et aliis affinibus colore subtus dilutiore, gula nigra magis restricta et præsertim rectricum apicibus late albis distinguenda.

6. Formicivora brevicauda.

Formicivora brevicauda, Sw., Zool. Journ. ii. p. 148.

♂. *Cinereus unicolor, plaga ovali in gutture et pectore superiore nigra: alis nigricantibus extus cinereo limbatis, harum autem tectricibus nigris albo terminatis: cauda brevi, colore nigro-cinerea, rectricum macula subapicali nigra, ipsarum autem apicibus albidis: rostro corneo, pedibus nigris.*

♀. *Olivascenti-brunnea, subtus clarior, capite subcinereo gutture albicantiore: tectricum alarium apicibus colore dilutioribus.*

Hab. In Brasilia Orientali prope urbem Bahia (*Sw.*).

Mus. Brit. et P. L. S.

Obs. Species ab auctoribus cum *F. axillari* et affinibus confusa, sed crassitie minore, cauda breviore, colore corporis cinereo unicolore et plaga gutturali ovali bene definita facile dignoscenda.

7. Formicivora hauxwelli. (Pl. CXXVI. fig. 2.)

Plumbea, subtus paulo dilutior, mento albescentiore: alis nigris, tectricibus omnibus albo terminatis, duas lineas albas formantibus; secundariis dorso proximis extus caudæ quoque tectricibus et rectricibus ipsis omnibus macula terminali alba præditis: uropygii plumis laxis, elongatis: cauda brevissima: rostro nigricanti-plumbeo, pedibus fuscis.

Long. tota 3·7, alæ 2·1, caudæ 9.

Hab. In Peruv. Orientali (*Hauxwell*).

Mus. Brit.

8. Formicivora cinerascens.

Formicivora cærulescens?, Sclater, P. Z. S. 1854, p. 112 (nec Vieill.).

Pallide cinerascens fere unicolor, subtus dilutior; interscapularium basibus albis: alis nigricanti-brunneis cinereo limbatis; tectricum apicibus albo guttulatis: cauda nigricante, rectricibus omnibus albo terminatis: rostro et pedibus nigris.

Long. tota 6·0, alæ 2·4, caudæ 2·2.

Hab. In Peruv. Orientali, Chamicurros (*Hauxwell*) et in ripis fl. Napo.

Mus. Brit.

Obs. Similis *F. cærulescenti* ex Brasilia sed rostro fortiore et longiore, cauda breviore et æqualiore, colore corporis inferioris dilutiore et campteriis non albis distinguenda.

I formerly referred this bird to Vieillot's *Form. cærulescens*, of which Menetries has given a figure in his 'Monograph of the Myiotherinæ,' pl. 6. But a comparison of specimens of both species, which are now in the British Museum, has convinced me that these two birds, though much resembling each other in plumage, are essentially distinct, and I have given above the characters by which they may be easily separated.

The example from Chamicurros, which was part of Mr. Hauxwell's fine collection, is not quite mature, and shows brownish colour-

ing beneath and upon the wings. Like *F. cærulescens*, this bird has only ten rectrices.

9. Herpsilochmus pectoralis.

Cinereus, dorsi medii plumis albo mixtis; pileo nigro: fronte, superciliis et lateribus capitis albis: alis nigris, tectricum omnium apicibus albo guttatis, secundariis late, primariis stricte albo extus marginatis: cauda nigra, rectricis unæ utrinque extimæ dimidio apicali et proximarum trium apicibus gradatim decrescentibus albis; rectricibus duabus intermediis extus anguste albo marginatis et tectricum caudæ apicibus quibusdam eodem colore guttatis: subtus obscure cinereus, plaga magna in pectore antico nigro: rostro plumbeo, mandibula inferiore albicante: pedibus nigris.

Long. tota 5·0, alæ 2·1, caudæ 1·7.

My attention was first called to this species when looking through the specimens of this family in the Museum of the Academy of Nat. Sc. of Philadelphia.

There is also a single specimen in the British Museum, which came, I believe, from the same origin as the one at Philadelphia—that is from the Massena collection. There is no locality affixed.

In style of colouring this bird seems to come nearest to *H. pileatus*, but it is much larger in size, and the pectoral black patch renders it easily distinguishable from every bird of the family known to me.

10. Dysithamnus xanthopterus.

Dasythamnus xanthopterus, Burm. Syst. Ueb. d. Th. Bras. iii. p. 81.

♂. *Capite colloque cinereis, fronte, regione superciliari et lateribus capitis albo striolatis: interscapulio et alis extus læte rufis, illo dilutiore; dorso postico valde plumoso, colore virescenti-rufo, hujus pennarum basibus cinereis: cauda nigricanti-cinerea, rectricibus extus rufescente marginatis: subtus albus, lateribus cervicis cinereis, ventris autem ochracescentibus: rostri nigri mandibula inferiore pallida, pedibus nigris.*

♀. *Mari similis sed pileo rufo et subtus magis fusco-flavicans.*

Long. tota 5·5, alæ 2·4, caudæ 2·0.

Hab. In Brasilia Orientali.

Mus. Brit. et P. L. S.

The British Museum possesses the male, and I have a female specimen of this *Dysithamnus*, which is easily recognizable by its deep chestnut-red wings and back; the same in both sexes. The bend of the wing and whole of the upper coverts are of this colour, and I could hardly, therefore, at first think it possible that this could be the *Dasythamnus xanthopterus* of Burmeister (Syst. Ueb. d. Th. Bras. iii. p. 81), although his description agrees with the female of my species. But recollecting that ξανθὸς, though commonly used in Natural History as synonymous with the Latin *flavus* and English

"*yellow*," is also capable of bearing the meaning "*auburn*," or even "*chestnut*;" it appears to me that the name "*xanthopterus*," though eminently calculated to mislead as applied to this bird, is perhaps not sufficiently inaccurate to require to be replaced by a new name. I have therefore retained Professor Burmeister's appellation for this species. His single example was obtained in the vicinity of New Friburg in the province of Rio de Janeiro. Those in the British Museum and my own collection have the ordinary appearance of Brasilian skins, and are probably from Rio or Bahia.

I do not know what has induced Prof. Burmeister to attempt to change Cabanis's correctly formed generic term *Dysithamnus* into *Dasythamnus*; but in this, as in other instances, that author seems to undervalue the principle of priority, now universally recognized in the application of names in Natural History.

11. THAMNOPHILUS MELANOTHORAX.

Supra intense castaneus, remigibus alarum intus nigricanti-brunneis, lateribus capitis et corpore subtus ad imum pectus atris, hoc colore in ventrem sensim dilutiore : ventre et lateribus olivascenti-brunneis rufo tinctis : cauda unicolore castanea : rostro corneo, pedibus nigro-fuscis.

Long. tota 6·5, alæ 3·2, caudæ 2·8.

Hab. In America Meridionali?

Mus. Brit.

I have never met with but the single example of this curious bird which is in the British Museum. The genus *Thamnophilus* is the only one I know of in which it can be placed; but the bill is more conical and thicker and rather shorter than in the birds of that group, which most nearly approach it in size. There are two white spots on the outer secondaries of the specimen, but these are evidently the results of an incipient albinism.

12. THAMNOPHILUS MELANOCEPS.

Thamnophilus melanoceps, Spix, Av. Bras. ii. pl. 39. fig. 1. p. 28.

Ferrugineo-rufus, subtus clarior : capite toto undique et collo supero nigris : rostro et pedibus nigris.

Long. tota 7·0, alæ 3·2, caudæ 2·4.

Hab. Eastern Peru, Sarayaçu on the Ucayali (*Cast.* et *Dev.*).

Mus. Paris.

I was not acquainted with this fine species of *Thamnophilus* when I wrote the article on the arrangement of those birds in the 'Edinburgh N. Phil. Journal.' I have since seen several examples in the Museum of the Jardin des Plantes, which were obtained by MM. de Castelnau and Deville at Sarayaçu on the Ucayali. The irides are marked "*orange*."

2. On Two Species of Bats inhabiting New Zealand. By Robert F. Tomes.

(Mammalia, Pl. LIII., LIV.)

The first notice of the occurrence of *Cheiroptera* in New Zealand was given by Forster in 1772–74 *, who recorded the occurrence of a Bat flying over the sea-shore near the margin of a wood in the estuary of Queen Charlotte. It was shot, but being struck only in the wing, lived for two days. "He was described by me," says he, "and was drawn by my son." To this species Forster gave the name of *Vespertilio tuberculatus*. The description has been published in the work noted below, and the drawing is now in the British Museum. I shall have occasion to refer to both the description and the figure.

In 1843 Dr. Gray gave a very condensed description of a Bat in the Appendix to Dieffenbach's Travels in New Zealand, which he, believing to be the species mentioned in the MSS. of Forster, called by the same specific name. As Dr. Gray had specimens for examination, he at once perceived that they could by no means be considered as representatives of the genus *Vespertilio*, and that they did not even belong to the same family. Accordingly we find them in the 'Catalogue of the Mammalia of the British Museum,' published in 1843, placed in the Family *Noctilionina*, with the new generic appellation *Mystacina*, the old specific name *tuberculata* being retained.

Having some time since had occasion to examine some species of Bats in the Museum of the College of Surgeons, Prof. Quekett showed me one which had been recently received from New Zealand. It was not until I had been assured that it came directly from that country, in a bottle with a collection of New Zealand insects, that I could be persuaded that no mistake as to locality had been made. The forms presented by this example were so entirely unlike those of the only New Zealand species with which I was acquainted, that it was with considerable surprise I beheld a bat having pretty much the same forms and proportions as the common little English *Pipistrelle*.

Shortly afterwards an opportunity occurred of inspecting the fine collection of *Cheiroptera* in the Leyden Museum, which contains three examples of this supposed new species, but without any specific name. Finally, I detected other examples in the British Museum, amounting in number to five.

Being then satisfied of the existence of two species of Bats in New Zealand, I was anxious to pursue the subject further, and to determine, if possible, to which of these Forster had given the name of *V. tuberculatus*. The kindness of Dr. Gray speedily placed in my hands all the necessary materials. There could be no hesitation; the supposed new species was undoubtedly the one from which

* Descriptiones animalium in itinere ad maris australis terras per annos 1772–74 suscepto observatorum, edidit H. Lichtenstein. 1844.

SCOTOPHILUS TUBERCULATUS Forster sp

G.H.Ford.

Fig. 1.

Fig. 2.

d

b

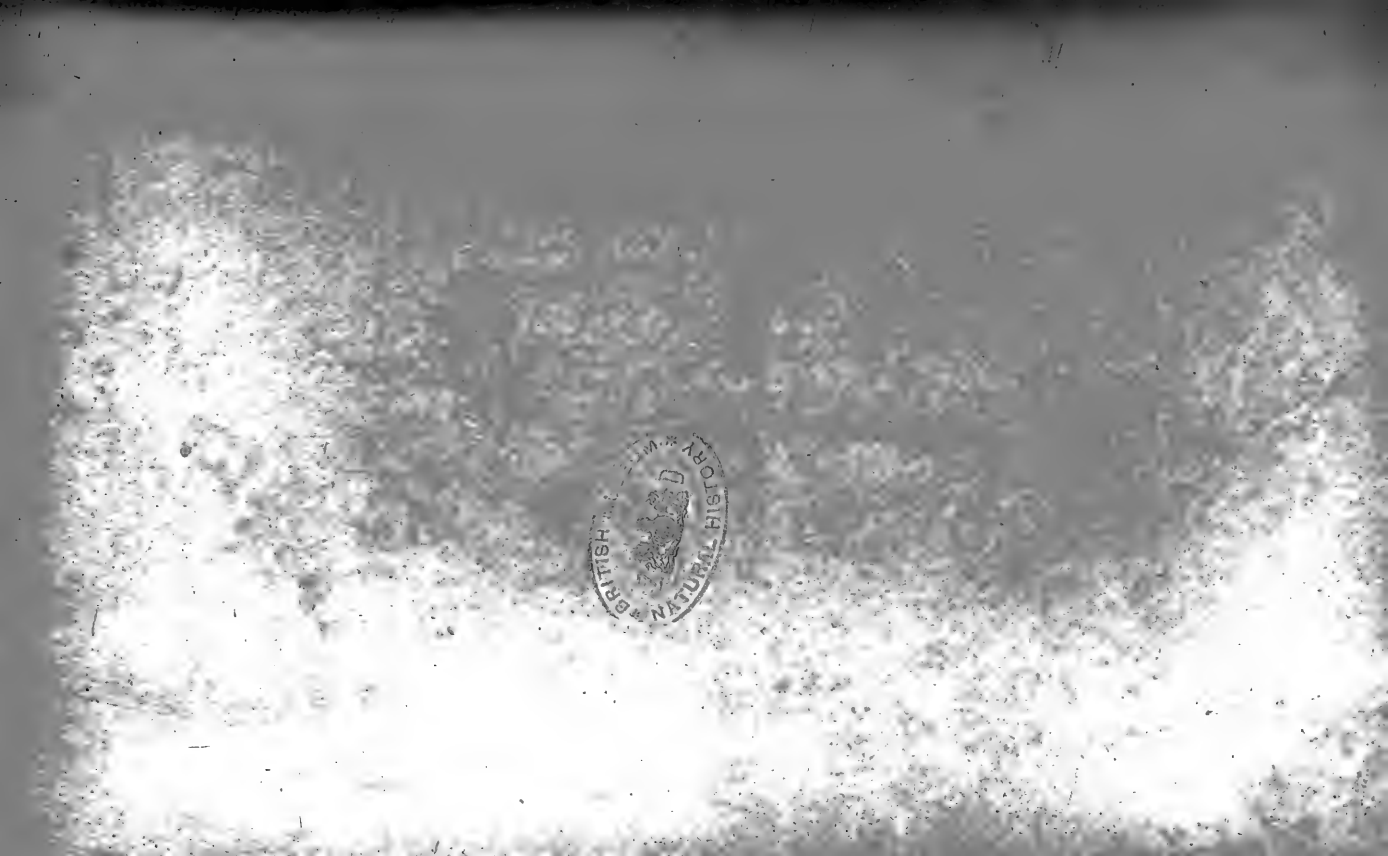
c

a

MYSTACINA TUBERCULATA Gray

G.H.Ford

W. West, Imp.



Forster's drawing had been made, whilst the description, indicating the number of incisors, and other peculiarities, pointed unequivocally to the same conclusion.

As the above-mentioned zoologists have certainly been the first describers of two distinct animals, the names imposed by them will of course be retained; but it is much to be regretted that their specific names are similar; and the more so, as the one most recently given was clearly intended as a reference to the earlier known species.

The following description has been taken from the specimen in the College of Surgeons, and also from the specimens in the British Museum. With the advantages of specimens in spirit and in skin, it is probable that the description will be found tolerably correct, both as regards the form of the face, ears, &c., and the quality and colour of the fur.

Fam. Vespertilionina.

1. Scotophilus tuberculatus, Forster, Descript. Anim. p. 63. 1772–74, Icon. ined. in Brit. Mus. t. 1. (Pl. LIII.)

In form and proportions somewhat resembling the Pipistrelle *of Europe; in size resembling* Vesp. Nattereri*; in colour very nearly similar to the* Scotophilus Gouldii *of Australia.*

The muzzle is rather broad and obtuse, and moderately hairy. The nostrils are tumid, and of an oval form, with their inner margins more prominent than their outer, giving them a sublateral opening; they are distant from each other about two lines. The forehead is rather flat. The lower lip is broad, with the extreme edge naked, and rather thickly clothed with short hair on the chin, which becomes very thick on the throat. Immediately within the *symphysis menti* is a small but distinct wart.

The ears are rather small, oval-triangular, with a pretty uniform outline, and with a kind of plait or crease on the basal front of the inner margin, giving that part of the ear a slightly projecting lobe, not however of sufficient magnitude to interfere materially with its general uniformity of outline. The outer margin is not hollowed out, but maintains a pretty regular curve, and has its basal portion brought forward, in the form of a narrow rudiment of membrane, on to the cheek, where it ends immediately under the eye.

The tragus is short, rather broad, and of nearly uniform breadth, with the end round. It has, as in all the other species of this restricted group, an inward curvature.

The wing-membranes spring from the base of the toes, and the latter occupy about half the length of the entire foot. The *os calcis* extends one-third of the distance from the foot to the tip of the tail, which has its extreme tip free.

The face is furnished with some tufts and lines of bristly hair. Immediately in front of the eye may be noticed a tuft, consisting of a few hairs, and on the gland of the upper lip is a similar one. From behind the nostril proceeds a narrow band of fine bristly hairs,

which curves downwards and backwards on the lip for a short distance, and then taking an upward curvature, passes in front of the eye, and is lost in the fur of the forehead.

All the membranes, both above and below, have those parts contiguous to the body, hairy, especially the interfemoral, on which it extends more markedly than elsewhere. The part of the latter membrane which is destitute of hair, is smooth, and has about ten transverse strongly dotted lines.

Over the whole of the body the fur is very thick, soft, and rather long. On the top of the head it is long enough to obscure the basal half of the ears, and thus give the appearance of an elevated crown.

Everywhere the hair is unicoloured, and of a black-brown colour on the head and back, passing into chestnut-brown on the rump. Beneath it is similar in colour, but more strongly tinged with brown, especially towards the pubal region, where it is reddish-brown.

On examining the cranium, I find that its chief peculiarity consists in its extreme shortness in relation to its other dimensions. In this respect it more nearly resembles the cranium of *Lasiurus noveboracensis* than that of any other species of bat I have yet seen, but it is even shorter than in that species. In its general conformation it bears considerable resemblance to that of the common *Pipistrelle* of Europe, especially in the degree of elevation of the cerebral region; but the arrangement of the dental series is more like that of the *Noctule Bat* than that of the *Pipistrelle*, but bears a still greater resemblance to that of the *Scotophilus Gouldii* of Australia. Thus, on examining the teeth of the upper jaw, they are seen to be arranged in two *straight* lines which are nearly parallel, the incisors only deviating from these lines, being placed across the front of the space enclosed by them. This enclosed space—constituting the anterior part of the palate—is nearly a parallelogram, being but slightly narrower in front than posteriorly. Its length to its breadth is as one and a quarter to one.

The range of the teeth in the lower jaw must, of course, bear exact relation to that of the upper *, varying only in the number of the teeth and their individual form.

* It will not be out of place here to remark, that this expression applies exclusively to the normal state of dentition of animals in a state of nature. The reverse of this may occasionally be seen in accidental varieties or malformations, and frequently in domesticated animals, where a great change in the form of the jaws and teeth has often resulted from long-continued selection of individuals from which to produce a breed for some special purpose, which selection may have been further assisted by a constant training to the purpose for which the breed was designed. This must certainly be the case with some of the varieties of dogs. In the bull-dog, for instance, we find a most remarkable development of lower jaw, attended with an equally distorted arrangement of the teeth. It is scarcely necessary to allude to the singular appearance often observable in the front teeth of the human species, under- or over-lapping each other, as the case may be, and displaying every degree of intermediate arrangement. But these deviations from the normal state of dentition in no way affect the statement above made respecting the relation of the inferior to the superior maxilla, and their implanted teeth.

The number of the teeth is as follows:—

In. $\frac{2-2}{6}$; Can. $\frac{1-1}{1-1}$; Pre. Mol. $\frac{1-1}{2-2}$; Mol. $\frac{3-3}{3-3}=\frac{14}{18}$.

The upper incisors are arranged in pairs, of which the inner one of each pair is much larger than the outer one. They are all somewhat elongated, conical, and pointed, and when viewed in front are seen to have their points directed inwards, but when seen laterally have nearly a vertical direction, similar in this respect to the canines. A considerable interval separates them on each side from the latter teeth, and this, with their regular conical outline and nearly vertical position, constitute their chief peculiarities. In the centre, between the inner ones, is a considerable opening, caused by the non-development of the anterior margins of the intermaxillary bones, and the notch in the front of the palate, just as in the *Noctule Bat* and most other true *Vespertilionidæ*. The other teeth in the upper jaw present no deviations from what is usual in the genus.

In the lower jaw the incisors are of the form ordinarily observed in this genus; they are symmetrically arranged and trilobed. The canines present no marked peculiarities of form. The premolars are small, pointed, and have their basal cusps less developed than those of the corresponding teeth in the *Noctule Bat*. The first of these teeth is much the smaller of the two. The molars differ in no respect from those of the above-mentioned species, excepting that their cusps are perhaps somewhat longer and more pointed.

In the following Table of dimensions, the first column represents the measurements of the specimen in spirit in the Museum of the College of Surgeons, before alluded to, and the other columns have been taken from specimens in skin in the British Museum:—

	No. 1.		No. 2.		No. 3.		No. 4.	
	″	‴	″	‴	″	‴	″	‴
Length of the head and body..	2	1						
——— of the tail	1	7	1	6				
——— of the head.....	0	$7\frac{1}{2}$						
——— of the ears	0	$3\frac{1}{2}$						
——— of the tragus	0	$1\frac{3}{4}$						
——— of the fore-arm	1	6	1	6	1	6	1	6
——— of the longest finger ..	2	8	2	10	2	8	2	7
——— of the fourth finger ..	1	10	1	10	2	0	2	0
——— of the thumb.....	0	$2\frac{1}{2}$	0	$3\frac{1}{4}$	0	$3\frac{1}{2}$	0	$3\frac{1}{2}$
——— of the foot and claws..	0	$3\frac{3}{4}$	0	4	0	4	0	$4\frac{1}{2}$
Expanse of wings	10	9	10	4				

The foregoing description had been taken with a view to its publication, before that of Forster had been examined, the impression at that time being that the species was new.

For the convenience of immediate comparison, and to show the general similarity of the two descriptions, a condensed description will now be given of that furnished by Forster.

About the size of *Vesp. communis*, or a little larger; the head like that of a mouse, and of medium size; snout blunt, emarginate,

simple, with bi-tuberculated nostrils. The lower jaw rather shorter than the upper.

Incisors in the upper jaw 4, in pairs, of which the two inner ones are the larger; the two outer ones smaller, and approximate to them. In the lower jaw 6, very small and approximate. *Laniares* (?) $\frac{1-1}{3-3}$; molars $\frac{4-4}{4-4}$.

Ears moderate, smooth, subovate; tragus semiorbicular. Wings large and dark brown. The fur everywhere soft, fine, and rusty brown.

Length from the end of the nose to the root of the tail	2 inches.
Length of the tail	$1\frac{3}{10}$,,
Expanse of wings	$10\frac{1}{2}$,,

Fam. Noctilionina.

Genus Mystacina, Gray.

Body very short and broad. Snout much produced; nostrils sublateral, surrounded by a thickened projecting rim. Under jaw much shorter than the end of the nose. Top of the head considerably elevated; ears lateral, simple; tragus long, narrow, and pointed. Wings moderate; thumb moderate. Index finger with two phalanges, second finger with *four*, third and fourth fingers with three, each. Wing-membranes extending to the distal extremity of the tibia. Legs and feet short and stout. Tail very short, piercing the interfemoral membrane near to its base, and projecting on the upper surface of it, as in *Taphozous*. Interbrachial membrane, a narrow piece of membrane beneath the fore-arm, that adjoining the sides of the body, and that enclosing the tibia, as well as the basal portion of the interfemoral membrane, thick and leathery, with numerous deep wrinkles or corrugations on its upper surface. Incisors, two in the upper jaw, large, contiguous, and shaped like canines; in the lower jaw two, small, and placed in front of the canines.

1. Mystacina tuberculata, Gray. (Pl. LIV.)

Mystacina tuberculata, Gray, Cat. Mam. Brit. Mus. p. 34, 1843; Gray in Deiffenb. Journ. App. p. 296, 1843; Gray, Zool. Voy. Sulphur, No. II. p. 23, 1843; Zool. Voy. Erebus and Terror, No. IV. pl. 22. 1844.

The snout of this singular-looking species is considerably elongate d with the end of the nose emarginate between the nostrils, which are very prominent, and directed sublaterally. The mouth is placed far back in relation to the nose, and a space intervenes between the two, which is clothed with very fine short hairs. The hairiness and form of this space are somewhat similar to the same part in the *Coati Mondi*. No very strongly-marked peculiarity is observable in the mouth itself, but it is rather small, and has only the extreme edges of the lips destitute of hair.

The top of the head is convex, rounding off on every side, and the space between it and the end of the nose, *i. e.* the face, is concave in its longitudinal direction, but not transversely, as in *Taphozous*.

The ears are lateral, and remarkably simple in form. Instead of the forward extension on the side of the face, so usual in the insectivorous species of this order, they are attached precisely as in the fruit-eating species, *i. e.* just as we may observe them in a *dog* or *cat*. In form they are regularly oval, and slightly pointed. The tragus is straight, narrow, and pointed, reaching to the middle of the ear.

The wings are rather broad, and of medium length. The thumb is of moderate size, with the basal joint very short; the index finger is composed of two phalanges, the terminal one being very minute. The second finger has *four* phalanges, and the third and fourth fingers have three each. The presence of four phalanges in the second finger, instead of the usual number of three, in this family, will be again adverted to. The wing-membranes barely extend to the distal extremity of the tibia.

The legs and feet are very short and stout, as in the genus *Molossus*. The heel-cartilage is of medium length and substance, and the interfemoral membrane is rounded at its posterior margin, and is perforated near its base by the tail, which is short, and exhibits its terminal half free above the membrane, as in the genus *Taphozous*.

The portions of membrane contiguous to the fore-arm, the sides of the body and the tibia, are very thick and leathery, with numerous deep wrinkles, and the basal half of the interfemoral membrane (as far as to where the tail becomes free) possesses the same peculiarity. The wrinkles, in many places, cross the legs and fore-arms, but they are only observable on the *upper* surfaces of the membranes and limbs. This singular part of the cutaneous system is marked by a regular and decided outline, and can scarcely be said at any place to graduate into the smooth membrane of the wings. Its extent is pretty well indicated by the hairy portions of the membranes in the genus *Lasiurus*, excepting that it only occupies one-half of the interfemoral membrane.

In its general character, the fur is short, crisp and thick, having a grizzly shining appearance, very similar to that of some of the *Soricidæ*. That of the head extends towards the nose, and covers the whole of the face, being bounded anteriorly by a frill of stiff upright hairs; that commencing near the corner of the mouth extends upwards in front of the eye, and meets on the top of the nose with the corresponding part of the other side of the face. On all the upper parts of the body the fur is similar. It is dusky at its base, and tipped for half its length with shining grey-brown, having a slight tinge of olive. Beneath, the fur is brown at its base, with shining tips of grey-brown. The fur of the throat extends to the chin and under lip, and densely covers the whole, excepting the extreme edge of the lip.

The whole of the cutaneous system is very dark-brown, with the exception of the wrinkled part already mentioned, which is paler, and tinged with yellowish.

The cranium exhibits some peculiarities worthy of note. Viewed from above, the cerebral portion is seen to be about as much arched as that of *Vesp. Nattereri*, and has a faint sagittal crest towards the occipital region. Also there is a moderately pronounced occipital crest, which becomes more strongly developed in the vicinity of the acoustic elements of the skull. The auditory bullæ have much the same form and proportion as the same parts in *Vesp. Nattereri*, and the facial portion of the skull is proportioned much as in that species. The orbital openings are of very moderate size, and the zygoma but little arched, and very slender. The bony palate terminates a little posteriorly to the last molar. The nasal opening is small, and the intermaxillary bones meet in front, for the support of the contiguous incisors, as in *Miniopteris* and *Furipterus* among the *Vespertilionina*, and *Molossus*, *Rhinapoma*, and *Noctilio* among the *Noctilionina*.

The incisors in the upper jaw are two in number, large, conical, and pointed. They are provided with a distinct *cingulum*, visible in front, which passes into a well-marked basal lobe, or cusp, behind the tooth. As the incisors are situated very near to the canines, and are themselves in contact, this lobe is only visible when seen directly from behind. The incisive foramina are two in number and very minute. The canines are long, pointed, and triangular, without any basal lobe. The next two teeth in the upper jaw present the same forms which usually characterize the premolars in the insectivorous *Cheiroptera*; and the three remaining teeth, *i. e.* the molars, may be similarly passed over.

The hinder part of the lower jaw is formed very similarly to the same part in the genus *Vespertilio*, but has the *posterior process* less produced. Another point of difference occurs in the form of a somewhat rounded *posterior angle*, something like that observable in *Furipterus*, but more nearly resembling the same part in the jaw of the *Ursus labiatus*, and, as in the latter instance, very thin in substance laterally. The jaw itself is straight, especially the alveolar margin, which is in a line continuous with the *posterior process*.

The canines in the lower jaw are of considerable size, and have a basal lobe behind. They are nearly contiguous, and the incisors, two in number, are placed in front of them as in some species of the genus *Molossus* (*Nyctinomus*), and, as in that genus, are probably lost with age. They are very small, feebly implanted in the jaw, and have their tips trilobed. The next two teeth are of the usual premolar type, such as we find in *Vespertilio* proper, and they are succeeded by the three molars, presenting no marked peculiarities of conformation.

Dentition :—In. $\frac{2}{2}$; Can. $\frac{1-1}{1-1}$; Pre. Mol. $\frac{2-2}{2-2}$; Mol. $\frac{3-3}{3-3}=\frac{14}{14}$.

In the following Table of dimensions, column number 1 has been taken from a large and probably adult specimen in the British Museum, and numbers 2 and 3 from specimens, perhaps not quite adult, in my own collection. The latter one, having all the bones retained, would furnish the more exact dimensions, but that it is probably immature. From it the skull was extracted, from which the above characters have been taken :—

	No. 1.	No. 2.	No. 3.
	″ ‴	″ ‴	″ ‴
Length of the head and body	2 6	2 4	2 4
——— of the enclosed part of the tail.	0 3	0 3	0 3
——— of the free part of the tail	0 3	0 3	0 2½
——— of the head	1 0½	0 11½	0 11
——— of the fore-arm	1 9½	1 7	1 8
——— of the longest finger	3 0	2 11	2 11½
——— of the fourth finger	2 6	2 4	2 4
——— of the thumb	0 5	0 4½	0 4
——— of the tibia	0 8	0 7	0 7
——— of the foot and claws	0 7½	0 6	0 6
Expanse of wings	12 0	11 10	11 6

The following are the dimensions of the skull extracted from the specimen which has supplied the measurements given in the second column of the above Table :—

	″	‴
Length from the occipital crest to the anterior of the maxillary bones	0	9¼
Breadth across the zygomatic arches	0	5
Length of the nasal bones	0	3
Greatest breadth of the nasal bones	0	1¼
Length of the dentinal series in the upper jaw	0	4
Breadth between the two outer cusps of the two posterior molars	0	3½
Breadth between the points of the two upper canines	0	1½
Total length of the lower jaw	0	6½
Length of the dentinal series in the lower jaw	0	4
Breadth between the outer cusps of the two posterior molars	0	2¾
Breadth between the points of the lower canines	0	1

In summing up the characters of this singular species (as far as is known, the sole representative of the genus), several affinities not usually associated are manifest. Thus in the form of the tail, and the way in which it perforates the interfemoral membrane, it bears strong resemblance to the genus *Taphozous*, whilst the strength and form of the hinder limbs, but more especially the form and implantation of the canine and incisor teeth, would seem to indicate an affinity with the genus *Molossus* (*Nyctinomus*), both of these genera being representatives of the family *Noctilionina*. Again, on examining attentively the forms of the ear and tragus, we shall be struck with the great resemblance which the latter bears to that of some of the examples of the genus *Vespertilio*, and the former, although differing considerably from the ear in *Vespertilio*, bears nevertheless a greater resemblance to it than perhaps to that of any other genus. But there is another peculiarity to which I have already alluded, which is deserving of especial notice—the presence of *four* bony phalanges in the second finger—a peculiarity in which it resembles the *Phyllostomidæ* or Leaf-nosed Bats of the New World, that number being one of their characteristics; whilst in all the Old World genera,

with the exception of the one now under notice, we find that that finger has only *three* bony phalanges*. There are, however, several characters present which appear to belong exclusively to the present genus, such as the form of the snout and nostrils, the singular markings on some of the membranes, and the peculiar quality of the fur.

EXPLANATION OF PLATE LIV.

Fig. 1. *Mystacina tuberculata*, three-fourths of the natural size.
a. Head of the same, of the natural size.
b & *c*. Cranium of the same, of the natural size.
d. Magnified representation of the front teeth of the same.
Fig. 2. Magnified representation of the front teeth of *Nyctinomus dilatatus*, showing the resemblance between them and the same parts in *Mystacina tuberculata*.

3. On the Jamaican Cyclotus, and the Description of Twenty-one proposed New Species and Eight New Varieties of that Subgenus from Jamaica. By the Hon. Edward Chitty.

Before entering upon the task of description, it seems advisable to offer a few observations upon the difficulty which has hitherto surrounded this group of *Cyclostomidæ* inhabiting Jamaica.

The late Professor C. B. Adams, in Contr. to Conch., No. 8, p. 140, *et seq.* wrote an article upon it; and although the required study enabled him to add seven new species to the former Jamaican list, a perusal of his paper will show that he laboured under great doubts and without clear satisfaction as to the result. The fact is, that almost all the species in the Jam. Cat. of Adams†, 1851, from No. 68 (for *C. Duffianus*, No. 67, is not a Jamaican, but a South American species—*fide* Adams and Mr. Bland, who found duplicates in South America), to No. 77 inclusive, run so much into one another in outward form of the mere shells, *wanting the opercula*, that it is next to impossible to classify them. There is also the difficulty of young and old shells intermingled, which, as regards some of the species, renders the "confusion worse confounded," particularly in the young of *C. Jamaicensis*, and the more mature of *C. crassus*.

The group in question, and many others, lead me to the firm conviction that, unless the differences are very marked, a single specimen

* A similar peculiarity occurs in the genus *Centurio*, which, when first described by Dr. Gray, was thought to be a native of the Old World, but there was some doubt as to the exact locality from which it had been received. But other examples have been since obtained from the New World, and its near alliance with the tailless *Phyllostomidæ* satisfactorily established. The existence therefore of *four* phalanges in this finger in *Centurio* cannot be considered, as in *Mystacina*, as an exception to a general rule, but on the contrary as a further extension of it.

† Whenever the name "Adams" is mentioned in these communications, the late Professor C. B. Adams, of Amherst College, America, is referred to, unless otherwise specified.

is not to be trusted; and that it is only by a multitude of specimens, perfect as regards maturity and possession of opercula, that truth can be arrived at, and species determined.

The difficulty with Adams, as with myself, has hitherto been the want of the original types of the fundamental shells, so to speak. I allude especially to the types of *C. corrugatus*, Sow.; *C subrugosus*, Sow.; *C. Jamaicensis*, Chemn.; and *C. asperulus*, Sow. [Of *C. suturalis* there never was a doubt.] That difficulty is evidenced by his note of interrogation "?" at p. 143, (*id.*) after "1 *C. corrugatus*," and his description of "No. 1, *C. corrugatus*" below, which most clearly refers to a species, which to my certain knowledge he has distributed indiscriminately as *C. corrugatus* and *C. jugosus*. So he made up the collection which some time ago I presented to the British Museum. I know that the presence or absence of the umbilical keel was a guide he was always looking for. He did not seem to understand Sowerby's description "umbilico magno, crenulato, intus transversim striato." *Vid.* Cont. Conch., p. 143. And beyond a doubt, his description of the operculum of *C. corrugatus* at p. 143, *id.* cannot for a moment be reconciled with Pfeiffer's in Cat. Phaneropneumona, p. 13.

Mr. Cuming's liberality in lending his choicest specimens for science' sake is too well known to require my commendation. To him I am now indebted for the loan of his types of *C. corrugatus*, *C. jugosus*, *C. subrugosus*, *C. Jamaicensis*, *C. seminudus*, *C. varians*, *C. crassus*, and *C. asperulus*, all of which have passed through Pfeiffer's hands: and I have examined those in the British Museum.

C. asperulus is not in my collection, though amongst those I am about to propose as new species, some approach very near to it. The two specimens (one with part of the operculum) in the Cumingian Museum, and those in the British Museum are somewhat like in character to Jamaica shells, especially *C. crassus*, in regard to absence of umbilical keel, and *C. rudis-planusque* (after mentioned) as regards operculum; and I do not wish to cast a doubt as to its habitat being Jamaica, though I have not fallen in with it.

Pfeiffer, in Cat. Phan. p. 13, has indicated that *C. corrugatus* was in the British Museum when he wrote; but unfortunately the specimens there under that name vary so much in their opercula, that it is impossible to say to which he referred. In fact, his description is believed to have been taken from one in the Cumingian Museum. But there again, equal doubts and uncertainty exist. Some shells, all named by Pfeiffer, having opercula of the character of those of *C. Jamaicensis*, are marked "*C. corrugatus*," and others are similarly marked with the addition of "var.," the opercula of which answer his description in Cat. Phan., p. 13, and have the precise character of that which it is my intention to adopt as the true *C. corrugatus*, those characters being totally dissimilar. Thence an interminable confusion exists, which it is very difficult to disentangle.

It seems to me that Sowerby and Pfeiffer have had only single specimens to deal with, and not knowing how many forms of opercula there are, have certainly not been very minute in their descrip-

tions, and have not perhaps set sufficient value on those differences, which they had an opportunity of observing; while Adams saw great differences, but from the want of *many* specimens feared to give specific importance to them.

I should not have adopted the independent course of disregarding previous naming or descriptions, nor attempt to propose new species, had I possessed a few specimens of each only. But having of almost every species plenty of perfect specimens, and having them so arranged that I know the precise habitat of almost all, I feel there is abundant justification for my proceeding. Sowerby's description of the operculum of *C. corrugatus* is (doubtless from causes before alluded to) so very meagre, that it is utterly impossible to say to what shell he referred. Pfeiffer, Gray, and Adams have all been misled: for every Jamaican *Cyclotus* has its operculum "*extus laminâ elevatâ.*" But it will be found that the description which I shall give of the operculum of *C. corrugatus*, does not militate with, but only enlarges upon Pfeiffer's, which is "with whorls, the margin of which is dilated into broad, spiral, raised, somewhat expanded lamina." While the shells which Adams has distributed, (and at p. 143, Cont. Conch. has described with a "?") as *C. corrugatus*, and which Gray has marked "*C. corrugatus* var." in the British Museum, militate very strongly with Pfeiffer's description, and also exactly agree with the opercular type of *C. jugosus*, which type is so peculiar that it can hardly be supposed that Sowerby would not have especially noted it.

Aided by what now appear marked differences in other parts of the shells, my principal guide to the new species I am about to propose has been the *Operculum*. I am aware that some have to a certain degree discarded the operculum as a specific test: yet a careful examination of my Jamaican *Cyclotus*,—the careful gathering together, all from one extensive and rich field,—will tend to the conviction that such a repudiation is not correct. We find the forms of opercula constant in all other subgenera and species of *Cyclostomidæ*, with equal certainty in shape and sculpture; and by more than analogy the opercula of the Jamaican *Cyclotus*, accompanied by differences in other parts of the shell, are specific guides and of specific importance.

I propose for consideration that there are *six distinct forms of opercula* in the Jamaican *Cyclotus*.

Form § I. *that of* C. corrugatus, *Sow.*

Sowerby, in Pro. Z. S., 1843, p. 30, describes the operculum of it as "*testaceo, extus laminâ elevatâ, convolutâ; intus corneo, polito,*" testaceous with elevated convolute lamina outside (or on the upper side), and horny and polished on the under side.

Pfeiffer, in Cat. Phan. p. 13, describes it as "with whorls, the margin of which is dilated into broad, spiral, raised, somewhat expanded lamina."

I should describe the *typical* form of the operculum of that which I adopt as *C. corrugatus*, "with lamina rising more or less, and well separated from the plane of the operculum, bending outwards;

the upper margin, more or less dilated and reflected, so as to lie more or less parallel to the plane of the operculum, but not so much as to touch each consecutive whorl. Plane of operculum plain."

FORM § II. *that of* C. varians, *Ad.*

Operculum with outward-spreading whorls raised from its plane, the upper margins of which are thickened and inflected, and reflected, so as to meet and touch each consecutive whorl; and form a corrugated, almost entire, planular surface; and when broken in half, forming on either side something like a number of italic capitals, *T T*, or the rails of a railway. Where concave on the outer surface, the concavity is formed by the increasing height of the lamina, the under side (as far as I have seen) being always planular.

FORM § III. *that of* C. seminudus, *Ad.*

Operculum with slightly elevated, bluntly thickened, and broadly expanding whorls, the edges of which are wholly appressed to, and not separated from the plane.

FORM § IV. *that of* C. Jamaicensis, *Chemn.*

Operculum with moderately raised narrow lamellar whorls, which are flattened and blunt at the margin, and very slightly and narrowly expanded and reflected outwards; the plane of the operculum always excentrically and sharply striated by lesser raised laminæ.

FORM § V. *that of* C. Rupis-Fontis, *Chitty.*

Operculum with well-raised whorls, which are sharpened at the margin, and stand almost vertical with the plane, the margin being neither reflected nor inflected.

FORM § VI. *that of* C. jugosus, *Ad.*

Operculum with highly raised whorls, the margins of which are sharp, and more or less inflected, convex interiorly and concave exteriorly.

These differences are broad enough whereon to found sub-subgenera, but from that I abstain.

Under FORM § I. I place my *C. corrugatus* and var. *a*, *C. Portlandensis*, *C. notatior*, and var. *a*, *C. notatus*, *C. Novæ-Spei*, *C. cycloatus*, *C. dubiosus*, and *C. suturalis*.

Under FORM § II. *C. varians* and var. *a*, *C. subrugosus*, *C. corrugatior*, and var. *magna*, *C. gemma*, and *C. zigzag*.

Under FORM § III. *C. seminudus*, *C. De Burghæanus*, *C. rudisplanusque*, *C. pretiosus*, *C. Bairdianus*, *C. ruber*, and *C. asperulus*.

Under FORM § IV. *C. Jamaicensis*, *C. Novus-Saltus*, *C. dentistigmatus*, *C. crassus*, and *C. inutilis*.

Under FORM § V. *C. Rupis-Fontis*, and *C. corrugatissimus*.

Under FORM § VI. *C. jugosus*, and vars. *rufilabris*, *parvus* and *striosus*, *C. pallescens*, *C. Westmorlandensis*, *C. nodosus*, and *C. Beswicki*.

N. B. Of *C. perpallidus*, the operculum is still unknown.

I do not place much value on the outward form, sculpture, and size of these *Cyclotus*, and, wanting the opercula, regard the classification of them as very difficult; I will, however, proceed to the more particular description of each species and variety as I find them in my own private cabinet, taking them in the order already mentioned.

§ I.

C. CORRUGATUS, Sow. Proc. Z. S. 1843, pp. 29, 30.

Sowerby's entire description is, "C. testâ orbiculatâ, subdepressâ, crassiusculâ, albidâ, apice rufescente; epidermide tenui, fuscâ, indutâ; spirulâ subprominulâ, acuminatiusculâ; anfractibus quinque, rotundatis, transversim striatis et corrugatis; suturâ distinctâ, aperturâ circulari, subeffusâ, supernè angulatâ et in canalem inconspicuam desinente; peritremate tenuiusculo, margine acutiusculo, latere umbilicali incrassato; umbilico magno, margine crenulato, intus transversim striato. Operculo testaceo, extùs laminâ elevatâ, convolutâ, intùs corneo, polito."

C. CORRUGATUS, Pfr. Cat. Phan. p. 13.

Shell subturbinate-depressed, solid, regularly all over angularly wrinkled, white, with a deciduous fulvid epidermis; *spire* short, reddish, rather acuminate; *whorls* 5, convex, the last one cylindrical, nearly flat beneath, *with a nodulous ridge around the umbilicus*, which is open, and of a middle size; *aperture* a little oblique, nearly circular, with a slight angle above, inside whitish; *peristome* straight, blunt; its margins joined into an angle, which often is doubled; right margin slightly sinuate; left margin shortly affixed to the penult whorl. *Operculum* concave externally, with 9 very narrow whorls, the margin of which is dilated into broad, spiral, raised, somewhat expanded laminæ. Height 14, greatest breadth 22, least breadth 19 mill.—Cat. Phan. p. 13.

C. CORRUGATUS, Chitty.

The shell I adopt as *C. corrugatus* I describe as "depressed-turbinate: colour blueish-white, with an epidermis of rich red-brown and yellowish-brown; just below the suture and apex, rich red-brown; salmon-colour tinge within the aperture. *Sculpture*, the $3\frac{3}{4}$ upper whorls, excepting the nuclear apex, with the lines of growth strongly but finely defined, without wrinkles. Thence the lines of growth become coarser and coarser throughout the remainder; coarser and coarser wrinkles diagonally from right above to left below on the penult whorl, the wrinkles gradually assuming a zigzag form, till they become very coarse at the periphery of the last whorl, and then eccentric curvilinear grooves which terminate and are deepest, but are not tooth-marked at the umbilical keel, which is well raised, the terminating fourth part of the last whorl becoming comparatively smooth. *Spire*, moderately elevated, with convex outlines. *Whorls*, $5\frac{1}{4}$, moderately rounded, rather flattened above, and spreading below, with moderate suture; the terminal half of the last

whorl much depressed above, at, and behind the aperture. *Aperture*, rather oblique in incomplete shells, subelliptical and subangular above, like a hanging pear—in finished shells, subcircular, rather dilated below on the right side, and the angularity above becoming almost obsolete by the thickening of the outside. *Peritreme*, well thickened and blunt all round. *Umbilicus*, deep and comparatively narrow; greatest breadth, that is from side to side at the *umbilical keel**, about 0·36, and least breadth 0·28. *Umbilical keel*, narrowly and roundly pinched up, the striæ of growth extending over it imbricatedly from the hollow. *Operculum*, greatest breadth 0·51, least breadth 0·46 —slightly concave externally, with about† 9 outward bending, spiral whorls of laminæ rising from its plane, the summits of which spread, and are reflected outwards, but widely separated from one another, nearly parallel to the plane, and striated eccentrically, as like water flying off a turned wheel by centrifugal force; lamina well detached above from the plane, and from each other whorl. Height of shell, 1 inch; greatest breadth 1·2, least breadth 1 inch‡.

C. CORRUGATUS, var. *a* (?), Chitty.

This shell differs from *C. corrugatus* in being much smaller. Height 0·8, greatest breadth 0·94, least breadth 0·75; greatest breadth of *umbilicus* 0·27, least breadth 0·2; greatest breadth of *operculum* 0·43, least breadth 0·37. The corrugation is finer. It is sometimes *quasi* smooth below, and marked with bands like *C. Jamaicensis* with transverse raised sub-obsolete lines. *Umbilical keel* is less prominent.

Whorls 5. Whorls of operculum about 6 or 7.

C. PORTLANDENSIS, Chitty. Portland.

Form, depressed-turbinate. *Colour*, blueish-white with a deep bistre brown epidermis; apex blood-red sometimes. *Sculpture*, $3\frac{1}{3}$ of upper whorls coarse, striæ of growth becoming thenceforth deeply corrugated vertically on the upper part of the last whorl until about the last third, where the corrugation ceases; the striæ of growth are finer and a few pits occur, and a few transverse obsolete ridges appear. No corrugation at the periphery: a few pits, and a slight corrugation surround the outside of the umbilical keel. Umbilical keel and striæ of growth within the umbilicus are much stronger than in *C. corrugatus*. *Spire*, and outlines like *C. corrugatus*. *Whorls*, $5\frac{1}{5}$, last whorl and about $\frac{1}{4}$th of penult whorl depressed above, below the suture. *Aperture*, like *C. corrugatus*, but rather more expanded on right than on left side; oblique to axis, as *C. corrugatus*. *Peritreme*, like *C. corrugatus*. *Umbilicus*, much wider in

* The measurement of the *umbilicus* in all instances is taken from side to side from the inner edge of the *umbilical keel*, taking care that the *points* of the compasses shall be at a right angle with the axis of the shell.

† The nuclear centre and second whorl are probably never seen in mature shells, from their extreme delicacy while young, which causes the appearance of being devoid of laminæ in the extreme centre.

‡ All my measurements are in decimals of an inch.

proportion than *C. corrugatus*: greatest breadth 0·32, least breadth 0·26. *Operculum*, of general character of that of *C. corrugatus*: greatest breadth 0·45, least breadth 0·41; whorls, about 10, much closer approaching each other than in *C. corrugatus*, and spread of margin much less; slightly concave. Height 0·85, greatest breadth 1·07, least breadth 0·88.

C. NOTATIOR. Chitty. St. Elizabeth.

Form, *colour*, and *sculpture* much like *C. corrugatus*, finer in proportion. *Whorls* 5, a slight depression only on upper part of last whorl. *Umbilical keel*, not so distinctly raised, but broader in proportion: greatest breadth 0·25, least breadth 0·2. *Operculum*, of *C. corrugatus* character, slightly concave: raised lamina of 8 whorls, the margin scarcely reflected. Height 0·59, greatest breadth 0·8, least breadth 0·61.

C. NOTATIOR, var. *a*, Chitty. Yallahs Hill.

Is much smaller and finer in sculpture, and the umbilical keel is much less prominent in proportion. Height 0·46, greatest breadth 0·61, least breadth 0·53.

C. NOTATUS, Chitty. Trelawny.

Sculpture, fine and almost smooth, with a slight corrugation on the upper part of latter half of the last whorl, which is devoid of depression in its upper part. *Umbilicus*, greatest breadth 0·17, least breadth 0·16. *Umbilical keel*, almost obsolete. *Operculum*, character of *C. corrugatus*, more concave than preceding; spiral lamina, about 8 whorls, upper margin scarcely reflected. Height 0·58, greatest breadth 0·64, least breadth 0·56.

C. NOVÆ-SPEI, Chitty. New Hope, Westmoreland.

This shell is very much corrugated on the last and a quarter of the penult whorls, and eccentrically and very deeply round the umbilical keel; from all others of its size it may be distinguished, even in worn shells, by the appearance of pits or indentations on its exterior, as though the keel (which is very prominent) had been bitten into its shape by pointed distant teeth. *Umbilicus*, greatest breadth 0·24, least breadth 0·18. *Operculum*, character of *C. corrugatus*; lamina 8 or 9 whorls, margin rather more broadly expanded and flattened than in *C. notatus*, slightly concave. Height 0·63, greatest breadth 0·82, least breadth 0·71.

C. CYCLOATUS, Chitty. New Hope.

Form, as usual. *Colour*, a broad band of rich brown-red extending round above and below the periphery, whence its name—and above and below, light dingy yellow. *Sculpture*, fine striæ of growth on upper three whorls, the remainder much coarser, corrugated below the suture, and below that, pitted; smooth and shining at the periphery; much pitted outside the umbilical keel, coarse lines of growth inside umbilicus. *Spire*, much depressed. *Whorls*, 4⅔rds, well

rounded with deep suture. *Aperture*, subcircular, angular (as usual) above. *Peritreme*, slightly indented above. *Umbilicus*, large, greatest breadth 0·27, least breadth 0·24. *Umbilical keel*, much raised on the inside, and moderately so on the outside. *Operculum*, more concave than the preceding; sculpture partakes of that of *C. corrugatus* and of *C. Jamaicensis*, the spiral lamina bending outwards, and its margin slightly reflected horizontally, as in the former, and the plane being strongly striated, as in the latter; 7, or perhaps, 9 whorls, convex on under side. Height 0·61, greatest breadth 0·88, least breadth 0·72.

C. DUBIOSUS, Ad., and C. SUTURALIS, Sow. See Cat. Phan. p. 12.

Habitat of *C. dubiosus* is north of "Holland Estate," near the "Ys" river. It is very scarce; and I never could obtain more than one small lot, of about nine or ten specimens, many not fresh; and only one with the operculum, the spiral lamina of which is very like in all respects to that of *C. suturalis* (see *id.*, p. 12); but has at least 7 whorls; these in both shells bend outwards, like to my type of *C. corrugatus*, with margins well reflected outwards, but scarcely horizontally, though more so in *C. dubiosus* than in *C. suturalis*; the under side of operculum is flat. *C. suturalis* is found in the higher mountains which run from Manchester, as far as New Hope, Westmoreland, in the west end of the island; but not, I think, near the spot where the former is found, though passing it.

§ II.

C. VARIANS, Ad. See Cat. Phan., p. 15, and *ante*, p. 145, as to formation of lamina on operculum. *Operculum*, planulate on the under side. Height 0·72, greatest breadth 0·9, least breadth 0·72.

C. VARIANS, var. *a.*, Chitty.

Is of a darker colour; the *operculum* is slightly more concave; the last part of the last whorl is nearly smooth, devoid of sculpture; the *umbilical keel* is not so wide, and the shell is much less depressed in proportion to its breadth. Height 0·72, greatest breadth 0·86, least breadth 0·67.

C. SUBRUGOSUS, Sow. See Cat. Phan., p. 15.

The description of operculum, wanting there, I am able to supply; Class *varians*, more planular, with 9 or 10, or perhaps more whorls of the spiral lamina; planulate below.

C. CORRUGATIOR, Chitty. Gutter's Hill.

Form, much depressed-turbinate. *Colour*, light red-brown, inclined to pink, with a light brown epidermis. *Sculpture*, fine striæ of growth on the 1st and 2nd whorls, except on the nuclear apex; from about the completion of the 2nd whorl, the diagonal (from right above to left below) corrugation becomes very strongly and regularly defined, terminating, in regularity,

at about one half of the last whorl, where the corrugation becomes coarse, irregular, and ill-defined, till little more than coarse striæ of growth are seen behind the aperture. From the periphery downwards, the corrugations on the last whorl, for about its first half, are much closer together than those above, and lie almost horizontally, but inclining from left above to right below; and, outside the umbilical keel, the rest of the whorl below the periphery is much pitted. Striæ of growth inside the umbilicus rather fine. *Spire* much depressed, with convex outlines. *Whorls* nearly 5, well rounded with a deep suture. *Aperture* well rounded, slightly subangular above. *Peritreme* rather reflected, and spread on the right, sometimes double above; thickened (as is usual) on the left, and slightly detached from body-whorl. *Umbilicus* broad; greatest breadth, 0·35; least breadth, 0·31. *Umbilical keel* well developed. *Operculum* moderately concave above, planulate below, rather inclined to that of *C. corrugatus* form, from the cross lines on the margin of the spiral lamina being less developed, but otherwise like the *C. varians* type in general character of closeness to one another. 8 or 9 *whorls*, and still a vacuity in the centre. Height 0·7, greatest breadth 0·98, least breadth, 0·84.

Var. *minor*, Chitty, is much smaller; being, height 0·53, greatest breadth 0·8, least breadth 0·65.

Var. *magna*, Chitty, is much more conical; height 0·8, greatest breadth 0·92, least breadth 0·81.

C. GEMMA, Chitty. New Hope.

Form, very much depressed-turbinate. *Colour*, bluish-white, with a light brown epidermis. *Sculpture*, like to *C. corrugatior*, but corrugation commences almost at the first quarter of the 3rd whorl; corrugation very marked in proportion to size, as in *C. corrugatior*; sometimes in zigzag vertically, sometimes with diagonal arrow-head-shaped indentations, the points being on the periphery, on the last whorl. *Spire*, much depressed, with convex outlines. *Whorls*, $4\frac{1}{4}$, well rounded with a deep suture, last whorl much depressed. *Aperture*, widely expanded, especially on the right side and below, slightly angular above. *Peritreme*, well expanded on right side, more separated from body-whorl on left than in *C. corrugatior*. *Umbilicus*, broad; greatest breadth, 0·21, least breadth, 0·16. *Umbilical keel*, almost obsolete. *Operculum*, same as in *C. corrugatior*, with about 9 whorls. Height 0·41, greatest breadth 0·66, least breadth 0·51.

C. ZIGZAG, Chitty. Trelawny.

Form, depressed-turbinate. *Colour*, white, with light brown epidermis. *Sculpture*, like *C. corrugatior* in the upper whorls, only very much finer and closer, and more regularly corrugated, in zigzag form, on the last whorl, and finely corrugated all over the under side, except behind the aperture, round the umbilicus. *Spire*, moderately elevated, with convex outlines. *Whorls*,

$4\frac{3}{4}$, well rounded, with a deep suture at the upper whorls, and a moderate one above the last whorl. *Aperture,* subcircular, diam. 0·34, expanding rather on the umbilical than on the opposite side, slightly detached from the body-whorl; angular above. *Peritreme,* slightly sinuate. *Umbilicus,* narrow, greatest breadth 0·15, least breadth 0·13. *Umbilical keel,* well produced. *Operculum,* small (diameter 0·25) with spiral lamina of 9 whorls, and perhaps more; much more concave than in *C. varians,* and less so than *C. corrugatior*; planulate beneath. Height 0·6, greatest breadth 0·75, least breadth 0·58.

§ III.

C. SEMINUDUS, Ad. See Ad. Contrib. Conch., pp. 143, 146; Cat. Phan., p. 15.

In order to carry out my views as to the specific value of the opercula, it is necessary I should enlarge upon Adams's description, which is as follows: — "Operculum quite concave, with the spiral lamella scarcely elevated, but much thickened and appressed on the exterior side." My description is: — Operculum concave on the upper side, and convex on the under side, with 5 or 6 distant whorls of spiral lamina, scarcely elevated, and much thickened; the margins spreading widely outwards horizontally into a surface covered by excentric lines, so as to join each succeeding whorl, and *apparently* not detached; closely appressed to the plane, though in reality (as seen on breaking the operculum in half) not soldered to it. This operculum, from its centre, represents the base of an amphitheatre, each whorl resembling very broad steps or seats rising towards the exterior; greatest diameter 0·34, least breadth 0·32. *Umbilicus,* greatest breadth 0·41, least breadth 0·34. *Habitat,* north-west border of Manchester, and Bogue estate, St. Elizabeth.

C. DE BURGHÆANUS, Chitty. ? Westmoreland.

Form, globose-conic. *Colour,* bluish-white, with an epidermis, light brick-red, on the upper whorls, turning into a pale straw-colour for about $\frac{1}{8}$th below the suture, on part of the penult, and on the last whorl, and rich red-brown over the remainder, which is sometimes interrupted by straw-coloured bands at the periphery and round the umbilical keel. *Sculpture,* lines of growth on $3\frac{1}{2}$ of the upper whorls, thence it becomes finely corrugated below the suture on the penult whorl, very coarsely so on the last whorl, sometimes extremely so, and knotted at the sinuation in the peritreme, all below being smooth and shining, except for the continuance of the lines of growth, a few distant blunted spiral lines, and a few pittings scattered below at the junction of the umbilical keel and aperture. Within the umbilicus, the lines of growth are very coarse. *Spire,* well elevated with convex outlines. *Whorls,* 5, well rounded with a well-impressed suture. *Aperture,* rather oblique, well expanded below. *Peritreme,* light-brown, more sinuate above than *C. seminudus,* and sometimes very

deeply sinuated; in age not so much thickened as in *C. seminudus*, but in one instance of a larger (than typical) old shell, very much produced from the body-whorl. *Umbilicus*, narrow; greatest breadth 0·3, least breadth 0·24. *Umbilical keel*, well developed, not very broad. *Operculum*, planular above, with a slightly elevated, broad, rounded lamina, of about 5 whorls far apart, and the last much farther from the outer edge of the operculum; the margins broadly reflected and expanded on the plane of the operculum and covered with sharp excentric striæ; on the under side, the centre is elevated at the nucleus, then concave and broadly raised all round the edge; greatest breadth 0·43, least breadth 0·4. Height of shell 0·84, greatest breadth 0·99, least breadth 0·82. Named in compliment to Mrs. De Burgh.

I have reason to fear that I *may* have distributed this shell as *C. seminudus*. Let me here observe how excellent a guide is the operculum; but for the concavity of *C. seminudus* and the flatness of this, other differences might have escaped notice. How marked are the differences, however!

	Measurements of *C. seminudus.*	Measurements of *DeBurghæanus.*
Height of shell	0·65	0·84
Greatest breadth	1 inch	0·99
Least breadth	0·79	0·82
Greatest breadth of umbilicus	0·41	0·3
Least breadth	0·34	0·24
Greatest breadth of operculum	0·34	0·43
Least breadth	0·32	0·4

C. RUDIS-PLANUSQUE, Chitty. Accompong Town, St. Elizabeth.

This shell, likewise, Adams has distributed as a variety of *C. varians*, from which it most materially differs in its operculum. It is, however, a puzzling shell, as it varies so much in its dimensions, as seen below.

Form, globose-conic. *Colour*, dark brown; sometimes light red-brown; sometimes, in age, almost black on the last whorl; sometimes with a light narrow band at the periphery; sometimes with a broad band. *Sculpture*, inconstant, generally shining and smooth, except for rather coarse striæ of growth; sometimes finely corrugated on the penult whorl and below the suture on the last whorl, and below, at the junction of the peritreme and umbilical keel; sometimes merely slightly pitted here and there; sometimes with the lines of growth very coarsely developed on the upper whorls; coarse lines of growth within the umbilicus. *Spire*, well elevated, with convex outlines. *Whorls*, $4\frac{3}{4}$, moderately rounded, with deep suture above; moderate suture at the termination of the last whorl, which is much depressed. *Aperture*, pyriform, expanded on the right. *Peritreme*, generally very sinuate on the right above. *Umbilicus*, narrow, greatest breadth 0·25, least breadth 0·22. *Umbilical keel*, well developed. *Operculum*, like *C. DeBurghæanus*, only planular on the under side.

Of the largest specimen	height 0.71, greatest breadth 0·82, least breadth 0·65.
Of the medium size....	height 0·51, greatest breadth 0·67, least breadth 0·53.
Of the smallest size....	height 0·34, greatest breadth 0·45, least breadth 0·35.

C. PRETIOSUS, Chitty. New Hope.

Form, depressed-conic. *Colour*, middling light rich brown. *Sculpture*, 1st, 2nd and 3rd and $\frac{1}{3}$ whorls (except the nuclear apex) very fine, gradually growing very strong and prominent, vertical lines of growth; the rest, finely diamond-cut above and below, except the last third of the last whorl, which is smooth, with fine lines of growth, and sometimes diamond-cut below. Lines of growth coarse within the umbilicus. *Spire*, much depressed, with scarcely convex outlines. *Whorls*, $4\frac{1}{2}$, well rounded, with a deep suture, last whorl much expanded at the aperture on the right and below. *Aperture*, much detached from penult whorl, well rounded, width and height (into the usual angle) 0·24. *Peritreme*, very slightly sinuate above, much thickened in mature shells. *Umbilicus*, wide, greatest breadth 0·15. *Umbilical keel*, moderately developed for little more than half a whorl. *Operculum*, like *C. rudis-planusque*, but with 4 whorls only, and the outer one is in proportion further from the edge. Height 0·41, greatest breadth 0·56, least breadth 0·45.

C. BAIRDIANUS, Chitty.

Form, globose-conic. *Colour*, rich red-brown, with sometimes a lighter band at the periphery and round the umbilical keel, yellowish at the suture on the last whorl. *Sculpture*, fine lines of growth on the upper whorls and fine corrugation on the penult and last; moderately coarse lines of growth within the umbilicus. *Spire*, well elevated, with convex outlines. *Whorls*, 5, well rounded, with deep suture. *Aperture*, much expanded to the left, pyriform. *Peritreme*, rather sinuate above, much projecting at the usual angle. *Umbilicus*, narrow, greatest breadth 0·2. *Operculum*, like *C. seminudus*, but with only 4 whorls, the last rising higher, further from the edge, and spreading more widely than any of this class of opercula, so as almost to form a concave surface, except towards the centre. Height 0·57, greatest breadth 0·65, least breadth 0·57.

C. RUBER, Chitty. Westmoreland.

Form, depressed-conic. *Colour*, very red-brown, especially red on the apex and internally, with a somewhat lighter band at the periphery and round the umbilicus, slightly yellow below the suture on the last whorl. *Sculpture*, very fine lines of growth on the first 3 whorls, and then coarser and coarser, yet fine diamond-cutting throughout; corrugated also below the suture just behind the aperture, and very much where the peritreme and umbilical keel meet; coarse lines of growth within the umbilicus. *Spire*, not much elevated: convex outlines. *Whorls*, 5, well rounded, deep

suture. *Aperture*, very oblique, approaching to straight on the left, and much expanded, especially above on the right. *Peritreme*, slightly sinuate above. *Umbilicus*, narrow, greatest breadth 0·24. *Umbilical keel*, strongly produced within, rather flat outside, continuous round the whorl. *Operculum*, rather concave and convex on the lower side between the types of *C. seminudus* and *C. Jamaicensis*; whorls 6, the margins rising higher before dilation than in *C. seminudus*, and being much broader and rounder than in *C. Jamaicensis*. Height 0·61, greatest breadth 0·88, least breadth 0·7.

This shell has been distributed by Adams as a variety of *C. varians*.

§ IV.

C. Jamaicensis, Chemn. See Cat. Phan. p. 13.

I will only add to that description, that the operculum, though generally planular, is sometimes very triflingly concave, and that the last lamella whorl is wide apart from the edge.

C. dentistigmatus, Chitty. Yallahs Hill and Portland.

Form, depressed-conic. *Colour*, dark olive brown, strong red-brown at the apex and within the aperture. *Sculpture*, coarse lines of growth down to the last quarter of the penult whorl, thence coarse corrugation till it becomes extremely coarse, wide and highly raised at the back of the last whorl, and becomes obsolete at the back of the aperture; below the periphery, smooth with about 14 deep eccentric tooth-like indentations running up to the umbilical keel (thence the name); lines of growth within the umbilicus, not coarse. *Spire*, well elevated, somewhat mammiform, with concave outlines. *Whorls*, $5\frac{1}{2}$, much rounded with a deep suture, last very large and ventricose. *Aperture*, rather oblique, dilated on the right side, large, red-brown within. *Peritreme*, very sinuate above. *Umbilicus*, largely open and funnel-shaped, greatest breadth 0·36. *Umbilical keel*, very prominent and wide. *Operculum*, planular above, lamina of 9 whorls rising higher and much closer than in *C. Jamaicensis*, which it much resembles otherwise; below the margins, the lamina spreads out as in *C. seminudus*, so as to touch each consecutive whorl, and appear to be appressed to the plane, but are *de facto* detached. Last whorl close to the edge, rather concave below. Height 0·9, greatest breadth 1·13, least breadth 0·9.

This shell may be readily known by the tooth-marks which give rise to its name. Its operculum and size distinguish it from *C. Novæ-Spei*.

C. novus-saltus, Chitty. New Forest.

Form, depressed-conic. *Colour*, brown. *Sculpture*, throughout fine somewhat close regular striæ of growth, which give a silky appearance. *Spire*, moderately elevated, with convex outlines. *Whorls*, $5\frac{1}{3}$, well rounded, with a deep suture. *Aperture*, circular, not expanded. *Peritreme*, simple. *Umbilicus*, greatest breadth 0·32. *Umbilical keel*, almost obsolete, just visible. *Operculum*, concave

above; spiral lamina of 7 whorls rising as in *C. Jamaicensis*, but much narrower at the margins, which are deflected and expanded on to the plane as in *C. dentistigmatus*, but do not quite so closely approach the consecutive whorl. Height 0·76, greatest breadth 0·97, least breadth 0·77.

C. CRASSUS, Ad. See Cat. Phan., p. 16.

C. INUTILIS, Chitty. (Unique.)

Form, much depressed-conic. *Colour*, light brown; apex red-brown. *Sculpture*, fine lines of growth on the $3\frac{1}{4}$ whorls, thence (for its size) roughly corrugated, except the last quarter of last whorl, where, above, lines of growth are strong, with slight pitting; lines of growth fine within the umbilicus. *Spire*, much depressed, with convex outlines. *Whorls*, 4, well rounded, with very deep suture. *Aperture*, oblique from left to right below, dilated above and much expanded to the right, horizontally elliptical, 0·22 across, 0·2 vertically. *Peritreme*, rather sinuate above, and detached from the penult whorl. *Umbilicus*, open and large, greatest breadth 0·14. *Umbilical keel*, well defined inside umbilicus. *Operculum*, of *C. Jamaicensis* type, concave exteriorly, with lamella of 5 whorls, like *C. crassus*. Height 0·31, greatest breadth 0·46, least breadth 0·35.

§ V.

C. RUPIS-FONTIS, Chitty. Rock Spring, Hanover.

Form, globose-conic, very thick and substantial. *Colour*, deep red-brown, with a broad band of dingy yellow next below the suture on the penult whorl, lighter behind the aperture, red at the apex, light brown at the periphery, and bluish-white inside the aperture. *Sculpture*, fine lines of growth, with a slight corrugation and slight pitting below the suture on the last whorl; lines of growth fine within the umbilicus, somewhat pitted close to the exterior of the umbilical keel. *Spire*, well raised, with convex outlines. *Whorls*, $5\frac{1}{4}$, well rounded with deep suture; last slightly depressed above. *Aperture*, slightly expanded on the right. *Peritreme*, very much thickened, slightly sinuate above. *Umbilicus*, moderately open, greatest breadth 0·22, funnel-shaped. *Umbilical keel*, strongly and broadly produced outside and inside. *Operculum*, planular below and above, plane plain or smooth, lamina with 6 whorls rising high and vertically to the plane exteriorly, thickened at the base and rising with a slight outward slope, so as to make the margin comparatively sharp; termination of the last whorl sharp; last whorl distant from the upraised edge of the plane. Height 0.79, greatest breadth 0·99, least breadth 0·75.

C. CORRUGATISSIMUS, Chitty.

Form, depressed-conic. *Colour*, brown. *Sculpture*, 3 and $\frac{2}{3}$rds of upper whorls fine lines of growth, thence very much and very coarsely corrugated above and below in zigzag form to close behind

the aperture with deep tooth-like indentations round the umbilical keel; inside the umbilical keel fine striæ of growth. *Spire*, not much elevated, with almost straight outlines. *Whorls* 5, well rounded, deep suture. *Aperture*, slightly oblique to the right below, much expanded below. *Peritreme*, much sinuate above, and sinuated throughout. *Umbilicus*, moderately open, greatest breadth 0·31, funnel-shaped. *Umbilical keel*, well developed, not very wide, deeply produced inside. *Operculum*, deep concave, lamina elevated, as in *C. Rupis-Fontis*, 7 whorls of the same character much closer together, and close to outer edge of plane; termination of last whorl inflected and thickened. Height 0·81, greatest breadth 1·1, least breadth 0·81.

§ VI.

C. JUGOSUS, Ad. See Cat. Phan. p. 14. *Hab.* St. Elizabeth.

C. JUGOSUS, var. *parva*, Chitty.

A small variety of this shell occurs. Height 0·52, greatest breadth 0·8, least breadth 0·61.

C. JUGOSUS, var. *striosus*, Chitty.

A still smaller variety occurs, the mouth of which is less dilated, and the sculpture is altogether less corrugated, and which, from above the periphery on the lower part of the last whorl, gives place to close, parallel, diagonal groovings. Height 0·39, greatest breadth 0·6, least breadth 0·5.

C. JUGOSUS, var. *rufilabris*, Chitty.

This I doubtfully place as a variety only; if thought otherwise, it may take specific rank as *C. rufilabris*. It is much more conical than *C. jugosus*, brownish on the lip, coarsely corrugate in the site of the obsolete umbilical keel; the umbilicus is very narrow; the end of the last whorl on the operculum is appressed to the preceding whorl. Height 0·61, greatest breadth 0·71, least breadth 0·57.

C. PALLESCENS, Ad. *Hab.* North-east corner of St. Elizabeth, Chitty. See Cat. Phan. p. 14.—Lamella 10 whorls on operculum, and much less raised than in *C. jugosus*.

C. WESTMORELANDENSIS, Chitty. Westmoreland.

Form, subglose-conic. *Colour*, red-brown, with light brown epidermis; aperture red-brown; apex red. *Sculpture*, fine lines of growth, with slight coarse corrugation over the middle of last whorl, coarse lines of growth inside umbilical keel. *Spire*, well elevated, with slightly convex outlines. *Whorls*, $5\frac{1}{4}$, well rounded, but less above; moderate suture. *Aperture*, well rounded, slightly oblique to the left below, a little dilated on the right below. *Peritreme*, much sinuate above. *Umbilicus*, moderate size, greatest breadth 0·3. *Umbilical keel*, moderately produced. *Operculum*, planular below, but from the *increasing* height of the whorls of the spiral lamina, apparently concave above; 9 or 10 whorls, closer than in *C. jugosus*,

M. & N. Hanhart p

ORYX BEATRIX, Pry.

end of last whorl appressed to preceding one. Height 0·8, greatest breadth 0·97, least breadth 0·81.

C. NODOSUS, Chitty. Maroon Town, St. James.

Form, more depressed-conic. *Colour*, white, with light brown epidermis, brown at lip and on operculum. *Sculpture*, lines of growth, remarkably knotted corrugation on last whorl, pitted deep about umbilical keel, and coarse lines of growth within. *Spire*, depressed, with rather straight outlines. *Whorls*, $5\frac{1}{4}$, well rounded, with deep suture. *Aperture*, rather oblique to the left below. *Peritreme*, slightly sinuate above. *Umbilicus*, wide, greatest breadth 0·3, funnel-shaped. *Umbilical keel*, not wide, but well produced. *Operculum*, small, strong, sharp-edged lamina of 5 or 6 wide-apart whorls, rising almost equally from the flat plane, end of last thickened. Height 0·6, greatest breadth 0·85, least breadth 0·67.

C. BESWICKI, Chitty. Bogue Estate, north-east corner of St. Elizabeth.

Form, subglobose-conic. *Colour*, pinkish, with light brown epidermis. *Sculpture*, very coarse lines of growth, very slight distant corrugation on the last whorl, coarser below; fine lines of growth within umbilical keel. *Spire*, well elevated, with almost straight outlines. *Whorls*, $5\frac{1}{2}$, moderately rounded, with moderate suture. *Aperture*, oblique and much dilated to the right below, depressed above. *Peritreme*, slightly sinuate above, sharp on the right. *Umbilicus*, moderate, greatest width 0·25. *Umbilical keel*, strongly produced. *Operculum*, with lamina of about 9 much incurved close spiral whorls, which are very slightly concave on the entire margins; end of last a little incurved to preceding one. Height 0·75, greatest breadth 0·9, least breadth 0·74.

C. PERPALLIDUS. Near Moore Town, Portland.

This shell was originally brought to me by a negro named Shelly, whom I could never, even by money! excite to sufficient energy to collect more. See Cat. Phan. p. 16. Operculum still wanting.

4. DESCRIPTION OF A NEW SPECIES OF ANTELOPE (ORYX BEATRIX) FROM BOMBAY?, LATELY LIVING IN THE MENAGERIE OF THE SOCIETY. By DR. JOHN EDWARD GRAY, F.R.S., F.L.S., V.P.Z. & ENT. SOC. ETC.

(Mammalia, Pl. LV.)

The African genus *Oryx* is divided into two sections, according to the form of the horn. In one, the Kookaam, or Gemsboc (*O. gazella*), the horns are straight; in the true Oryx (*O. leucoryx*), they are arched and recurved. The former has a black streak along the lower part of the sides, and is found over a large extent of Africa, from the Cape to Abyssinia; for *O. Biessa* of Rüppell ap-

peared to be only a small variety of *O. gazella*, the smaller size depending on some peculiarity in the climate or locality, as is the case with the *Strepsiceros kudu* found in Abyssinia by Capt. Harris, which is only half the size of that inhabiting the Cape of Good Hope. The *O. leucoryx*, on the other hand, which is confined to Senaar and Senegal, is without any indication of the lateral streak.

The animal now under consideration is intermediate between these species; it has the straight horn of *A. gazella* and the plain colour of *A. leucoryx*, but its dark legs and peculiar white feet at once separate it from either.

The animal was presented to the Society by Capt. John Shepherd of the India House; it was regarded in the Gardens as a half-grown *Oryx gazella*, and is said to have been brought from Bombay. A pair was shipped from the latter port, but the female died at sea. The male is now in the Collection of the British Museum.

Oryx Beatrix. The Beatrice. (Pl. LV.)

The horns slender, straight, or only very slightly curved near the tip, annulated nearly to the tip. White; a spot on the middle of the face, a smaller spot between the base of the horns, a large patch on each cheek, extended above up to the eyes, and united together beneath under the throat; the knees and front of the fore- and hind-legs, and a large spot on the chest, dark blackish brown; the legs to the posterior grey-brown; end of the tail black.

Hab. Bombay, but probably brought from the shores of the Red Sea. Brit. Mus.

This specimen is not half the size of the Gemsboc from the Cape, and is immediately known from it by the distribution of its colours.

In form and size it resembles the true Oryx (*O. leucoryx*), but it differs in the straightness of the horn, the size and form of the cheek-spot, and especially in the dark colour of the legs, and the well-marked white ring around the fetlock joint just above the hoof.

The hair is whorled on the middle of the haunches like the rest of the genus, and the hairs of the back in front of the withers are directed forwards.

5. Description of New Genera of Gorgoniadæ. By Dr. John Edward Gray, F.R.S., F.L.S., V.P. Z. & Ent. Soc. etc.

(Radiata, Pl. VIII.)

1. Sarcogorgia.

The coral rather irregularly furcately branched on a single plane. The axis black, cylindrical, thick at the base, with slender flexible branchlets. The bark fleshy; in the dry state, thin, like a continuous skin, smooth, without spicula, with rather close more or less raised cells, strengthened with a quantity of sand-like granular spicula.

SARCOGORGIA PHIDIPPUS, Gray

d. del. et lith.

W. West Imp

This genus is at once distinguished from all the other *Gorgoniæ* that I have seen, by its thin, smooth, skin-like bark studded with sandy more or less raised wart-like cells, which on the thick stem are numerous all round the surface, scarcely raised, while on the thinner branchlets they are further apart, and form prominent wart-like cells.

The axis is olive-brown, formed of concentric laminæ, which often show a space between them at the fractures. When the bark is soaked in potash it is rather thick and flesh-like, and the cells are surrounded with a single series of rather regularly disposed, nearly equal-sized, angular, sand-like, transparent particles, forming a sheath to the polype.

The tentacle of the polypes, when examined in this state, are thick, conical, and simple, without any indication of the pinnate tubercles which are to be seen in the living *Gorgonia*, according to the observations of most naturalists.

I only know of a single species of the genus, which was purchased of a dealer in natural history at Liverpool, without any habitat.

SARCOGORGIA PHIDIPPUS. (Pl. VIII.)

2. SUBERGORGIA.

Coral furcately branched, rather compressed, with a continued sunken groove up the middle of each side. Cell rather prominent, convex, in two or three rather irregular series up each edge. Axis pale brown, ~~wart~~-like, formed of rather loosely concentric fibrous laminæ, containing a large quantity of calcareous matter, and effervescing with muriatic acid. The bark when dry is rather thin, smooth, hard and granular within.

SUBERGORGIA SUBEROSA.

~~Suber~~gorgonia suberosa, Esper. t. 49.

This genus, and the genera *Junceella*, *Ctenocella*, and *Gorgonella* of Valenciennes, should be arranged with *Corallium* under the family *Coralliidæ*, characterized by having a calcareous axis.

6. DESCRIPTION OF A RABBIT SAID TO BE FOUND ON THE HIMALAYAN MOUNTAINS. BY A. D. BARTLETT.

(Mammalia, Pl. LVI.)

This animal is smaller than the domestic Rabbit, being shorter and more compact; its body is pure white, the nose, ears, legs and tail are of a dark brownish-black, the eyes dark red.

The fur is much shorter and more nearly equal in length than in the common Rabbit. The young are perfectly white all over until they are five or six weeks old, at which time the nose and tail begin

o get dark-coloured; the feet soon afterwards get dark, and lastly he ears turn black.

In their movements they appear quicker than other rabbits, and they jump a considerable distance; some in my possession I have seen leap upon objects 3 feet from the ground. The first specimens of these animals that came under my notice were obtained by Mr. Baker, who informed me that they came from the Himalayas. I have since seen a large number of them, and in no instance have I observed any variation in the colour or markings. They are prolific breeders, and appear extremely hardy.

Having some recollection of hearing a furrier once speak of the skins of the Polish Rabbit, I took an opportunity a few days since to examine a large lot of these skins at a fur warehouse, when I found that they were beyond all doubt from the animal now under notice. Upon inquiry I was told that these skins are imported into this country in large numbers, and extensively used as a substitute for ermine, which fur they much resemble. I find in Mulsant, 'Cours Elémentaire d'Histoire Naturelle,' the following:—"The fur of the White Rabbit, even that of the Polish Rabbit, is easily distinguished from that of the ermine, by its less cylindrical hairs, which are considerably longer than the down." I am also informed that they are bought at the great sale of furs that takes place annually at Leipsic; to this great fair skins are brought from all parts of the world, and I think it highly probable that these skins are imported from the mountainous parts of Asia.

I have not at present examined the skull of this animal, but should I find sufficient difference upon comparing it with the skulls of the other known species, I shall then propose for it the name of *Lepus nigripes*, or Black-footed Rabbit.

July 14, 1857.

Dr. Gray, F.R.S., V.P., in the Chair.

Mr. Gould having returned from a visit to the United States, whither he had proceeded for the purpose of studying the habits and manners of the species of *Trochilus* frequenting that portion of the American continent, detailed some of the results of his observations.

Having arrived just prior to the period of the bird's migration from Mexico to the north, and having had ample opportunities for observing it in a state of nature, he noticed that its actions were very peculiar, and quite different from those of all other birds: the flight is performed with a motion of the wings so rapid as to be almost imperceptible; indeed the muscular power of this little creature ap-

pears to be very great in every respect, as, independently of its rapid and sustained flight, it grasps the small twigs, flowers, &c. upon which it alights with great firmness, and if wounded clings to them with the utmost tenacity: it appears to be most active in the morning and evening, and to pass the middle of the day under the shade of the thick leafy branches. Occasionally it occurs in such numbers, that fifty or sixty may be seen on a single tree. When captured, it so speedily becomes tame, that it will feed from the hand or mouth within half an hour. Successful in keeping one alive during a long railway journey, in a gauze bag attached to his breast-button, for three days, during which it readily fed from a small bottle filled with a syrup of brown sugar and water, Mr. Gould determined to attempt the bringing of some living examples to England, in which he succeeded, but unhappily they did not long survive their arrival in London, and died on the second day: had they lived, it was his intention to have sent them to the Society's Gardens, where they would doubtless have been objects of great attraction. Mr. Gould added, that he was certain that they might be readily brought to this country; that they would live in the gardens at least during the months of summer, and that the captains of any of the great steamers now voyaging between England and America would willingly render the assistance requisite to effect this desirable object.

Mr. Gould exhibited a highly interesting species of *Ceriornis*, which he had found in the Collection of Dr. Cabot of Boston, who, with the greatest liberality, permitted him to bring it to England for the purpose of comparison and description. The appearance of this bird is very singular, and the uniform buff colouring of the breast would lead to the supposition that it is merely a variety of one or other of the previously known species of the genus; but the greater length of the tarsi, and the well-defined markings of the back, forbid such a conclusion. For this new bird, forming the fourth species of the genus, Mr. Gould proposed the name of

CERIORNIS CABOTI.

Forehead, sides of the head, nape and chin, black; crest and sides of the neck deep red; all the upper surface mottled with black, rich chestnut, buffy white, and black, the latter colouring assuming the form of a large circular spot at the tip of each feather; this buff mark greatly increasing in size on the scapularies, and the greater wing- and tail-coverts; primaries and tail feathers very dark brown, crossed with toothed markings of buff mottled with black; breast and under surface deep sandy buff stained with red, and black on the flanks, under tail-coverts and thighs.

Total length, $18\frac{1}{2}$; bill, $1\frac{3}{8}$; wing, 10; tail, $7\frac{1}{4}$; tarsi, $3\frac{1}{2}$; middle toe and nail, $2\frac{3}{4}$.

Hab. China.

Remark.—This species is more nearly allied to *C. Temminckii* than

to the other members of the genus. The specimen is believed to be unique.

The following papers were read:—

1. On Stoastomidæ as a Family, and on Seven proposed New Genera, Sixty-one New Species, and Two New Varieties from Jamaica. By the Hon. Edward Chitty.

Stoastomidæ! When I first open my cabinet of this Family to the spectator, two observations are generally made. The one, "How minute! how could you trouble yourself with such specks! they are not worth seeing, for we cannot see them." Then follows, "Well, they *are* very wonderful; but how did you collect them?"

To the first observation I answer, "True, they are but specks, and have very much injured my eyesight; but they *are* worth seeing under the microscope; for they are worthy to rank, and must rank, in point of sculpture, with the most wonderful and beautiful shells known to conchologists, and most of them are most worthy of a sculptor's or designer's study." Among the *Helices, Pupæ, Achatinæ, Cylindrellæ, Bulimi,* &c. there are plenty of *minute* species almost microscopic, and interesting enough; but, under the microscope, these only improve in size, and no further beauties are unfolded, and little further interest is given to them by its use. The *Stoastomidæ,* however, are not only wonderful for their minuteness, and from the knowledge that, however minute, they are part of an animal, perfect in its anatomy as that of the largest shell; but the form and sculpture of each species are so marked, that the microscope brings out in each, new beauties and new wonders, entitling them to rank among the most wonderful works in animal creation. And to say the *least* of these *Stoastomidæ,* "They *are* shells, and beautiful ones too, and are not only worthy, but *must,*—being known to exist,—be in every cabinet that pretends to the smallest degree of perfection or completion."

To the second I shall reply by practical information which I think will be valued.

"Easily attained, little valued," may be taken as a good general maxim. But my love for this family arose from a difficulty; and as it involves the history of *Stoastoma,* I may be permitted to relate it.

In the winter of 1848–49 the late Prof. C. B. Adams paid me a visit in Jamaica; and looking over a limited collection, he observed that which is now known as *Stoastoma pisum.* The singularity of its semicircular mouth was noticed by him, as it had been by me; but it then stood alone, and he put it on one side to be described as *Helicina pisum,* hesitating to give it generic importance. He next visited Manchester parish, the principal habitat of *St. pisum*; and meanwhile I, in my own garden in St. Thomas in the East parish, close to Yallahs Hill, found a minute shell with a somewhat similar mouth, about which I corresponded with him. This

turned out to be that wonderful and beautiful speck *St. Wilkinsonæanum*. He again in Manchester collected more specimens of *S. pisum* and other species of the family, and, first under the proposed generic name of "*Hemicyclostoma*," the species were finally placed under the generic name of "*Stoastoma*" at the suggestion of Dr. A. A. Gould. While Adams was still away from me, as I was examining my only specimen of *S. Wilkinsonœanum*, it dropped from my hand—fortunately on to the floor-cloth,—and I did not recover it till after a full hour's careful search. This showed me the folly of being satisfied with the possession of one specimen only, where others *might* be obtained; and I determined to make a vigorous search for more. I ransacked my garden and all round, in vain; for, as I now conclude, it had been brought there accidentally, perhaps by a bird; till at last I crossed a deep ravine, a streamlet at the bottom of it, and got to one side of what we call "Little Yallahs' Hill," which stands a good half-mile crow-fly distance from my garden; there I found a spot, a slope on the hill-side, with crumbling fine dirt running, or sifting as it were, down it. There I *first* found *Geomelania Greyana* (described as *Cylindrella Greyana*, Contrib. Conch. p. 82, till I made out the operculum of that genus). These were so numerous, and many so broken, that I put handfuls of the fine dirt into a small bag for home examination. The result was, plenty of *St. Wilkinsonœanum*, and other new species at the same time.

The plan of collecting all minute shells, beyond this "bagging" of dirt, is, to have a small zinc or tin tray about 9 inches long and 3 wide, with sides turning up all round half an inch high. I put about half a teaspoonful of dirt, such as I have alluded to, into it. Holding the tray at each end, and tilting it the furthest side downwards, shaking it lightly backwards and forwards, right and left, end to end, causes the dirt to fall and spead somewhat evenly along the outer edge; then, *levelling* the tray, a slight jerk from *side* to *side* of the tray causes the whole of the dirt to spread pretty evenly over the tray's surface, and exposes every minute object to view, with the aid of strong spectacles or a lens. A pointed wetted camel's-hair brush takes up and may deposit the minute subjects into a pill-box, or other receptacle, for future examination. The formation of Jamaica being mostly tertiary limestone, out of about a quart of such dirt as this, I have taken dozens and dozens of minute specimens of no less than thirty-one species, besides larger ones, which the naked eye could well see—probably upwards of fifty species from one quart of dirt altogether!

I am about to describe sixty-one new species, which, added to those described by Adams, make the total of eighty belonging to Jamaica. Yet let it not be imagined for one moment that I consider these are all that inhabit the island: on the contrary, I incline to think that that number might be doubled or trebled were the whole land explored.

I consider that the range of each species is very limited, and that

each spot of land suitable to them will contain distinct species which are not to be found elsewhere. *S. pisum* is a remarkable exception. That shell occurs in the Back Woods or highest mountains in the north of Manchester; at Porus, say ten miles "crow-fly" distance on the east border of Manchester; at Moreland and "Bull dead" in Manchester, say about the same distance south, near the western border: and again it is found at Accompong Town in St. Elizabeth's parish, at (say) twenty-five or thirty miles to the west. And it is curious to observe, that, taking Manchester back woods as the focus, I have collected and received shells from many intermediate spots between it and Porus and Moreland, and Bull dead and Accompong town, without getting one *St. pisum*, although many shells equal or smaller in size of other genera and species. But take any other of the *Stoastomidæ*, and probably you will search for it in vain *outside* of a circumference of three-fourths of a mile from the spot where it first was found. Each such spot will contain probably as many as four or six or seven species; but to that spot all those species are confined. In the following descriptions it will be seen that the habitat of six species is certainly "Peace River:" and that that of eight species is as certainly Yallahs Hill. That latter I have personally explored; one of my residences was near by, and I repeatedly visited it; and I have no hesitation in saying that none of those eight species are to be found at half a mile either way. There are hundreds of spots of this kind in the island never trodden by human foot, and therefore there is no knowing how many *Stoastomidæ* and other minute shells might yet be found, or how many of other genera, from large to small, may yet be added to the terrestrial conchology of Jamaica. The number of unique specimens in my cabinet tells us this truth, I having been a collector *in situ* for years by myself or my black deputies, who are rarely to be bribed into a repetition of a visit to a strange and unwelcome spot.

I must here record my great thanks to my friend Dr. S. Livesay for the personal assistance he has afforded me with some of these troublesome shells; but more especially, not only for the loan of his microscope throughout the labour, but for his most ingenious contrivances, which have been of the greatest help in the examination and measurement of shells, enabling me, by aid of one, to examine all parts by a rotatory motion, and at the same time to readily compare one shell with another; and by aid of another, on the sliding-scale principle, to measure by the thousandth part of an inch with the nicest accuracy and with the greatest facility. Future describing conchologists would do well to make inquiries of that gentleman.

In order to give a clearer understanding of my descriptions, it is well to state how I have proceeded to examine the shell. Dr. Livesay's apparatus consists of a plate on which a battery (as it were) of large pins may be placed in grooves, and kept firm by an upper plate, moveable at one end, so as to admit of removing them when required, and fixed at the other by a hinge. These pins are revolved in their grooves by the fingers, there being a small piece of rounded cork stuck on the point of the pin to lay hold of. The shell is gummed

on to the pin's head, so that the plane of aperture is parallel to the length of the pin, and the axis of the shell at right angles with it. In this position the operculum, if there, or if not, the inside of the aperture, and also the apex and umbilicus, and indeed all parts of the shell, except the point of attachment, can be brought under the microscope by revolving the pin.

Next, let me explain any new terms I may have used. In speaking of "above" or "below," I always consider the apex the uppermost, and the umbilicus the lowermost part. In speaking of "right" or "left," the outer edge of the aperture is considered to be on the right hand.

In pursuing the examination, we give in succession *Form* and *Colour*. Those two are manifest. *Sculpture*: we commence to describe the sculpture of the last whorl, and calculate from below the suture downwards towards the umbilical region at about a quarter from the aperture, or the last quarter or third of the last whorl. *Spiral carinæ* are sculptured raised lines, transverse to the axis or column of a shell. The *spire* and its outlines are self-evident. *Whorls* are counted from the aperture upwards; from that part to where it is opposite or attached to, what is termed, the body whorl, forms one whorl, and so on upwards, the whole, half, third, or quarter being determined by the exact termination of the appearance of a suture at the nuclear apex. The *aperture*, or mouth, though not audibly, speaks its own shape, &c. *Labrum* in *Stoastoma* is the edge of the right-hand portion of the aperture, extending from the suture, as it were, above, round on the right, till it finishes its curve below; the labium being the almost straight part on the left. Labral and labial, coined words, refer to those parts of the edge of the aperture, &c. Labrum "double" denotes a more or less fine, sharp groove close behind the very verge of the labral side of the aperture; and it shows that some at least of *Stoastomidæ* have peristome and peritreme, though never prominent or expanded as in *Choanopoma fimbriatulum*, *C. Chittyi*, and the like.

The "*labral lamella*" is a term we adopt, equivalent to Adams's "spiral lamella," "lamellar spiral keel," "spiral carina continued into the lower extremity of the labrum," &c.; or the "lamelliform keel," "basal margin continued," &c., "small lamella," "raised lamella," &c. of Pfeiffer, Cat. Phan. I call it "*labral*" lamella, because it appears to me to grow out of the labral side of the shell, one specimen of *Lewisia Agassiziana* in progress of development clearly denoting the fact. It answers to the "*umbilical keel*" of some of the *Cyclotus*. In "*measurement*" of height the axis is placed at right angles to the base, so that "height" signifies distance between two parallel lines, the apex touching one, and the extreme lower edge of the aperture touching the other, the axis being at right angles. "Greatest breadth" measures from the edge of the aperture about the periphery to its extreme opposite at the other side of the last whorl, the axis being still at right angles. "Least breadth" is when three parts of the last whorl touch two parallel lines, that is, the plane or edge of the aperture, the back of

the last whorl, and narrowest part of it close to the aperture, or the penult whorl.

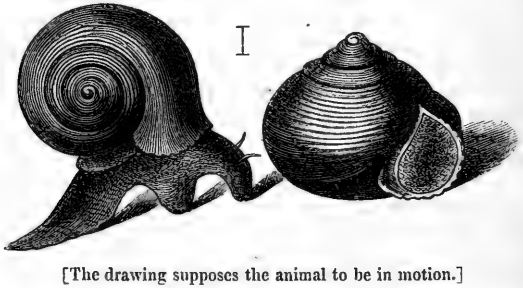
With, then, the one species from Polynesia, *Electrina succinea*, the total of *Stoastomidæ* amount to 81 species known; and I proceed to propose an entirely new arrangement of them. Professor Adams foresaw the necessity and propriety of it. In his 'Monograph of Stoastoma,' p. 4, occur the following passages:—"The value of this genus is equal to that of the Lamarckian genera of *Cyclostoma* and *Helicina*. If these should be generally received as families, subdivided into several genera according to the plan of Dr. L. Pfeiffer, it will be entitled to constitute a distinct family, STOASTOMIDÆ. Some of the characters rarely, if ever, occur in other genera, while the specific differences consist partly in slight modifications of these characters. Such are the blunt but not reflected edge of the labrum and the spiral lamella issuing from the umbilicus. The genus has thus a very obvious type, quite distinct from any hitherto discovered. An affinity with the *Cyclostomidæ* is established between *Aperostoma* (Troschel) and the depressed and discoidal species of *Stoastoma*." "Its affinity with the *Helicinidæ* is established between *Lucidella* (Swainson) (??), and some of the conical species, as *S. Redfieldianum* and *S. Leanum*, by their general form and sculpture, and by the form of the base. But observations on the animals will be of more value on this subject. We were not so fortunate as to obtain living specimens. While preparing this Monograph, a correspondent informs us that *S. pisum* when alive is sea-green."

In raising *Stoastoma* into a family, I am thus justified by Professor Adams, and only carry out his views in calling it, Family *Stoastomidæ*, Adams.

Fortunately I happen to be "the correspondent" who found the shell *S. pisum* in "a living state;" when it is, and continues after, if so taken, of a "sea-green" colour externally. I have also examined the outward form of the animal. The following are my rough original notes made long ago upon it:—

"STOASTOMA PISUM.

"The animal seems to have but one pair of horns, and is thus shaped.



[The drawing supposes the animal to be in motion.]

"*Horns* short, thick at base, and pointed. Mollusk black, or of the darkest bottle-green. Seems to aid its progress by its snout."

So different, then, is the animal and shell from either *Cyclostomidæ* or *Helicinidæ*, that with propriety we may take it out of either family and place it as a distinct family, STOASTOMIDÆ, Adams, which I divide into the following genera; adding, however, to Adams' description, "all the species"—"are sculptured with spiral lines;" this, "except very rarely, as in the instance of *S. Philippianum*;" and it is right also to mention, that this family possesses the habit of absorbing part of the internal structure of their shells, as pointed out by Mr. Bland in a paper read before the Lyceum of Nat. Hist. N. Y. (see Annals), Feb. 27th, 1854.

The genera will stand thus:—

First, those most singular shells having, as it were, two mouths, such as the only two hitherto known, *St. Agassizianum*, Ad., and *St. Philippianum*, Ad., demand a section to themselves. These and two others I shall call Genus LEWISIA, in compliment to Prof. Lewis Agassiz.

Secondly, those beautiful ones, like *St. Gouldianum*, with long projecting termination of the last whorl, and such decided sculpture of a few (four or six) strong transverse striæ, with fine ones intervening—being all of subdiscoidal form ("*Gouldia*" being preoccupied among marine shells), I shall call Genus "WILKINSONÆA," in honour to the memory of the lady whose name it bears, as well as to that of Adams, it being the second shell of the kind he described: with a subdivision for those devoid of the lengthened last whorl, but with similar sculpture.

Thirdly, those singular shells with somewhat depressed spire, subangulated on the upper part of the last whorl, then *quasi* straight or flat at the periphery, and then subangulated again at the base, Genus "FADYENIA," in memory of the lamented author of the 'Flora of Jamaica.'

Fourthly, those shells which represent the *S. pisum*, the first type, and are subglobose, STOASTOMA.

Fifthly, depressed conic shells, like unto *S. Chittyanum*, Genus METCALFEIA; *S. Chittyanum* being the only one described by Adams.

Sixthly, the globose, discoidal forms, such as *Stoastoma Cumingianum* (that name being elsewhere preoccupied), I call Genus "PETITIA," as the second named by Adams, and in compliment to M. Petit de la Saussaye.

Seventhly, globose conic shells, like *S. Lindsleyanum*, I call Genus "LINDSLEYA."

And, eighthly, the subdiscoidal, like *S. Blandianum*, I nominate Genus "BLANDIA."

In assigning the following new specific names, it will be found that I have adopted Prof. Adams's course of naming them after persons. In his list of nineteen species, only one, *S. pisum*, is otherwise named. I have called all my new genera after persons recorded by Adams,

and all my new species after scientific men, or persons living, wel known among conchologists, the exceptions of personal friends being very few. And let me hope, that in so doing, I show the high esteem I feel this family of shells is entitled to, and also my great respect for the names I have made use of.

STOASTOMIDÆ, Adams.

Gen. Lewisia, Chitty.

1. L. Agassiziana, *Ad.*
2. L. Philippiana, *Ad.*
3. L. Woodwardiana, *Chitty.*
4. L. MacAndrewiana, *Ch.*

Gen. Wilkinsonæa, Chitty.

5. W. Wilkinsonæana, *Ad.*
6. W. Gouldiana, *Ad.*
7. W. Schomburghkiana, *Ch.*
8. W. Abbottiana, *Ch.*
9. W. Jardineiana, *Ch.*
10. W. Greenwoodiana, *Ch.*
11. W. Laidlawiana, *Ch.*
12. W. Tappaniana, *Ad.*
13. W. Hollandiana, *Ad.*
14. W. Dysoniana, *Ch.*
15. W. Hanleyana, *Ch.*
16. W. Bensoniana, *Ch.*
17. W. Moussoniana, *Ch.*

Gen. Fadyenia, Chitty.

18. F. Fadyeniana, *Ad.*
19. F. Bowerbankiana, *Ch.*
20. F. Grayana, *Ch.*

Gen. Stoastoma, Ad.

21. S. pisum, *Ad.*
22. S. Pfeifferianum, *Ad.*
23. S. Livesayanum, *Ch.*
24. S. (Electrina) succineum, *Sowb.*

Gen. Metcalfeia, Chitty.

25. M. Metcalfeiana, *Ch.*
26. M. Chittyana, *Ad.*
27. M. Bacquićana, *Ch.*
28. M. Sutherlandiana, *Ch.*
29. M. Mörchiana, *Ch.*
30. M. Verreauxiana, *Ch.*
31. M. Sinclairiana, *Ch.*
32. M. Mitchelliana, *Ch.*
33. M. Dorhniana, *Ch.*
34. M. Layardiana, *Ch.*
35. M. Swiftiana, *Ch.*

Gen. Petitia, Chitty.

36. P. Petitiana, *Ad.*
37. P. Cumingiana, *Ad.*
38. P. Anthoniana, *Ad.*
39. P. Stevensiana, *Ch.*
40. P. Fortuneana, *Ch.*
41. P. Adamsiana, *Ch.*

42. P. Tayloriana, *Ch.*
43. P. Stricklandiana, *Ch.*
44. P. Stokesiana, *Ch.*
45. P. Grevilleana, *Ch.*
46. P. Carpenteriana, *Ch.*
47. P. (? Lewisia) Barroniana, *Ch.*

Gen. Lindsleya, Chitty.

48. L. Lindsleyana, *Ad.*
49. L. Pickeringiana, *Ch.*
50. L. Redfieldiana, *Ad.*
51. L. Jayana, *Ad.*
52. L. Leana, *Ad.*
53. L. Denisoniana, *Ch.*
54. L. Polyblankiana, *Ch.*
55. L. Albersiana, *Ch.*
56. L. Fischeriana, *Ch.*
57. L. Moricandiana, *Ad.*
58. L. Reeveana, *Ch.*
59. L. Shuttleworthiana, *Ch.*
60. L. Boissieriana, *Ch.*
61. L. Gaskoiniana, *Ch.*
62. L. Newcombiana, *Ch.*
63. L. Rüsseana, *Ch.*
64. L. Poeyana, *Ch.*
65. L. Henryana, *Ch.*
66. L. Alderiana, *Ch.*
67. L. Bridgesiana, *Ch.*
68. L. Salléana, *Ch.*
69. L. Arthuriana, *Ch.*
70. L. Gutiereziana, *Ch.*
71. L. Oweniana, *Ch.*
72. L. Wollastoniana, *Ch.*

Gen. Blandia, Chitty.

73. B. Blandiana, *Ad.*
74. B. Jeffreysiana, *Ch.*
75. B. Bairdiana, *Ch.*
76. B. MacGillivrayana, *Ch.*
77. B. Troscheliana, *Ch.*
78. B. Hilliana, *Ch.*
79. B. Trailliana, *Ch.*
80. B. Lukesiana, *Ch.*
81. B. Loweana, *Ch.*

Genus I. Lewisia, Chitty.

Quasi *double-mouthed.*

Lewisia Agassiziana, Chitty. See *Stoastoma Agassizianum*, Ad. Cont. Conch. p. 158; Cat. Phan. p. 234.

The habitat of this shell is near Ackendown, Westmoreland. The "deposit," of which Adams speaks, is still remaining in one of my specimens (the original type), and beyond a doubt is the operculum, like many others I shall describe. It is so fixed in the aperture, that I will not risk its breakage in removal, and so I cannot fully describe it. It is excessively concave in its centre, continued on the labial side in a long, broad, smooth, shining convex plate, shaped like a tongue, and extending almost and sinking into the opposite extreme of "the spiral lamella excessively developed and soldered," &c., as described by Adams.

Lewisia Philippiana, Chitty. See *Stoastoma Philippianum*, Ad. Cont. Conch. p. 158; Cat. Phan. p. 235.

Operculum, still ——?

Hab. Burnt Hill, near Ackendown, Westmoreland, *non* Ackendown.

Lewisia Woodwardiana, Chitty.

Hab. ——? Hanover (unique).

Form, subdiscoidal. *Colour*, very pale horn. *Sculpture*, 14 spiral carinæ, widely apart, rather blunt; about 4 visible on the penult whorl, lines of growth well defined. *Spire*, very slightly elevated, with concave outlines. *Whorls*, 4, very slightly rounded, with a lightly impressed suture; last whorl well rounded. *Aperture*, well detached from the body whorl, slightly depressed and slightly constricted, semielliptical. *Labrum*, double, slightly thickened, reflected and rounded off, smooth, plain, not scolloped. *Labium*, straight, edge produced angularly in its centre, and much rounded and reflected towards the umbilicus. *Labral lamella* (see *ante*), rises somewhat abruptly from the labrum, forming a cavity longer in its interior than the aperture, and joins the last whorl below, beyond the umbilicus, by rather a sharp inflection upwards; so that from its junction to outside the labium is not wider than the lesser diameter of the aperture; exteriorly very convex, with a deep suture between it and the last whorl beneath. *Umbilicus*, concealed. *Operculum*, ——?

Height 0·057, greatest breadth 0·083, least breadth 0·07.

Named in compliment to S. P. Woodward, Esq., British Museum, author of 'Manual of Recent and Fossil Shells,' &c.

Lewisia MacAndrewiana, Chitty (unique).

Hab. Near the Botanic Garden, St. Andrew's. The smallest *Stoastoma*!

Form, subdiscoidal. *Colour*, pearl white, semitransparent, most likely therefore a young shell. *Sculpture*, 25 equidistant fine spiral carinæ. *Spire*, much depressed, with convex outlines. *Whorls*, $3\frac{1}{4}$, well rounded, with rather a deep suture; last whorl well rounded. *Aperture*, well rounded, more than a semicircle, very slightly expanded below; a little detached from penult whorl and very slightly depressed. *Labrum*, slightly double, thin, reflected very shortly, white, shining, smooth, planular. *Labium*, well detached from penult whorl, rather lower than plane of labrum, very slightly curved to the right below. *Umbilicus*, N.B.! apparently very shallow, but covered by an externally convex white callosity, which proceeds from behind the upper end of the labium and covers the umbilicus, and is attached to the body whorl all but at its extreme left; whereunto it may, in older specimens, be entirely soldered. This, though incomplete at the aperture, bears the characters of a complete shell. The *labral lamella* is very slightly produced, rounded at its edge, quite separate from the above callosity on the right, but apparently joining the exterior of it on the left, round the umbilical region.

Height 0·024, greatest breadth 0·046, least breadth 0·036.

I have some doubts as to placing this unique specimen in this subgenus, but think that, from the callosity over the umbilicus and its seeming immaturity, and the appearance that the labral lamella

is not complete, it will, from older or other specimens, be found to be properly classed.

Named in compliment to Robert MacAndrew, Esq., so well known from his valuable dredging operations.

Genus II. Wilkinsonæa, Chitty.

§ 1.

Shell subdiscoidal; last whorl extraordinarily produced. Sculpture, a few strong and many fine carinæ.

Wilkinsonæa Wilkinsonæana, Chitty.

Hab. Yallahs Hill, East face.

The symmetrical form and beautiful sculpture induce me to rank it first. Is was also the second *Stoastoma* found, though not described till long after *S. Gouldianum*, the latter in Sept. 1849 and the former in Oct. 1850; for Adams at that time was inclined to treat it as a mere variety! *Stoastoma Wilkinsonæanum*, Ad. Cont. Conch. p. 148; Cat. Phan. p. 233.

Wilkinsonæa Gouldiana, Chitty.

Hab. The backwoods in Manchester's highest mountains, northern region. *Stoastoma Gouldiana*, Ad. See Mon. Stoast. Adams, 1849, p. 5; Cat. Phan. p. 232.

Var. *a*. Ad.

Same habitat.

Labrum not so much produced above. *Aperture* more cupped and expanded in proportion. (See, as above.)

Var. *b*. Chitty.

Hab. Trelawny, still further north.

Is much smaller than var. *a*., and labrum and aperture are miniature of *S. Gouldianum* proper.

Height 0·035, greatest breadth 0·073, least breadth 0·058.

Wilkinsonæa Schomburghkiana, Chitty.

Hab. Moreland, Manchester.

Form, subdiscoidal. *Colour*, semitransparent very pale horn. *Sculpture*, lines of growth very apparent; counting from the suture, there are five less prominent and then one very prominent rounded spiral carinæ, three less and one very prominent, two less and one very prominent, two less and one prominent, three less and one very prominent, and eight less, gradually becoming finer round the umbilicus: visible on the upper whorls, three less, one prominent and two less. *Spire*, much depressed, with considerably convex outlines. *Whorls*, $3\frac{2}{3}$rds, well rounded but flattened at the lower part; suture very lightly impressed. *Aperture*, constricted at more than the width of

the last whorl from the labrum, about 0·015, and then convexly rounded externally and concavely internally; widely expanded, deflected below, subsemielliptical. *Labrum,* leaves the body at about 50°, very much thickened and reflected; pure white; deeply scolloped by the strong spiral carinæ, which form five blunted points. *Labium* *, nearly straight above, curved below abruptly to the right and then to the left back again; much below the plane of the labrum, joining it at about the constriction of the aperture above, but rising to the plane below. *Umbilicus,* narrow and deep. *Labral lamella,* very slightly rounded, and projecting at its junction with the labrum, narrow and slightly produced below. *Operculum,* very broadly margined all round by a wide convex fold and a raised lamella on the labral side like the capital italic *D*; very deeply concave, with, in the hollow, three or four rounded raised ridges crossing diagonally from right above to left below, which are finely decussated diagonally from left to right, the labral side finely plaited, the lower left end expanding broadly, and folding over the lower part of the labium in thin plaits or laminæ; which plaits are continued on the lower side of the operculum. A very interesting shell.

Height 0·039, greatest breadth 0·074, least breadth 0·053.

Named in honour of Sir Robert Schomburgk, the celebrated traveller in Guiana, and great naturalist, &c.

WILKINSONÆA ABBOTTIANA, Chitty.

Hab. ——? Hanover.

Form, subdiscoidal. *Colour,* white, subtransparent, shining. *Sculpture,* five very strong spiral carinæ, with, at the periphery, two highly microscopic, scarcely visible, intervening the strong lines; three rather stronger, below the lowest strong carina round the umbilicus; one strong on the upper whorls. *Spire,* much depressed, with convex outlines. *Whorls,* 4, very slightly rounded, with a light suture. *Aperture,* extraordinarily produced from the body-whorl, rather constricted far away from the labrum, and rather cupped inwards to the labrum; flattened above, expanded and depressed below, semielliptical. *Labrum,* extraordinarily produced and depressed at the uppermost strong spiral carina, slightly scolloped and pectinated at and by the other strong carinæ, reflected and thickened slightly. *Labium,* widely detached from the body-whorl, very little curved to the right below, very much below the plane of the labrum. *Umbilicus,* shallow and broad. *Labral lamella,* slightly and angularly spread out close to the labrum, then thin and narrow and not concealing the umbilicus. *Operculum,* most extraordinary, and who can describe it?! Very deeply concave in the middle, with a broad raised margin all round, very broad and much rounded on the labial side, which has a largely developed tooth-like horizontal plait or fold half-way down it descending into the hollow, and a much larger one proceeding from the lowest labial side, flowing, as it were, to the left

* It is singular, that out of only ten specimens, every one should have the operculum which partially hides the labium.

well over the labial side, and also over the labium, not concealing the lowest part of the operculum, but showing the lowest part of the labial side to be broad and spreading,—trumpet-shaped. Unfortunately I possess but two specimens, only one having the operculum, which is so firmly fixed in the shell that I dare not further attempt its extraction, and therefore I cannot further examine its extraordinary structure.

Height 0·034, greatest breadth 0·066, least breadth 0·049.

Named in compliment to Captain George Abbott, of the R.W.I. Steam Mail Company's Service (at present commanding the 'Magdalena'), for his great care and attention in procuring and preserving specimens of natural history for the Zoological Society of London.

WILKINSONÆA JARDINEIANA, Chitty.

Hab. Swift River Head, St. George's.

Form, subdiscoidal. *Colour*, very pale horn. *Sculpture*, lines of growth visible; seven strong spiral carinæ, without intervening fine ones; three strong, on upper whorls. *Spire*, slightly elevated, with concave outlines. *Whorls*, 4, moderately convex, with a lightly impressed suture; last whorl wholly detached from the penult, extending about one-third the widest breadth of the shell beyond it, and angularly and pointedly produced above. *Aperture*, slightly constricted about the point of attachment to the penult whorl, then bulging or swelling out and becoming slightly constricted at the labrum; semi-elliptic, but modified by the below-mentioned depression of the labrum, and production of the last whorl, and also, in a corresponding degree, on the lower side. *Labrum*, produced above to an extraordinary degree at the second carina, and there very much depressed or bent inwards, thickened and reflected; very slightly scolloped by the spiral carinæ. *Labium*, much detached from the penult whorl; upon a plane with the lower part of the labrum, but much below it above; slightly sinuate above, and very much so to the right at its junction with the labrum below. *Umbilicus*, moderately deep, only partially concealed by the *labial lamella*, which is narrow and shortly incurved towards the umbilicus. *Operculum*, ——?

Height 0·024, greatest breadth 0·059, least breadth 0·042.

Named in compliment to my friend Sir William Jardine, Bart., of Applegarth.

WILKINSONÆA GREENWOODIANA, Chitty.

Hab. ——? Hanover.

Form, subdiscoidal. *Colour*, pale horn. *Sculpture*, lines of growth visible; three fine spiral carinæ and one strong, and so on until the fifth strong carina, below which, round the umbilicus, are six fine carinæ; on the upper whorls one strong in the centre of six fine carinæ. *Spire*, depressed with convex outlines. *Whorls*, $3\frac{2}{3}$, slightly convex, with lightly impressed suture. *Aperture*, separated from penult whorl in an elegant curved line, more than semicircular,

rather flattened above and very slightly expanded. *Labrum,* spreading not very prominently above, white and smooth, slightly reflected and expanded about its centre, pectinated very slightly by four of the stronger carinæ. *Labium,* slightly detached from penult whorl; sinuous, thin, and slightly reflected; on the plane of the labrum below, much below it above. *Umbilicus,* moderately deep and narrow, well circumscribed by the *labial lamella,* which is sharply and slightly produced. *Operculum,* ——?

Height 0·032, greatest breadth 0·054, least breadth 0·044.

Named in compliment to Major Greenwood, whose collection of shells from New Zealand was sent by him to the British Museum.

WILKINSONÆA LAIDLAWIANA, Chitty.

Hab. Pool's Rock, Hanover.

Form, subdiscoidal. *Colour,* very pale green. *Sculpture,* 1st, 2nd and 3rd spiral carinæ, strong; 4th strongest; 5th, 6th and 7th strong; 8th strongest; 9th, 10th and 11th strong; 12th strongest; 13th, 14th and 15th strong; 16th strongest; 17th, 18th and 19th strong; 20th strongest; 21st and 22nd stronger; 23rd, 24th, 25th and 26th, round umbilicus, fine; the strong lines are all obsolete behind the aperture; on the upper whorls are 5 strong, 1 strongest, and 2 stronger carinæ. *Spire,* slightly elevated, with convex outlines. *Whorls,* $3\frac{1}{2}$, well rounded, with deep suture. *Aperture,* very slightly constricted at a distance from the labrum, and the strong carinæ become obsolete; thence, aperture well expanded; rather depressed above and expanded below; more than a semicircle. *Labrum,* very double, more so above than below; joins the body-whorl at the constriction by an angle of about 70°; rather strongly produced at the first strongest carina; deeply and broadly pectinated and scolloped between the strongest carinæ, namely the 4th, 8th, 12th, 16th, and 20th, making five points; slightly thickened and reflected; white. *Labium,* slightly reflected, rather thin, slightly curved to the right above and below; well detached from the body-whorl; below the plane of the labrum. *Umbilicus,* moderately deep, broad; little affected by the *labral lamella,* though it is equally and strongly produced all round. *Operculum,* shallow in the centre and very flatly concave, with two sharp diagonal carinæ across it, from right above to left below: labral side with a broad border and raised lamella: upper end, diagonally plaited from left above to right below, and lower end the same, only from right above to left below.

Height 0·036, greatest breadth 0·064, least breadth 0·048.

Named in kind remembrance of my bosom friend, Henry Laidlaw, Esq., Stipendiary Justice, Manchester, Jamaica.

§ 2.

Last whorl not strongly produced. Sculpture a few strong, and many fine carinæ.

WILKINSONÆA TAPPANIANA, Chitty. See *Stoastoma Tappanianum*, Ad. Cont. Conch. p. 149; Cat. Phan. p. 233.

Hab. Peace River, Manchester.

WILKINSONÆA HOLLANDIANA, Chitty. See *Stoastoma Hollandianum*, Ad. Cont. Conch. p. 149; Cat. Phan. p. 234.

Hab. The back woods of Manchester.

WILKINSONÆA DYSONIANA, Chitty.

Hab. John Crow Hill, Portland.

Form, subdiscoidal or very depressed conic. *Colour*, very pale yellow. *Sculpture*, beautiful,—6 very highly raised sharp spiral carinæ, with about 11 very fine highly microscopic carinæ intervening in the first space below the suture, 9 on the second space, 7 on the third, fewer on the fourth and fifth, and very numerous beyond the sixth strong carina round the umbilicus. On the upper whorls, one strong carina in the middle, and one close above the suture, with a proportionate number of very fine intervening. *Spire*, slightly elevated, with very convex outlines. *Apex*, sharp. *Whorls*, $4\frac{1}{4}$, scarcely rounded, with very light suture; last whorl scarcely produced from the body-whorl. *Aperture*, very slightly constricted at the fauces, not expanded, except very slightly below. *Labrum*, pectinated and very slightly scolloped by the six strong carinæ, thin and sharp. *Labium*, detached from the penult whorl; on a plane with the labrum, very slightly rounded above, much below to the right. *Umbilicus*, very deep and suddenly narrowed. *Labral lamella*, very strongly produced close to the labrum above, less prominent round the umbilicus. *Operculum*, slightly concave in the middle, with a deep broad margin all round, very fine granulations in the hollow, with (?) four very fine distant carinæ crossing diagonally from right above to left below.

Height 0·04, greatest breadth 0·066, least breadth 0·053.

Named in compliment to the memory of the late Mr. David Dyson of Salford, so well known for his zoological researches in Central America, Venezuela, &c.

WILKINSONÆA HANLEYANA, Chitty.

Hab. Pool's Rock, Hanover.

Form, subdiscoidal, or very depressed conic. *Colour*, pale horn. *Sculpture*, lines of growth, wide apart: 3 strong spiral carinæ; 4th, stronger; 3 strong; 8th, stronger; 3 strong; 12th, stronger; 3 strong; 16th, stronger; 2 strong; 19th, stronger; and 4 strong round the umbilicus. On the upper whorls, 3 strong; 1 stronger; and 3 strong. *Spire*, slightly elevated, with straight or very slightly

concave outlines. *Whorls*, 3½, well rounded with light suture. *Aperture*, much constricted behind the labrum, and then much dilated; depressed above and expanding below; subsemicircular. *Labrum*, double, slightly produced above; pectinated and slightly scolloped by the five stronger carinæ; attached to the body-whorl and produced at an angle of about 70°; slightly thickened and reflected. *Labium*, much lower than the plane of the labrum above; less so, below, moderately detached from the body-whorl; rather curved at both extremities. *Umbilicus*, shallow and broad, not affected by the labral lamella, which is fine and narrow throughout. *Operculum* ——?

Height 0·041, greatest breadth 0·061, least breadth 0·047.

Named in compliment to Sylvanus Hanley, Esq., author of 'British Shells,' &c.

WILKINSONÆA BENSONIANA, Chitty.

Hab. Roaring River, Westmoreland.

Form, subdiscoidal. *Colour*, rather dark brown. *Sculpture*, six prominent sharp spiral carinæ intermingled with eighteen less strong: on the upper whorls, one strong between about six less strong. *Spire*, very little elevated, with slightly concave outlines. *Whorls*, 3½, slightly rounded with a very light suture. *Aperture*, semicircular, depressed above in the uppermost third, much expanded below. *Labrum*, much and pointedly produced above, at an angle of about 75° from the body-whorl, white, slightly thickened and reflected, angulated, not pectinated, by all five points of the sharper carinæ. *Labium*, rather curved below, much detached from body-whorl, on a plane with the labrum at the lower end, much below it above. *Umbilicus*, rather deep and broad. *Labral lamella*, regularly produced, strong but narrow, subangularly pointed close at the labrum. *Operculum*, moderately concave, serpentine on the labial side, with a groove on the labral side.

Height 0·027, greatest breadth 0·049, least breadth 0·038.

Named in compliment to W. H. Benson, Esq., who has contributed so much to our Indian land-shells.

WILKINSONÆA MOUSSONIANA, Chitty.

Hab. Yallahs Hill.

Form, subdiscoidal. *Colour*, white, semitransparent. *Sculpture*, 22 lines, four of which are very slightly stronger than the rest, lowest most strong and prominent; on the upper whorls, 7. *Spire*, slightly elevated, with convex outlines. *Whorls*, 3½, slightly rounded, with a light suture. *Aperture*, slightly expanded and depressed below, more than a semicircle. *Labrum*, thickened and reflected, double above, very slightly scolloped by the four stronger carinæ, or rather the labrum is produced in straight lines to meet each stronger carina, forming three straight lines scarcely pectinated, in octagonal shape, moderately and roundly produced above from the body-whorl. *Labium*, rather curved, below the plane of the labrum above, moderately detached from the body whorl. *Umbilicus*, deep. *Labral lamella*, sharply, finely and uniformly produced. *Operculum*, slightly

concave, smooth, with ? two strong rounded carinæ vertically crossing the hollow.

Height 0·035, greatest breadth 0·058, least breadth 0·042.

Named in compliment to Prof. A. H. Mousson of Zurich, Switzerland.

Genus III. Fadyenia, Chitty.

Spire depressed, subangular on the upper part of the last whorl, subplanulate at the periphery, subangulate below, and subplanulate round the umbilicus.

Fadyenia Fadyeniana. See *Stoastoma Fadyenianum*, Ad. Mon. Stoast. Adams, 1849, p. 7 ; Cat. Phan. p. 231.

Hab. Hills S.W. of Port Henderson.

Other shells, I have reason to know, have been distributed for this.

Fadyenia Bowerbankiana, Chitty.

Hab. Roaring River, Westmoreland.

Form, subdiscoidal. *Colour*, very pale tinge of brown. *Sculpture*, 24 strong equidistant (above) spiral carinæ, wider apart below, and more faint round the umbilicus, and obsolete at the labrum ; with a hiatus between the 13th and 14th, equal to the space occupied by 3 carinæ, at the periphery ; 7 visible on the upper whorls. *Spire*, much depressed with concave outlines. *Apex*, mammillated. *Whorls*, 4, well rounded above, with a deep suture ; last whorl rather large and expanded ; subangular at the upper part, subplanulate at the periphery, and subangular below, subplanulate, but more convex round the umbilicus than in *F. Fadyeniana* ; the whorl is much wider above than below, so that the subplanulate periphery is nearly at right angles with the outline of the spire. It is the same in *F. Fadyeniana*. *Aperture*, very slightly constricted above behind the labrum ; dilated, large ; rather more constricted below, behind, and at the labrum ; upper third flattened almost at a right angle with the labium ; well rounded below. *Labrum*, simple, white. *Labium*, on a plane with the labrum, well detached from the body-whorl ; thickened and reflected towards the umbilicus, more so below than above ; much rounded to the right below. *Umbilicus*, rather deep. *Labral lamella*, well defined, strong and prominent, and inflected upwards towards the umbilicus. *Operculum* ——?

Height 0·041, greatest breadth 0·08, least breadth 0·063.

Named in compliment to my friend and fellow-labourer in science, Dr. L. Q. Bowerbank, M.D., of Kingston, Jamaica.

Note.—In *F. Fadyeniana* fine spiral carinæ intervene the coarser, and all are more distantly apart.

Fadyenia Grayana, Chitty.

Hab. Yallahs Hill.

Form, subdiscoidal. *Colour*, rich light brown. *Sculpture*, about 33 irregular and inequidistant, some fine and some rather strong,

spiral carinæ, of which 8 or 9 are visible on the upper whorls. *Spire*, much depressed, less than in *F. Bowerbankiana*, with concave outlines. *Apex*, mammillated. *Whorls*, $4\frac{2}{3}$rds, with a moderate suture; last whorl typical, subangulated and subplanulated as in *F. Bowerbankiana* and *F. Fadyeniana*. *Aperture*, semicircular, only slightly affected by the subangularity above and below the periphery, very slightly dilated. *Labrum*, double; outer edge pectinated by the spiral carinæ, inner edge simple, white and shining. *Labium*, white, thickened and reflected towards the umbilicus about its centre, below much curved to the right, much lower than the plane of the labrum at its lower end; widely separated from the body-whorl. *Umbilicus*, very deep and narrow. *Labral lamella* very broadly and sharply produced throughout; besides the labral lamella within the umbilicus, extending from the back of the labium to the umbilicus and body-whorl, are four or five well-produced distinct sharp lamellæ. *Operculum*, deep concave in the centre, and a broad margin all round, which, on that side, folds well over the labrum, especially below; much covered by numerous coarse granulations, and in the hollow on the labral side with four or more strong raised lamellæ, which are also covered with coarse granulations.

Height 0·076, greatest breadth 0·105, least breadth 0·087.

Named in compliment to Dr. J. E. Gray, British Museum.

Genus IV. Stoastoma, Adams.

Shell subglobose.

Stoastoma pisum, Ad. See Mon. Stoast. Adams, 1849, p. 11; Cat. Phan. p. 228.

Sculpture, almost obsolete, very numerous raised spiral microscopic carinæ, which are well defined on the upper whorls, four or five being visible. *Labrum*, double. *Labium*, well detached from the penult whorl. *Operculum*, concave and finely granulated in its concavity.

Hab. Manchester, generally, and near Accompong Town, St. Elizabeth.—*Chitty.*

Stoastoma Pfeifferianum, Ad. See Mon. Stoast. Adams, p. 8; Cat. Phan. p. 230.

Labrum, double. *Operculum*, concave, finely granulated in its concavity; margin sharp on the labral side, rather broad, but not thickened on the labial side.

Hab. Manchester back woods.—*Chitty.*

Stoastoma Livesayanum, Chitty.

Hab. Near Ashley Hall, Trelawny.

Form, subglobose. *Colour*, pale yellow. *Sculpture*, 11 distant, blunt and raised spiral carinæ, of which 5 are visible on the upper whorls. *Spire*, conic, moderately elevated, with slightly convex out-

lines. *Whorls*, 4⅖rds, scarcely rounded, with a very light suture. *Aperture*, very slightly expanded; semielliptical, widest in the upper third of the labrum, very oblique. *Labrum*, pectinated by the spiral carinæ; double, very slightly reflected. *Labium*, slightly below the plane of the labrum, well detached from penult whorl, but connected with it by five or six of the spiral carinæ; arcuated to the left above into a sharp angle with the labrum, very much curved below to the right. *Umbilicus*, very small and deep. *Labral lamella*, strongly produced above, but immediately lost in the umbilicus. *Operculum*, semielliptical, planular, with fine granulations on the labral side, and concave on the labial side, with a raised ridge all round, which is much thickened and rounded, and highly raised about the lower part of the labral side.

Height 0·081, greatest breadth 0·103, least breadth 0·08.

Named in compliment to my friend Dr. Livesay, a devoted collector of genera.

Stoastoma, or Electrina, succineum, Sowerby, will belong to this group. See Cat. Phan. p. 228.

Genus V. Metcalfeia, Chitty.

Shell, depressed conic.

Metcalfeia Chittyana, Chitty. See *Stoastoma Chittyanum*, Ad. Mon. Stoast. Ad. 1849, p. 10; Cat. Phan. p. 231.

Hab. Peace River, Manchester.

Operculum, very slightly concave, with two strong lamellæ crossing its centre horizontally, and on the labial side two much finer ones above, and three or four below.

Metcalfeia Metcalfeiana, Chitty.

Hab. ——? Hanover.

Form, depressed conic. *Colour*, pale horn. *Sculpture*, lines of growth visible; sixteen strong, but not much raised inequidistant spiral carinæ, those round the umbilicus being most prominent, with here and there one very fine carina intervening. On the upper whorl, 5 carinæ. *Spire*, moderately elevated with very slightly concave outlines. *Apex*, obtuse. *Whorls*, 4½, very moderately convex, with a lightly impressed suture. *Aperture*, subsemicircular, slightly spreading. *Labrum*, subangularly produced from the body-whorl, not abruptly produced, deeply pectinated by the spiral carinæ. *Labium*, slightly detached from the body-whorl, very slightly curved below to the right; much below the plane of the labrum. *Umbilicus*, very deep and narrow. *Labral lamella*, very little, but sharply, produced, not concealing the umbilicus. *Operculum*, slightly concave, finely granulated in the hollow with three strong apparently not serrated horizontal lamellæ, extending from the labral side over two-thirds of the width of the operculum, and one equally strong between

the first and second above extending one-third across only, the lowest slightly curved downwards.

Height 0·073, greatest breadth 0·096, least breadth 0·079.

Named in compliment to W. Metcalfe, Esq., the possessor of a fine cabinet of shells.

METCALFEIA BAQUIÉANA, Chitty.

Hab. Near "The Cave," high road, Westmoreland.

Form, depressed conic. *Colour,* rich brown, fading into faint yellow and white. *Sculpture,* 19 spiral carinæ, with one fine intervening each pair. On the upper whorls 6 carinæ. *Spire,* moderately and rather concavely elevated. *Whorls,* $4\frac{1}{2}$, slightly rounded with a lightly impressed suture. *Aperture,* slightly expanded, shortly and roundly produced from the penult whorl, scarcely depressed; subsemicircular, rather dilated above. *Labrum,* pectinated by all the stronger carinæ, slightly scolloped. *Labium,* slightly detached from the penult whorl, rather abruptly detached from the labrum above and curved below to the right, much lower than the plane of the labrum below. *Umbilicus,* not deep. *Labral lamella,* expanded above, narrow round the umbilicus. *Operculum,* concave in the middle, seven lamellæ radiating horizontally from the labial side, one short and central above, one (the longest) crossing the hollow, one short on the labral side, one longer (second in length), one short, and two longer (third in length) below.

Height 0·06, greatest breadth 0·089, least breadth 0·071.

Named in compliment to my bosom friend, Mons. Baquié, of Westmoreland, Jamaica.

This shell is closely allied to *Metcalfeia Chittyana* at first glance, but differs in many minute particulars; the pectination on the labrum is alone sufficient to distinguish it; and their habitats are about sixty miles asunder. The spire is more conical than in *M. Chittyana,* spiral carinæ more distant, labium less widely detached from penult whorl, upper part of labrum more produced, apex is more blunt. In *M. Chittyana* the labral lamella expands suddenly above close to where it leaves the labium, rising above the plane of the aperture, and then descending round the umbilicus in a uniform curve without projecting; in *M. Baquiéana* it does not rise above the plane; but after leaving the labium, it spreads out towards the centre of the umbilicus, and continues uniform till it is lost in the umbilicus. In the former the lower end of the labium is on a plane with the labrum, in this it is below the plane. In this, the aperture is larger and more oblique, and the last whorl is less expanded.

METCALFEIA SUTHERLANDIANA, Chitty.

Hab. Belmont, St. James.

Form, depressed conic. *Colour,* very pale horn or white. *Sculpture,* lines of growth visible; 19 rather strong inequidistant spiral carinæ, with an unequal number of finer ones intervening. On the upper whorls 5 carinæ. *Spire,* moderately and rather concavely elevated. *Whorls,* 5, moderately elevated, with a deep suture.

Aperture, less than a semicircle, slightly expanded in the lower two-thirds, slightly oblique. *Labrum*, unequally and not strongly pectinated by the spiral carinæ, very slightly produced above. *Labium*, well detached from the body-whorl, attached to labrum above in a slight curve, very slightly waved in its centre, and well curved to the right below. *Umbilicus*, moderately deep, and labral lamella moderately produced. *Operculum*, —— ?

Height 0·072, greatest breadth 0·12, least breadth 0·079.

Named in compliment to Dr. P. Sutherland, the Arctic voyager, now Government Surveyor of Port Natal.

METCALFEIA MÖRCHIANA, Chitty.

Hab. Roaring River, Westmoreland.

Form, depressed conic. *Colour*, very pale horn. *Sculpture*, 5 strong spiral carinæ, 1 fine; 7th strong and 3 fine; 8th to 15th strong and 1 fine intervening each; on the upper whorls 8 strong. *Spire*, slightly elevated with concave outlines. *Whorls*, $4\frac{3}{4}$, very slightly rounded with a light suture. *Aperture*, slightly expanded, more below than above; slightly produced, abruptly from the penult whorl: more than a semicircle. *Labrum*, thin, and very slightly reflected; pectinated by the strong carinæ. *Labium*, on a plane with the labrum above, lower below; joining the labrum with a curve above; much curved to the right, below well detached from the penult whorl. *Umbilicus*, narrow and deep. *Labral lamella*, well produced above and rather wide below. *Operculum*, moderately concave in the middle, with a wide border on the labial side, which is vertically grooved and again crossed by four or five raised horizontal plaits: labral side with about eight short horizontal lamellæ, about four extending across the hollow, and a linguiform point at the lower extremity of the labial side overlapping the labium.

Height 0·072, greatest breadth 0·1, least breadth 0·074.

Named in compliment to M. Mörch, of Copenhagen, distinguished for his knowledge of Mollusca.

METCALFEIA VERREAUXIANA, Chitty.

Hab. —— ? Hanover.

Form, depressed conic. *Colour*, pale horn or yellow. *Sculpture*, 17 strong spiral carinæ with 1 fine intervening each. On the upper whorls 5 strong with 1 fine intervening. *Spire*, moderately elevated, with straight outlines. *Whorls*, $4\frac{1}{3}$, moderately rounded, with a light suture. *Aperture*, scarcely separated from the body-whorl, more than a semicircle, large, rather expanded and depressed below. *Labrum*, very slightly produced above, strongly and prominently pectinated by the strong carinæ, imbricated in those round the periphery, white and shining. *Labium*, slightly rounded into the labrum above, and on the right below; very slightly reflected; on a plane with the labrum above, lower below; very slightly detached from the body-whorl. *Umbilicus*, deep and narrow. *Labral lamella*, sharp and very slightly produced. *Operculum*, moderately concave, with large coarse granulations on the upper part of the labial side,

slightly lamellated horizontally; lower portion of labial side broad and spreading over the labium, with a deep groove, and terminating with a broad uplifted linguiform plait, which is distinct from the spreading upper portion.

Height 0·06, greatest breadth 0·078, least breadth 0·06.

Named in compliment to M. Verreaux, an experienced zoological collector.

METCALFEIA SINCLAIRIANA, Chitty.

Hab. Maroon Town, St. James (unique).

Form, depressed conic. *Colour*, pale horn or yellow. *Sculpture*, 9 strong spiral carinæ, with one fine intervening; on the upper whorls, 3 strong and fine ones intervening. *Spire*, slightly elevated, with rather concave outlines. *Apex*, rather acute. *Whorls*, $4\frac{1}{4}$, moderately rounded, with a light suture. *Aperture*, slightly spreading about the periphery to below; subsemicircular. *Labrum*, very slightly produced above, more so below; broadly detached from the body-whorl, strongly pectinated by the spiral carinæ. *Labium*, well detached from the body-whorl, on a plane with the labrum above, lower below, slightly curved to the right above, much so below, much thickened. *Umbilicus*, narrow and deep, well covered by the *labral lamella*. *Operculum*, ——?

Height 0·057, greatest breadth 0·084, least breadth 0·067.

Named in compliment to Dr. Andrew Sinclair, R.N., late Colonial Secretary of New Zealand.

METCALFEIA MITCHELLIANA, Chitty.

Hab. Maroon Town, St. James (unique).

Form, depressed conic. *Colour*, pale horn. *Sculpture*, 15 strong spiral carinæ, rather inequidistant, with one very fine intervening, and about the periphery sometimes two and sometimes three fine carinæ: at the periphery the two strong carinæ are widest apart, with three fine intervening; the next division below has one fine only, and the next below, two; on the upper whorls four strong carinæ. *Spire*, slightly elevated, with rather concave outlines. *Whorls*, $4\frac{1}{2}$, slightly rounded, with a moderate suture; last whorl expanded above and falling away below. *Aperture*, semicircular, much dilated below the periphery. *Labrum*, very slightly pectinated by the strong carina, very slightly produced above. *Labium*, on a plane with the labrum above, much lower below; slightly curved to the right below, moderately detached from the body-whorl. *Umbilicus*, deep, little affected by the labral lamella. *Operculum*, ——?

Height 0·07, greatest breadth 0·095, least breadth 0·077.

Named in compliment to D. W. Mitchell, Esq., the energetic Secretary of the Zoological Society of London.

METCALFEIA DORHNIANA, Chitty.

Hab. Pedro District, St. Ann's.

Form, depressed conic. *Colour*, pale horn. *Sculpture*, 4 strong spiral carinæ and 1 fine, 1 strong and 1 fine, 1 strong and 3 fine,

1 strong and 2 fine, and 1 strong and 3 fine, 1 strong, then 8 strong with fine intervening; on the upper whorls, 5 spiral carinæ. *Spire*, slightly elevated, with concave outlines. *Whorls*, 4, very slightly rounded with a moderate suture. *Aperture*, more than a semicircle, moderately expanded, very oblique. *Labrum*, moderately produced above, reflected, much pectinated by the strong spiral carinæ. *Labium*, well detached from the body whorl, curved to the right below, straight above, almost on a plane with the labrum. *Umbilicus*, deep and moderately broad. *Labral lamella*, strong, sharp and expanding, with a projecting angular point a little below its junction with the labrum. *Operculum*, ——?

Height 0·052, greatest breadth 0·079, least breadth 0·061.

Named in compliment to Herr Heinrich Dohrn, of Stettin, a zealous young conchologist.

METCALFEIA LAYARDIANA, Chitty.

Hab. ——? Westmoreland.

Form, depressed conic. *Colour*, rich light brown. *Sculpture*, about 25, slightly, unequally raised, inequidistant spiral carinæ; on the upper whorls 6 or 7. *Spire*, moderately elevated, with rather concave outlines. *Whorls*, $4\frac{1}{4}$, moderately rounded, with a moderate suture; last whorl well rounded. *Aperture*, moderately oblique, very moderately expanded and slightly deflected below, semicircular. *Labrum*, slightly produced above in a curved line, pectinated by about 15 of the spiral carinæ. *Labium*, moderately detached from the body-whorl, rather serpentine above and much curved to the right below. *Umbilicus*, deep and narrow. *Labral lamella*, but slightly expanded. *Operculum*, slightly concave, with about six horizontal raised lamellæ, nearly parallel above, but converging towards the umbilicus below, strong on the labial side, and faintly crossing over the labial side and covering the labium, with, on that side, others intervening.

Height 0·062, greatest breadth 0·086, least breadth 0·069.

Named in compliment to E. L. Layard, Esq., late of Ceylon, now Curator of the Museum, Cape Town, Cape of Good Hope.

METCALFEIA SWIFTIANA, Chitty.

Hab. Near Mr. Channer's, Santa Cruz Park, Saint Elizabeth (unique).

Form, depressed conic. *Colour*, pale horn, light brown at apex. *Sculpture*, 28 irregularly strong and inequidistant spiral carinæ; on the upper whorls 6. *Spire*, moderately elevated, with slightly concave outlines. *Whorls*, $4\frac{1}{2}$, moderately rounded, with a deep suture; last rather large. *Aperture*, slightly constricted and very slightly expanded at its margin; semicircular; slightly depressed above and slightly expanded below. *Labrum*, very slightly produced above; very slightly pectinated externally by, more or less, all the carinæ; smooth and white and shining at its extreme margin. *Labium*, well detached from body-whorl, on a plane with the labrum; much curved

to the right below and reflected to the left. *Umbilicus*, deep and narrow. *Labral lamella*, widely spreading. *Operculum*, ——?

Height 0·059, greatest breadth 0·087, least breadth 0·069.

Named in compliment to Robert Swift, Esq., of the Island of St. Thomas, an ardent collector.

Genus VI. Petitia, Chitty.

Shell, globose discoid.

Petitia Petitiana, Chitty. See *Stoastoma Petitianum*, Ad. Ann. Lyc. New York, v. n. 2. p. 67; Contr. Conch. p. 151; Cat. Phan. p. 232.

Hab. Peace River, Manchester.

Petitia Cumingiana, Chitty. See *Stoastoma Cumingianum*, Ad. Mon. Stoast. Ad. 1849, p. 9; Cat. Phan. p. 231.

Hab. ——? Manchester.

Note.—If I have the right type of this shell, the *operculum*, in addition to the "numerous lamellar grains" described by Adams, has 6 or 7 very slightly raised vertical lamellæ curving from above to the left below, with an inner raised margin inclosing the concavity and sloping outwards to the extreme edge of the operculum.—*Chitty.*

Petitia Anthoniana, Chitty. See *Stoastoma Anthonianum*, Ad. Contr. Conch. p. 151; Cat. Phan. p. 232.

Hab. ——? Manchester.

Petitia Stevensiana, Chitty.

Hab. Yallahs Hill.

Form, globose discoid. *Colour*, very light brown. *Sculpture*, 23 well-raised inequidistant spiral carinæ, wider apart below round the umbilicus; on the upper whorls 7. *Spire*, slightly elevated, with convex outlines. *Whorls*, 4, well rounded, with a deep suture. *Aperture*, subelliptical, well detached from the body-whorl; slightly constricted and scarcely expanded, and but little deflected below. *Labrum*, double, outer edge very finely pectinated by the spiral carinæ; inner edge white, smooth, slightly thickened and reflected; continuous with the labium above, with a slight curve. *Labium*, almost straight, very slightly curved to the right below, where it is below the plane of the labrum. *Umbilicus*, deep. *Labral lamella*, produced to a saw-like tooth at some little distance below its junction with the labium; convex externally. *Operculum*, ——?

Height 0·047, greatest breadth 0·086, least breadth 0·065.

Named in compliment to the naturalist's universal friend, S. Stevens, Esq., Bloomsbury Street, London.

PETITIA FORTUNEANA, Chitty.

Hab. ——? Manchester.

Form, globose-discoid. *Colour*, very pale horn. *Sculpture*, 25 spiral carinæ, about 8 on the upper whorls. *Spire*, much depressed, with convex outlines. *Whorls*, 4, moderately rounded, with light suture. *Aperture*, constricted at about the width of the last whorl from the labrum, and then expanded considerably at about an angle of 30°, expanded above and deflected slightly below; more than a semicircle. *Labrum*, slightly double, especially above and below, less at the periphery; inner edge smooth, white and shining, broadly but slightly scolloped and finely pectinated by about 5 points; joined and rounded into the labium above; much produced angularly and deflected above; produced from the body-whorl at an angle of about 60°. *Labium*, straight, with a slight curve to the right below; on a plane with the labrum above, and slightly lower below. *Umbilicus*, very deep. *Labral lamella*, very sharp and narrow, not covering the umbilicus. *Operculum*, slightly concave, with apparently obsolete bars crossing it horizontally.

Height 0·043, greatest breadth 0·078, least breadth 0·061.

Named in compliment to Robert Fortune, Esq., the celebrated Chinese traveller and collector.

PETITIA ADAMSIANA, Chitty.

Hab. New Hope, Old Hope, and a smaller variety on the road east of the "Water-wheel," Westmoreland.

Form, globose-discoidal. *Colour*, reddish horn. *Sculpture*, 13 very strong spiral carinæ, with between the 1st and 2nd and 2nd and 3rd, 1 each rather less strong; between the 3rd and 4th and 4th and 5th, 3 each less strong; between the 5th and 6th, 1 less strong; between the 6th and 7th, 3 less strong; between the 7th and 8th, 1 less strong, and none between the remaining strong carinæ. Lines of growth very faint; on the upper whorls, 4 strong carinæ with intervening less strong. *Spire*, slightly elevated, with rather convex outlines. *Whorls*, $4\frac{1}{3}$, very slightly rounded and very light suture; last whorl slightly swelling behind the labrum, and slightly constricted at the aperture. *Aperture*, very slightly expanded and scarcely detached from the penult whorl. *Labrum*, appressed to the body-whorl, not produced, much thickened, slightly double below; smooth and simple. *Labium*, much thickened and reflected towards the umbilicus in its centre, slightly curved to the right below; well detached from the body-whorl. *Umbilicus*, moderately deep, covered by an expansion very convex externally of the *labral lamella*, which is much produced immediately after leaving the labrum, and then becomes abruptly narrowed till it joins the body-whorl. In the labral lamella it approaches the subgenus *Agassizia*. *Operculum, very peculiar*, deep concave in the centre and studded with very fine granulations; edge all round very much thickened and folded over in vertical plaits outside, especially at the lower end of the labial

side; throughout the labial side overlapping the labium with sharp, fine, numerous raised lamellæ on the labral side.

Height 0·062, greatest breadth 0·09, least breadth 0·077.

Var. *a*.

From near "Water Wheel."

Height 0·044, greatest breadth 0·076, least breadth 0·061.

Named in honour to the memory of the late Professor C. B. Adams of America, my friend and conchological master.

PETITIA TAYLORIANA, Chitty.

Hab. ——? St. Ann's.

Form, globose-discoid. *Colour*, pale horn. *Sculpture*, 24 fine, sharp, inequidistant, spiral carinæ, 6 of which interspersed are rather strong; on the upper whorls 5. *Spire*, very slightly elevated, with convex outlines. *Whorls*, 4, slightly rounded, with a light suture. *Aperture*, very slightly constricted behind the labrum, and slightly expanding; scarcely detached from the body-whorl; slightly depressed above and expanded below. *Labrum*, white, shortly reflected, not produced above, very little pectinated by the stronger spiral carinæ; slightly double below. *Labium*, on a plane with labrum, straight, appressed above to the body-whorl. *Umbilicus*, rather deep and narrow. *Labral lamella*, scarcely produced. *Operculum*, slightly concave, rather produced at the upper corner of the labial side; smooth, but not shining.

Height 0·033, greatest breadth 0·06, least breadth 0·043.

Named in compliment to T. L. Taylor, Esq., the possessor of a fine collection of shells.

PETITIA STRICKLANDIANA, Chitty.

Hab. Roaring River, Westmoreland.

Form, globose-discoid. *Colour*, rich red-brown. *Sculpture*, lines of growth apparent; 38 inequidistant, irregularly raised, very fine spiral carinæ; on the upper whorls 8. *Spire*, very little elevated, with convex outlines. *Whorls*, $3\frac{2}{3}$rds, well rounded, with a deep suture. *Aperture*, widely dilated, not constricted, more dilated and depressed below; very slightly detached from body-whorl. *Labrum*, very widely double, moderately produced above, inner and outer edge strongly pectinated, and scolloped by 6 points of the spiral carinæ. *Labium*, very little detached from body-whorl, straight above and abruptly curved below to the right; much below the plane of the labrum. *Umbilicus*, deep and rather broad. *Labral lamella*, very little produced. *Operculum*, slightly concave, with fine granulations in the hollow; labral margin with two sharp raised lamellæ round it; a small narrow linguiform point overlapping the labium at the lowest extremity on the labial side.

Height 0·049, greatest breadth 0·074, least breadth 0·055.

Named in compliment to H. E. Strickland, Esq., of Apperley Court, Tewkesbury, a liberal collector.

PETITIA STOKESIANA, Chitty.

Hab. ——? Hanover (unique).

Form, globose-discoid. *Colour,* pale horn. *Sculpture,* lines of growth visible: 4 widely separated, rather strong, slightly raised, rounded spiral carinæ; 1 finer; 2nd to 7th strong, and 1 finer close below; 8th strong (the one at the periphery strongest and rather sharp), and 2 very faint, round, and distant from the umbilicus; on the upper whorls 5. *Spire,* very little elevated, with rather concave outlines. *Apex,* somewhat mammiform. *Whorls,* 4, well rounded, with a deep suture. *Aperture,* semicircular, altogether rather depressed, very slightly constricted, not spreading, moderately detached from penult whorl. *Labrum,* scarcely produced above, thickened, slightly reflected; smooth and white, not pectinated. *Labium,* well detached from body-whorl, on a plane with labrum, almost straight within the aperture, white, thickened and expanded towards the umbilicus, much so below, but most so and somewhat pointedly in its centre. *Umbilicus,* broad and deep. *Labral lamella,* much expanded at a distance from its junction with the labrum, becoming very fine as it fades into the umbilicus. *Operculum,* ——?

Height 0·049, greatest breadth 0·08, least breadth 0·061.

Named in compliment to Capt. Lort Stokes, R.N., late of H.M.S. 'Acheron,' a zealous collector.

PETITIA GREVILLEANA, Chitty.

Hab. Yallahs Hill.

Form, globose-discoid. *Colour,* pale horn. *Sculpture,* striæ of growth visible; 5 strong spiral carinæ, with 5 less strong intervening: on the upper whorls, 2 strong, with the lesser intermediate ones (this might almost be classed in the 2nd division of *Wilkinsonœa*). *Spire,* slightly elevated, with straight outlines. *Whorls,* $3\frac{2}{3}$rds, well rounded, with a well impressed suture. *Aperture,* obliquely elliptic, more expanded in the upper than lower portion, slightly campanulate on the right owing to a slight constriction behind the labrum. *Labrum,* very slightly produced above, thickened and reflected at about its middle. *Labium,* below the plane of the labrum above, slightly curved to the right below and thickened, slightly detached from body-whorl. *Umbilicus,* not deep, broad. *Labral lamella,* slightly developed. *Operculum,* moderately concave, shining, but with very fine granulations.

Height 0·05, greatest breadth 0·069, least breadth 0·057.

Named in compliment to my friend Dr. R. K. Greville, of Edinburgh.

PETITIA CARPENTERIANA, Chitty.

Hab. Pool's Rock, Hanover.

Form, globose-discoid. *Colour,* ——? *Sculpture,* striæ of growth visible: 8 strong*est* spiral carinæ and 1 strong; 5 strongest and 1 strong in each interspace; and 2 stronger round the umbilicus: on the upper whorls 3. *Spire,* much depressed with convex outlines.

Whorls, 3$\frac{2}{3}$rds, moderately rounded, with a deep suture. *Aperture*, semicircular, rather constricted behind the labrum, not expanded, very slightly detached from the body-whorl. *Labrum*, not produced above, smooth, rather double, inner edge sharp, the strong*est* lines terminating abruptly at the outer edge. *Labium*, very slightly curved to the right below, well detached from the body-whorl, lower than the plane of the labrum below. *Umbilicus*, very shallow and broad, much covered by the *labral lamella*, which is much and widely produced above. *Operculum*, ——?

Height 0·038, greatest breadth 0·07, least breadth 0·054.

Named in compliment to P. P. Carpenter, Esq., of Warrington, author of an excellent Catalogue of the Mazatlan Shells in the British Museum.

Petitia (? Lewisia) Barroniana, Chitty.

Hab. ——? (unique).

Form, globose-discoidal. *Colour*, ——? *Sculpture*, 20 spiral carinæ, 7 of which are rather more prominent, namely the 2nd, 4th, 8th, 12th, 16th, 18th and 19th: on the upper whorls, 6. Striæ of growth visible. *Spire*, much depressed, with straight outlines. *Whorls*, 4, moderately rounded, with a light suture. *Aperture*, much constricted at the labrum, semicircular, widely separated from the body-whorl. *Labrum*, not produced above, simple, thin, rather double, slightly and coarsely pectinated on the inner edge, much thickened and slightly reflected. *Labium*, much reflected, moderately curved below, on a plane with the labrum above, lower below. *Umbilicus*, moderately deep, very broad, much concealed by the *labral lamella*, which spreads enormously and suddenly above, exteriorly convex (? *Lewisia*). *Operculum*, very deeply concave in the centre, finely granulated, upper margin broad, and indented on the labral side, and enormously spread convexly over the lower end of the labium; almost equal to the spread of the labral lamella, deeply grooved at the lower end, terminating in a linguiform projection.

Height 0·048, greatest breadth 0·084, least breadth 0·065.

Named in compliment to Charles Barron, Esq., Curator of the Royal Naval Museum, Haslar.

Genus VII. Lindsleya.

Shell, globose-conic.

Lindsleya Lindsleyana, Chitty. See *Stoastoma Lindsleyanum*, Adams. Mon. Stoas. Ad. 1849, p. 12; Cat. Phan. p. 229.

Hab. Manchester back-woods.

Lindsleya Pickeringiana, Chitty.

Hab. ——?, ? Manchester, ? Yallahs Hill.

Form, globose-conic. *Colour*, very pale horn. *Sculpture*, 17 strong blunted rounded spiral carinæ, within each interspace one or rarely two very fine carinæ: on the upper whorls 5, with a fine one

in each interspace. *Spire*, well elevated, with straight outlines. *Apex*, rather sharp. *Whorls*, 5, well rounded, with a deep suture. *Aperture*, almost exactly semicircular, rather depressed below. *Labrum*, rather curvilinear in its plane, very slightly produced above, pectinated strongly by the strong carinæ. *Labium*, moderately detached from body-whorl, very slightly curved to the right below; on a plane with the labrum above, slightly lower below. *Umbilicus*, moderately deep and broad. *Labral lamella*, produced broadly, but sinking immediately into the umbilicus. *Operculum*, moderately concave, with a rather broad margin, with, on the labral side, 5 or 6 raised lamellæ converging towards the umbilicus, the labral side close to its lower extremity bending to the right like the labium, and at its very extremity furnished with a fine linguiform projection which spreads slightly over the labium.

Height 0·086, greatest breadth 0·14, least breadth 0·086.

Named in compliment to John Pickering, Esq., an extensive collector of British shells.

This shell in many respects resembles *L. Lindsleyana*, but is much larger, and its proportions under measurement are very dissimilar; its aperture is wider, and apex much sharper.

Lindsleya Redfieldiana, Chitty. See *Stoastoma Redfieldianum*, Adams. Mon. Stoas. Ad. 1849, p. 13; Cat. Phan. p. 229.

Hab. Peace River, Manchester.

Lindsleya Jayana, Chitty. See *Stoastoma Jayanum*, Adams. Mon. Stoas. Ad. 1849, p. 14; Cat. Phan. p. 230.

Hab. ——? Manchester.

Lindsleya Leana, Chitty. See *Stoastoma Leanum*, Adams. Mon. Ad. Stoas. p. 15; Cat. Phan. p. 229.

Hab. Peace River, Manchester.

Lindsleya Denisoniana, Chitty.

Hab. Moreland, Manchester.

Form, globose-conic. *Colour*, pale horn. *Sculpture*, lines of growth visible: 4 strong spiral carinæ and 1 fine; 6th strong, 7th fine; 8th strong, and 9th and 10th fine; 11th strong, 12th to 15th fine; 16th strong, 17th to 19th fine; 20th strong, 21st to 23rd fine; 24th strong, 25th and 26th fine; 27th strong, and 28th to 36th fine; on upper whorls, 5 strong, with fine ones on the intermediate spaces. *Spire*, much and concavely elevated. *Whorls*, $3\frac{3}{4}$, convex, with a well-impressed suture. *Aperture*, more than a semicircle, more angular above than *L. Leana*, very slightly constricted and dilated again slightly, more so below; less campanulate than *L. Leana*; aperture larger and wider above than *L. Leana*. *Labrum* not produced above, continuous all round with labium, sharply and slightly reflected at rather more than a right angle, with a ridge on the inner side, very slightly pectinated by about ten points of the

strong spiral carinæ, not thickened as in *L. Leana*; rather double below. *Labium*, on a plane with labrum, more closely appressed to body-whorl above. *Umbilicus*, narrow, much deeper and wider than in *L. Leana*. *Labral lamella*, very slightly developed. *Operculum*, ——?

Height 0·06, greatest breadth 0·074, least breadth 0·056.

Named in compliment to John Denison, Esq., well known for his extensive collection of shells.

LINDSLEYA POLYBLANKIANA, Chitty.

Hab. ——? Westmoreland.

Form, globose-conic. *Colour*, light red-brown. *Sculpture*, an uncountable number, say 50, extremely fine, raised, wavy, well-defined spiral carinæ; about 20 on the upper whorls. *Spire*, well elevated, with convex outlines. *Apex*, acute. *Whorls*, $4\frac{1}{4}$, quite round, with a very deep suture. *Aperture*, subelliptical, rather flattened above and broad spreading, narrowed below and rather straightened on the labial side, not in the least degree angular above or below; labrum and labium continuous, much reflected. *Labrum*, excessively double, especially above, where the outer stands clear out from the inner edge. *Labium*, much reflected and closely attached to body-whorl, very little straightened. *Umbilicus*, deep and narrow. *Labral lamella*, very fine and narrow, lost immediately in the umbilicus. *Operculum*, ——?

Height 0·069, greatest breadth 0·071, least breadth 0·056.

Named in compliment to George Polyblank, Esq., a liberal amateur collector.

LINDSLEYA ALBERSIANA, Chitty.

Hab. John Crow Hill, Portland.

Form, globose-conic. *Colour*, pale yellow. *Sculpture*, 25 fine spiral carinæ; on the upper whorls 9 or 10. *Spire*, well elevated, with rather convex outlines. *Whorls*, 5, well rounded, with a deep suture. *Aperture*, subelliptical, labrum and labium being continuous; white, smooth; slightly expanded and deflected below, very slightly detached from body-whorl, and almost vertical. *Labrum*, double; smooth, white, not affected by the spiral carinæ; continuous with the labium. *Labium*, moderately detached from body-whorl. *Umbilicus*, moderately deep, not affected by the *labral lamella*, which is very little produced. *Operculum*, moderately concave, smooth and shining.

Height 0·049, greatest breadth 0·063, least breadth 0·044.

Named in compliment to Dr. J. C. Albers, of Berlin.

This shell is like *L. Arthuriana*, but differs materially in sculpture, number of whorls, and measurement.

LINDSLEYA FISCHERIANA, Chitty.

Hab. ——? St. Ann's.

Form, globose-conic. *Colour*, pale yellow. *Sculpture*, 6 strong spiral carinæ, with 1 fine in the interspaces; then 3 fine and 1 strong;

then 1 fine and 5 strong, with 1 fine in the interspaces; then 3 fine and 1 strong and 1 fine and 1 strong; on the upper whorls 5 strong and 1 fine in each interspace. *Spire*, well elevated with straight outlines. *Whorls*, 4⅔rds, well rounded, with a deep suture. *Aperture*, very slightly expanded and depressed, scarcely separated from the body-whorl, semicircular. *Labrum*, white, shining, very slightly produced above, very slightly double, largely pectinated by 11 points of the strong carinæ. *Labium*, slightly detached from the body-whorl, upper three-fourths straight, rather abruptly curving to the right below; on a plane with labrum. *Umbilicus*, deep and narrow. *Labral lamella*, strong, wide and sharp, projecting in an angular point a little below its junction with labrum. *Operculum*, ——?

Height 0·072, greatest breadth 0·086, least breadth 0·072.

Named in compliment to M. Paul Fischer, the well-known French conchologist.

LINDSLEYA MORICANDIANA, Chitty. See *Stoastoma Moricandianum*, Adams, Cont. Conch. p. 150; Cat. Phan. p. 230.

Hab. Yallahs Hill?

LINDSLEYA REEVEANA, Chitty.

Hab. The borders of Manchester, Trelawny and St. Ann's.

Colour, pale horn. *Sculpture*, 7 strong spiral carinæ, those about the periphery being more distantly apart, with in each interspace 3 finer carinæ; on the upper whorls 4 strong carinæ: almost obsolete behind the labrum. Striæ of growth slightly visible. *Spire*, well elevated, with slightly convex outlines. *Whorls*, 4, well rounded, with a deep suture; last whorl well rounded and very globose. *Aperture*, peculiar and very large and spreading, considerably constricted far behind the labrum, very much expanding again like the half of the bowl of a spoon; subangular above and below on the left, depressed above, well dilated on the right below, widest horizontally, flattened below. *Labrum*, at about ⅓rd of the length of the constriction, attached to the body-whorl, in, as it were, a curvilinear opening of about 35°; the spiral carinæ at the back almost obsolete and striæ of growth stronger; double, the outer edge pectinated by 7 points of the stronger carinæ and scolloped; inner edge much thickened, pectinated by about 4 points, much produced and deflected above, modifying the aperture. *Labium*, appressed in its upper end to the penult whorl, straight above, slightly curved to the right below, very much below the plane of the labrum. *Umbilicus*, rather deep and very narrow. *Labral lamella*, very finely produced. *Operculum*, well thickened on the labial side, very slightly concave and smooth.

Height 0·061, greatest breadth 0·073, least breadth 0·061.

Named in compliment to Lovell Reeve, Esq., the able conchologist.

LINDSLEYA SHUTTLEWORTHIANA, Chitty.

Hab. Burnt Hill Glade, Westmoreland (unique).

Form, globose-conic. *Colour*, ——? *Sculpture*, striæ of growth

very visible, oblique; about 16 strong sharp spiral carinæ, stronger below, with one faint finer in each interspace; on upper whorls 5 strong, with finer intervening. *Spire*, slightly and rather concavely elevated. *Whorls*, 5, moderately convex, with a deep suture; last whorl large and spreading behind the labrum, but, on the left, assimilating the form of the subgenus *Metcalfeia*, and rather falling off below. *Aperture*, semicircular, except as modified by the labium; very slightly spreading. *Labrum*, thin, slightly reflected, pectinated by about 10 points, 4 fine and close on the upper part, 6 strong and wide apart round the periphery, strongest at the periphery; above, moderately produced from the body-whorl in a graceful curve. *Labium*, well detached from the body-whorl, curved throughout, below the plane of the labrum at lower end, thickened and reflected towards the umbilicus. *Umbilicus*, deep and narrow. *Labral lamella*, very slightly produced and immediately merged in the umbilicus. *Operculum*, —— ?

Height 0·072, greatest breadth 0·12, least breadth 0·084.

Named in compliment to Robert Shuttleworth, Esq., of Berne, the well-known botanical and conchological collector and author.

LINDSLEYA BOISSIERIANA, Chitty.

Hab. New Forest, Manchester.

Form, globose-conic. *Colour*, pale horn. *Sculpture*, striæ of growth visible: 12 prominent not very strong spiral carinæ, with between the 1st and 2nd, 2 finer carinæ; between 2nd and 3rd and 3rd and 4th, 1 fine; between 4th and 12th, 2 fine; beyond the 12th, 5 or 6 very, fine round the umbilicus: on the upper whorls 5 strong, with intermediate fine. *Spire*, well elevated, with slightly convex outlines. *Whorls*, 5, well rounded, with a deep suture. *Aperture*, more than a semicircle, moderately expanded and slightly deflected below. *Labrum*, but slightly separated or produced from the body-whorl, well pectinated by the strong carinæ. *Labium*, slightly detached from body-whorl, on a plane with labrum above; slightly lower below, moderately curved to the right. *Umbilicus*, deep and narrow. *Labral lamella*, rather produced at junction with labrum, narrow below. *Operculum*, slightly concave, five horizontal lamellæ across it, strongest in the middle, fine granulations, a linguiform sharp projection overlapping the labium.

Height 0·064, greatest breadth 0·083, least breadth 0·067.

Named in compliment to M. Edward Boissier, of Geneva, the eminent naturalist.

LINDSLEYA GASKOINIANA, Chitty.

Hab. Near Ashley Hall, Trelawny.

Form, globose-conic. *Colour*, white. *Sculpture*, 14 strong spiral carinæ, with 2 fine in each interspace; on the upper whorls 5, with fine ones intervening. *Spire*, well elevated, with straight outlines. *Whorls*, $4\frac{1}{2}$, with a moderate suture. *Aperture*, more than a semicircle, subelliptical. *Labrum*, detached from the body-whorl, produced moderately above, very strongly pectinated by about 13 points,

slightly expanded, reflected, and depressed below. *Labium*, slightly detached from the body-whorl, curved to the left above, and more so to the right below. *Umbilicus*, shallow and narrow, partially hidden by the gracefully curved but slightly projecting *labral lamella*. *Operculum*, very slightly concave, with a few coarse granulations, overlapping the labium on the labial side.

Height 0·064, greatest breadth 0·084, least breadth 0·064.

Named in compliment to J. S. Gaskoin, Esq., a lover of and writer on conchology.

LINDSLEYA NEWCOMBIANA, Chitty.

Hab. Clarendon Mountains (damaged, unique).

Form, globose-conic. *Colour*, ——? *Sculpture*, 18 strong rounded spiral carinæ, with 2 finer intervening at the periphery; on the upper whorls 5. Striæ of growth visible. *Spire*, well-elevated, with rather concave outlines. *Whorls*, 5, moderately rounded, with a well-impressed suture. *Aperture*, semicircular, scarcely detached from body-whorl, not expanded or depressed, except slightly below. *Labrum*, very little produced above, pectinated by all the strong lines. *Labium*, well-detached from body-whorl, slightly curved below, on a plane with labrum above, lower below. *Umbilicus*, deep and narrow. *Labral lamella*, slightly and evenly produced. *Operculum*, —— ?

Height 0·08, greatest breadth 0·1, least breadth 0·081.

Named in compliment to Dr. Newcomb, of Albany, N. Y.

LINDSLEYA RIISEANA, Chitty.

Hab. Near Mr. Channer's, Santa Cruz Park, St. Elizabeth (unique).

Form, globose-conic. *Colour*, pale yellow. *Sculpture*, 13 sharp spiral carinæ with 1 finer in each interspace; on the upper whorls 3 strong with fine intervening. *Spire*, well-elevated, with straight or very slightly concave outlines. *Whorls*, $4\frac{1}{4}$, very much rounded, with a deep suture; last whorl large. *Aperture*, sub-semielliptical, slightly expanded, rather flattened above and expanded below. *Labrum*, double, white, thickened, slightly scolloped and pectinated by 8 points, continuous with the labium, very slightly produced above. *Labium*, well-detached from body-whorl, continuous with labrum, much curved, more so below, very slightly lower than plane of the labrum below. *Umbilicus*, moderately deep and broad. *Labral lamella*, very slightly produced. *Operculum*, —— ?

Height 0·049, greatest breadth 0·067, least breadth 0·05.

Named in compliment to A. H. Riise, Esq., of the Island of St. Thomas, a scientific conchologist.

LINDSLEYA POEYANA, Chitty.

Hab. John Crow Hill, Portland.

Form, globose-conic. *Colour*, pale horn, almost white at the aperture. *Sculpture*, about 18 strong spiral carinæ, with here and

there 1 fine carina intervening, rather inequidistant; on the upper whorls 4. *Spire*, well-elevated, with straight outlines. *Whorls*, $4\frac{3}{4}$, scarcely convex, with a very light suture. *Aperture*, larger than semicircular, rather flattened above, moderately expanded, much on the right below. *Labrum*, slightly double and very little pectinated by the carinæ, produced above and much reflected, scarcely detached from body-whorl. *Labium*, little detached from body-whorl, straight, except the curve to the right below; very little below the plane of labrum in the lower part. *Umbilicus*, moderately deep. *Labral lamella*, very little produced. *Operculum*, concave, minutely granulated.

Height 0·077, greatest breadth 0·11, least breadth 0·078.

Named in compliment to M. Felipe Poey, now of the Havanna.

Lindsleya Henryana, Chitty.

Hab. Pool's Rock and Halley's Mountain, Hanover.

Form, globose-conic. *Colour*, pale horn. *Sculpture*, 18 blunt coarse spiral carinæ, with 1 very fine (about the periphery) intervening; on the upper whorls 7. *Spire*, well-elevated, with straight outlines. *Whorls*, $4\frac{1}{4}$, well-rounded, with deep suture. *Aperture*, very slightly expanded, more than a semicircle, spreading above and below, very slightly detached from the body-whorl. *Labrum*, thin and smooth, pectinated by about 10 points outwards, scarcely produced above. *Labium*, moderately detached from body-whorl, thin, curved to the right below, on a plane with the labrum above, rather lower below. *Umbilicus*, rather broad, and suddenly very deep. *Labral lamella*, considerably produced, more expanded above; within the umbilicus, and higher up the outside of the labium is another lamella, almost as strong as the labral lamella. *Operculum*, slightly concave, with about 12 very coarse granulations on the labral lower side.

Height 0·053, greatest breadth 0·067, least breadth 0·054.

Named in compliment to Henry Adams, Esq., of London, the conjoint author with his brother Arthur Adams.

Lindsleya Alderiana, Chitty.

Hab. John Crow Hill, Portland.

Form, globose-conic. *Colour*, pale yellowish horn. *Sculpture*, striæ of growth visible; 17 strong spiral carinæ, with 1 fine in each interspace, 3 fine intervening at the periphery, where the strong carinæ are wide apart; on the upper whorls 3, with finer intervening. *Spire*, well-elevated, with slightly concave outlines. *Whorls*, nearly 5, moderately convex, with a moderate suture. *Aperture*, semicircular, slightly expanded below. *Labrum*, slightly produced above, rather reflected, scarcely detached from the penult whorl, rather strongly pectinated by about 11 of the spiral carinæ. *Labium*, very slightly curved to the right, else almost straight, moderately detached from the body-whorl, rather below the plane of the labrum. *Umbilicus*, very deep. *Labral lamella*, slightly produced. *Oper-*

culum, slightly concave, crossed horizontally by 5 lamellæ, labial side plaited vertically.

Height 0·068, greatest breadth 0·086, least breadth 0·073.

Named in compliment to Josiah Alder, Esq., of Newcastle.

LINDSLEYA BRIDGESIANA, Chitty.

Hab. Bodle's Pen Wood (high road to Clarendon), St. Dorothy.

Form, globose-conic. *Colour*, very pale horn. *Sculpture*, 19 strongly raised spiral carinæ; on the upper whorls 6. *Spire*, moderately elevated, with rather concave outlines. *Whorls*, $4\frac{3}{4}$, moderately rounded, with a moderate suture. *Aperture*, semicircular, very slightly expanded above, more so below. *Labrum*, scarcely detached from body-whorl, slightly produced above, pectinated and scolloped bluntly by about 15 of the carinæ. *Labium*, straight, except a slight curve below; moderately detached from the body-whorl, rather below the plane of the labrum in lower end. *Umbilicus*, deep. *Labral lamella*, rather produced at its junction with the labrum, moderately broad round the umbilicus. *Operculum*, moderately concave, a very few coarse granulations, with 8 or 10 very short raised lamellæ converging to, but not reaching, the centre, on the labral side; a linguiform sharp projection overlapping the lower extremity of the labium.

Height 0·06, greatest breadth 0·076, least breadth 0·063.

Named in compliment to Thomas Bridges, Esq., an able zoological and botanical collector, particularly in Chili and other parts of South America.

LINDSLEYA SALLÉANA, Chitty.

Hab. New Forest, Manchester (unique).

Form, globose-conic. *Colour*, —— ? *Sculpture*, 12 strong spiral carinæ, 2 fine in each interspace and 3 less strong round the umbilicus: on the upper whorls 4 corresponding fine ones. *Spire*, well-elevated, with rather concave outlines. *Whorls*, $4\frac{3}{4}$, well-rounded, with a deep suture. *Aperture*, slightly expanded above, more so below, scarcely detached from last whorl, more than a semicircle. *Labrum*, scarcely produced from body-whorl, not produced above, very slightly reflexed and thickened, coarsely pectinated by the strong carinæ. *Labium*, moderately detached from body-whorl, slightly curved throughout, on a plane with labrum. *Umbilicus*, broad and moderately deep. *Labral lamella*, much produced at its junction with labrum, below, sharp, and dipping abruptly into the umbilicus. *Operculum*, —— ?

Height 0·079, greatest breadth 0·092, least breadth 0·073.

Named in compliment to M. Auguste Sallé, an excellent zoological collector.

LINDSLEYA ARTHURIANA, Chitty.

Hab. John Crow Hill, Portland.

Form, globose-conic. *Colour*, light yellow. *Sculpture*, 31 raised spiral carinæ, not quite equidistant; on the upper whorls 7. *Spire*,

well-elevated, with rather convex outlines. *Whorls*, 3⅔rds, very well rounded, with a deep suture, last whorl very globose. *Aperture*, slightly and somewhat abruptly expanded, more than a semicircle, subelliptical, slightly depressed above and expanded below. *Labrum*, rounded into labium, more broadly below, very slightly produced above, double, white, smooth, not pectinated. *Labium*, scarcely detached from body-whorl, on a plane with labrum. *Umbilicus*, very shallow, broad. *Labral lamella*, scarcely produced. *Operculum*, slightly concave, very finely granulated in the centre.

Height 0·049, greatest breadth 0·066, least breadth 0·054.

Named in compliment to Arthur Adams, Esq., of London, the conjoint author with his brother Henry Adams.

This shell is like *L. Albersiana*, but differs in sculpture, number of whorls and measurements.

Lindsleya Gutiereziana, Chitty.

Hab. New Hope, Westmoreland.

Form, globose-conic. *Colour*, pale horn. *Sculpture*, 16 strong spiral carinæ, *only* about the periphery one fine intervening; on the upper whorls, 5. *Spire*, well-elevated, with straight outlines. *Whorls*, 5½, well-rounded, with a deep suture. *Aperture*, less than a semicircle, very slightly spreading, and very slightly deflected below. *Labrum*, slightly separated from body-whorl, rather produced above, in a broad notch, pectinated by about 15 of the strong carinæ. *Labium*, well-detached from body-whorl, curved inwards, more so below; thickened and reflected in the centre and its lower end towards the umbilicus. *Labrum* and *labium* continuous above; *labium* on a plane with labrum below. *Umbilicus*, deep. *Labral lamella*, sharply produced as it leaves the labrum, becoming narrow and abruptly lost in the umbilicus. *Operculum*, ——?

Height 0·084, greatest breadth 0·15, least breadth 0·082.

Named in compliment to Señor Don Nicolas Josè Gutierez, Curator of the Museum at the Havanna.

Lindsleya Oweniana, Chitty.

Hab. Yallah's Hill.

Form, globose-conic. *Colour*, pale horn. *Sculpture*, 19 strong, rather inequidistant spiral carinæ; on the upper whorls 6. Striæ of growth visible. *Spire*, moderately elevated, with rather concave outlines. *Whorls*, 4½, well-rounded, with a deep suture. *Aperture*, semicircular, rather flattened above, slightly expanded in the lower two-thirds. *Labrum*, rather produced above, not reflected, thin, strongly pectinated by spiral carinæ. *Labium*, rather detached from body-whorl, gradually curved to the right below. *Umbilicus*, rather deep and broad, slightly hidden by the *labral lamella*, which is but little produced. *Operculum*, concave, finely granulated, with, on the labral side extending half across, 5 horizontal raised lamellæ converging towards the umbilicus, the margins of which are covered with fine granulations giving the appearance of serration; lower

third laps tightly over the labium, grooved horizontally, and then finished by a linguiform, raised, folding projection.

Height 0·069, greatest breadth 0·094, least breadth 0·073.

Named in compliment to Professor Owen.

LINDSLEYA WOLLASTONIANA, Chitty.

Hab. ——? Hanover.

Form, globose-discoidal. *Colour*, white, semitransparent. *Sculpture*, about 31 very fine inequidistant irregular spiral raised carinæ, about 8 rather stronger than the rest; on the upper whorls 8. *Spire*, slightly raised, with convex outlines. *Whorls*, $3\frac{3}{4}$, very moderately rounded, with a light suture. *Aperture*, slightly constricted behind labrum, and then slightly expanded, semicircular. *Labrum*, very little produced above, thickened and reflected and very slightly pectinated by the stronger carinæ. *Labium*, well-detached from the body-whorl, moderately curved below, on a plane with the labrum. *Umbilicus*, moderately deep and wide. *Labral lamella*, narrow and sharp. *Operculum*, slightly concave, plain and smooth, except a few coarse granulations.

Height 0·036, greatest breadth 0·064, least breadth 0·05.

Named in compliment to T. Vernon Wollaston, Esq., M.A., so well known for his Natural History researches in Madeira.

Genus VIII. BLANDIA, Chitty.

Shell subdiscoidal, not prominently sculptured.

BLANDIA BLANDIANA, Chitty.

See *Stoastoma Blandianum*, Ad. Mon. Stoas. Adams, 1849, p. 6; Cat. Phan. p. 234.

Hab. Peace River, Manchester.

BLANDIA JEFFREYSIANA, Chitty.

Hab. Roaring River, Westmoreland.

Form, subdiscoidal. *Colour*, pale yellow. *Sculpture*, 22 fine distant and nearly equidistant spiral carinæ, 5 interspersed being rather stronger; carinæ, finer behind the aperture: on the upper whorls 6. *Spire*, very little elevated, with convex outlines. *Whorls*, $3\frac{1}{2}$, moderately rounded, with a light suture. *Aperture*, constricted at a distance behind labrum, and widely expanded and cupping inwards at the labium, rather flattened above. *Labrum*, moderately produced above, treble in the upper part, broadly but not deeply scolloped, and pectinated by the 5 stronger carinæ, much thickened, white and shining. *Labium*, thickened and much reflected to the left at its edge, curved to the right below, widely detached from body-whorl, much below the plane of labrum. *Umbilicus*, very deep and broad. *Labral lamella*, rather strong. *Operculum*, very concave, margined with a broad convexly raised ridge something like *Wilk. Schomburgiana*, with two deep plainly visible indented grooves on

the labial side; 5 sharp diagonal raised lines crossing from right above to left below on the labral side of the hollow.

Height 0·04, greatest breadth 0·063, least breadth 0·047.

Named in compliment to J. Gwyn Jeffreys, Esq., late of Swansea, now of London, a zealous conchologist and possessor of the finest British collection.

Blandia Bairdiana, Chitty.

Hab. Yallah's Hill.

Form, subdiscoidal. *Colour*, very pale horn or pure white. *Sculpture*, about 30 or 40 spiral carinæ, almost obsolete, scarcely visible under a $1\frac{1}{4}$-inch microscope, about 5 being rather more sharp than the rest; on the upper whorls about 7. *Spire*, very slightly elevated, with rather concave outlines. *Whorls*, $3\frac{1}{3}$, moderately rounded, with a light suture: last whorl rather flattened at the periphery. *Aperture*, semielliptical, very much produced from the body-whorl, rather depressed above, but elegantly expanded throughout. *Labrum*, very much produced above, joining the body-whorl in a very graceful serpentine curving lamella, (by which the shell may be distinguished,) much thickened and reflected. *Labium*, moderately detached from the body-whorl and thickened and reflected, slightly curved to the right below, very much below the plane of the labrum. *Umbilicus*, broad and moderately deep. *Labral lamella*, very sharp and narrowly produced. *Operculum*, deep concave, apparently smooth, or with blunt vertical lamellæ, margined all round, labial side much curved, rather pointed at upper and lower extremity.

Height 0·033, greatest breadth 0·062, least breadth 0·052.

Named in compliment to my friend Dr. Baird, of the British Museum.

Var. *Minor*. A much smaller variety, coming from the same habitat.

Blandia MacGillivrayana, Chitty.

Hab. (?) Pedro district, St. Ann's.

Form, subdiscoidal. *Colour*, pale yellow. *Sculpture*, 20 faint equidistant spiral carinæ; on the upper whorls, 6. *Spire*, very little elevated, with convex outlines. *Whorls*, $3\frac{1}{4}$, moderately rounded with a moderate suture. *Aperture*, large, very broadly expanding, slightly depressed above. *Labrum*, double throughout, but more so above, slightly reflected, white, smooth, much produced above, leaving the body-whorl at an angle of about 50°. *Labium*, almost appressed to the body-whorl in its centre, slightly curved above, more below to the right, below the plane of the labrum. *Umbilicus*, shallow and spreading. *Labral lamella*, very little produced. *Operculum*, not concave, but moderately sunk or depressed (flat or smooth) in its interior surface, more so at the lower labial side; edge on labral side much and broadly folded over convexly.

Height 0·034, greatest breadth 0·055, least breadth 0·045.

Named in compliment to John MacGillivray, Esq., the well-known and able naturalist and collector.

Blandia Troscheliana, Chitty.

Hab. Clarendon Mountains.

Form, subdiscoidal. *Colour,* ——? (only two bad specimens). *Sculpture,* 23 irregular inequidistant coarsely rounded spiral carinæ obsolete at the periphery, 4 more prominent than the rest; on the upper whorls, 5. *Spire,* much depressed, with convex outlines. *Whorls,* $3\frac{1}{2}$, well-rounded, with a well-impressed suture. *Aperture,* very slightly expanded, rather flattened above and depressed below, more than a semicircle. *Labrum,* moderately produced above, double, white, thickened and reflected, very slightly pectinated by the four stronger carinæ, or rather squared as in *Wilkinsonæa Moussoniana.* *Labium,* well-detached from body-whorl, slightly curved to the right above and below, on a plane with the labrum below, lower above. *Umbilicus,* broad and deep. *Labral lamella,* very little produced. *Operculum,* smooth and concave, deep on the labial side.

Height 0·03, greatest breadth 0·059, least breadth 0·045.

Named in compliment to Dr. Troschel, of Bonn, Editor of the 'Archieve' of Natural History, &c.

Blandia Hilliana, Chitty.

Hab. ——?, Westmoreland.

Form, subdiscoidal. *Colour,* pale horn. *Sculpture,* 22 inequidistant spiral carinæ, wider apart and stronger above, and a few at the periphery most raised; on the upper whorls, 5. *Spire,* much depressed, slightly concave. *Whorls,* $3\frac{1}{2}$, moderately rounded, with a rather deep suture. *Aperture,* very slightly constricted at the fauces, slightly expanded, depressed above, more than a semicircle. *Labrum,* well-produced above and pointedly, leaving the body-whorl at about an angle of 30°, white, slightly pectinated by about five points, thin, reflected. *Labium,* slightly curved below, well-detached from body-whorl. *Umbilicus,* rather deep and broad. *Labral lamella* and *operculum,* like *Wilkinsonæa Bensoniana.*

Height 0·025, greatest breadth 0·047, least breadth 0·041.

Named in compliment to the Hon. Richard Hill, of Spanish Town, Jamaica, well-known as an ornithologist and lover of general natural history.

Blandia Trailliana, Chitty.

Hab. Clarendon Mountains (unique).

Form, subdiscoidal. *Colour,* pale horn. *Sculpture,* 5 coarser spiral carinæ and 2 coarse; 6th to 10th coarse, with one coarse between, and after each, 11th coarser, and 5 coarse, round umbilicus; on the upper whorls, 5. *Spire,* much depressed, with convex outlines. *Whorls,* $3\frac{1}{3}$, well-rounded, with a deep suture; last whorl well-rounded, large. *Aperture,* semicircular, slightly constricted at

a distance from the labrum, and then elegantly and slightly expanded. *Labrum*, well, and in an elegant curve, produced above, treble above and double below, as in *Helix Rupis-fontis* in my cabinet (N.B. since first describing this shell it has unfortunately got broken), very slightly thickened at its extreme edge, and white. *Labium*, moderately detached from body-whorl, wide and much reflected, curving slightly throughout, below the plane of labrum. *Umbilicus*, moderately deep and broad. *Labral lamella*, slightly produced. *Operculum*, —— ?

Height 0·034, greatest breadth 0·057, least breadth 0·041.

Named in compliment to Dr. Traill (Malacca?), the great East Indian collector.

Blandia Lukisiana, Chitty.

Hab. Near Port Maria (unique).

Form, subdiscoidal. *Colour*, pale horn. *Sculpture*, 27 fine sharp spiral carinæ, the 6th, 10th, 15th, and 23rd being rather stronger; on the upper whorls, 6. *Spire*, much depressed, with slightly convex outlines. *Whorls*, 3½rd, moderately rounded, with a moderate suture. *Aperture*, slightly depressed above, expanded below, semielliptic. *Labrum*, produced above in a curve, leaving the body-whorl in a quasi angle of about 80°, double and widely so above, pectinated by about 5 points, very slightly reflected, white. *Labium*, nearly straight, very little curved to the right below, slightly detached from the body-whorl, on a plane with the labrum above, lower below. *Umbilicus*, moderately deep. *Labral lamella*, rather produced in its centre. *Operculum*, —— ?

Height 0·024, greatest breadth 0·051, least breadth 0·04.

Named in compliment to Dr. Lukis of Guernsey, an able naturalist and antiquary.

Blandia Loweana, Chitty.

Hab. Bodle's Pen Wood, St. Dorothy.

Form, subdiscoidal. *Colour*, dark horn. *Sculpture*, spiral carinæ, 5 less and 1 strong repeated four times, then 5 less and 2 strong, then 3 fine and 1 strong, and 4 less strong; on the upper whorls, 7 or 8. *Spire*, very slightly elevated, with slightly concave outlines. *Apex*, obtusely prominent. *Whorls*, 3½, very slightly rounded, with a deep suture. *Aperture*, more than a semicircle, rather expanded above, very slightly deflected and expanded below. *Labrum*, slightly produced above at the 1st and 2nd strong carinæ, broadly pectinated and scolloped by all the strong carinæ. *Labium*, well-detached from the body-whorl, below the plane of the labrum above, slightly rounded and nearly up to the plane of the labrum in the lower end. *Umbilicus*, moderately deep. *Labral lamella*, very sharp and narrow. *Operculum*, deeply concave in the centre and minutely granulated; two or three microscopic lamellæ crossing vertically, the edge all round thickened and deeply reflected outward, the upper edge having five or six deep irregular vertical folds.

Height 0·027, greatest breadth 0·055, least breadth 0·042.

Named in compliment to the Rev. R. T. Lowe, lately Chaplain in Madeira, and the well-known contributor to the natural history of that island.

2. List of additional species of Mexican Birds, obtained by M. Auguste Sallé from the environs of Jalapa and S. Andres Tuxtla. By Philip Lutley Sclater, M.A.

M. Auguste Sallé, since his return from Southern Mexico (where he made the very extensive collection of birds, of which I gave an account in these Proceedings for last year), has received in Paris a considerable number of specimens procured by some of his correspondents in the same part of the country. Among them are many species of which he did not himself obtain examples. These he has been kind enough to send over for my inspection, and I have thus been enabled to form an additional List of upwards of sixty species of birds found in this part of Mexico, which were not included in my former catalogue. The majority of these were obtained in the environs of Jalapa and S. Andres Tuxtla, both of which places are within the confines of the State of Vera Cruz.

1. Spizaetus ornatus (Daud.).

Jalapa.

2. Herpetotheres cachinnans (L.).

Jalapa.

3. Asturina nitida (Lath.).

Jalapa.

4. Elanus leucurus (Vieill.).

Jalapa.

5. Athene hypogæa, Bp., Cassin, B. Cal. p. 188.

Jalapa.

6. Petrochelidon bicolor (Vieill.).

S. José.

7. Progne dominicensis (Gm.).

S. Andres Tuxtla.

8. Momotus cæruleiceps, Gould.

Jalapa.

9. Hylomanes momotula, Licht. Abh. Ac. Berol. 1838, p. 449, pl. 4.

Jalapa.

10. Ceryle torquata (Linn.).

Jalapa.

11. Ceryle amazona (Lath.).

Jalapa.
Agrees with S. A. examples.

12. Xiphocolaptes albicollis (Vieill.)?

A fine bird of the section of *Dendrocolaptinæ* which embraces the larger species (*albicollis, major, promeropirhynchus*, &c.), is in M. Sallé's collection from the vicinity of Jalapa. It is the first of the genus that I have seen from the country northward of Panama, and a full series of specimens would possibly show that it was different from the S. A. *X. albicollis*, to which I have referred it provisionally. Lafresnaye, in his 'Monograph,' has employed the name *Dendrocolaptes* for this section, but that name is rightly applicable to the *D. cayanensis* and its affines, for which he has used the generic term *Dendrocops*.

13. Rhamphocænus rufiventris (Bp.), Gray's Gen. pl. 47. f. 2.

S. Andres Tuxtla.

14. Rhimamphus æstivus (Lath.).

Jalapa and S. Andres Tuxtla.

15. Sylvicola americana (Linn.), Wilson's Am. Orn. pl. 28. f. 3.

Tlacotalpam.
I am rather surprised to find this bird so far to the south. I should rather have expected to see its Central American representative *S. mexicana* (Bp. Consp. p. 310).

16. Basileuterus chrysophrys, Bp. Consp. p. 314.

Olivaceo-viridis: gutture et corpore medio subtus flavis: lateribus olivaceis: pileo et capitis lateribus intense castaneis: superciliis latis et longis, aureis: fronte et superciliorum marginibus superioribus nigris: rostro nigro: pedibus pallide flavis.

Long. tota 5·0, alæ 2·3, caudæ 2·1.
This very pretty species of *Basileuterus* is shortly characterized by Prince Bonaparte in his 'Conspectus' from the specimen in the Berlin Museum. M. Sallé's examples were obtained in the vicinity of Jalapa.

17. Regulus calendula (L.), Wils. Am. Orn. pl. 5. f. 3.

Jalapa.

18. Turdus assimilis, Cab. Mus. Hein. p. 4.

Jalapa and Vigia.
This fine Thrush is very closely allied to a well-known S. Ame-

rican species *T. crotopezus*, Licht. (*T. albicollis*, Spix). The under surfaces of these two birds are very nearly alike — *Turdus assimilis* showing only rather a larger white patch on the neck and deeper cinereous breast; but above *T. crotopezus* is of a rich umber-brown colouring, and the tail of a bluish-grey; whereas in the Mexican species the whole upper surface is of a paler and more cinereous brown. I have seen examples of this bird also from Orizaba and Puente Nacional in Mexico and from Guatimala.

19. Malacocichla mexicana, Bp. Compt. Rend. t. xliii. Nov. 1846.

Jalapa.

20. Thamnophilus melanurus, Gould, P. Z. S. 1855, p. 69. pl. 83.

Santecomapam.

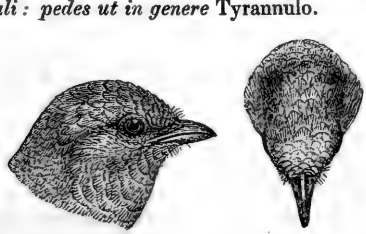
I have already recorded the appearance of this species in Chiriqui (P. Z. S. 1856, p. 142); but I was not prepared to find it so far north.

21. Todirostrum cinereum (Linn.), *antea*, p. 83.

Tlacotalpam, March 1856.

22. Camptostoma imberbe, sp. nov.

Genus novum Tyrannidarum, Tyrannulo *affine: rostrum altum, breve, valde compressum, apice acuta et dente finali nulla; culmine multum arcuato et regulariter incurvo, gonyde paulum ascendente; vibrissis rictalibus nullis: alæ modicæ, dimidium caudæ attingentes; primariis secunda, tertia et quarta inter se æqualibus et quintam paulo excedentibus, sexta his paulo breviore sed primam superante: cauda modica quadrata: tarsi breviusculi: pedes ut in genere* Tyrannulo.



C. imberbe, sp. nov.

C. supra olivascenti-fuscum, pileo semicristato, cinerascenti-fusco; alis fuscis, secundariarum et tectricum marginibus externis pallidioribus et albicantibus; cauda pallide cinerascenti-fusco unicolore: subtus cinerascenti-albidum flavo perfusum: rostri nigri mandibula inferiore basi flavicante; pedibus nigris.

Long. tota 3·5; alæ 2·8; caudæ 1·3.

Hab. In vicinitate urbis S. Andres Tuxtla in rep. Mexicana.

M. Sallé's recent collections contain a single specimen of this curious little bird, which was obtained in the neighbourhood of S. Andres Tuxtla. There is no doubt about its belonging to the *Tyrannidæ*, but the form of the bill appears to be quite different from that of any bird hitherto recognized as of that family, and to require a new generic appellation. I have therefore called it *Camptostoma* from the arched form of the culmen. The specific name *imberbe* refers to the entire absence of rictal bristles. I consider *Tyrannulus* to be perhaps its nearest-allied generic form, from which, however, it may be at once distinguished by the peculiar depth and compression of the bill. Dr. Hartlaub's *Ornithion inerme* belongs, I suspect, to this same section of *Tyrannidæ*.

23. Sayornis pallida (Sw.), *antea*, p. 127.

Jalapa.

24. Milvulus forficatus (Gm.), Bp. Am. Orn. pl. 2. f. 1.

Jalapa.

25. Scaphorhynchus mexicanus, Lafr. R. Z. 1851, p. 473.

Jalapa.

26. Pachyrhamphus major, Cab. in Wiegm. Archiv, p. 246; *antea*, p. 78, ♂ et ♀.

Jalapa.

27. Vireo noveboracensis (Gm.).

Jalapa.

28. Cyanocorax unicolor, DuBus, Esquisses Orn. pl. 17 (1848); *C. concolor*, Cass. Pr. Ac. Sc. Phil. iv. p. 26 (1848).

Jalapa.

29. Cyanocorax ornatus (Less.), R. Z. 1839, p. 41; Bp. Consp. p. 379.

Jalapa.

30. Cyanocorax ultramarinus (Temm.), Pl. Col. 439.

Adult specimens of this bird in M. Sallé's recently received collections from Jalapa seem to be quite the same as Temminck's plate. I believe the bird called *Cyanocitta floridana* in my former list to have been the young of this species.

31. Cyanocorax nanus, DuBus, Esquisses Orn. pl. 25.

Jalapa.

The Guatimalan species (*C. pumilo*) which is figured as "*C. nanus*?" in the 'Contributions' (1849, pl. 33) is perfectly distinct from the present bird, and Prince Bonaparte has done quite right in keeping them apart. In the *C. nanus* the throat is silvery whitish-blue, whereas in *C. pumilo* it is quite dark, almost black.

32. Icterus gularis (Wagl.).—*Psarocolius gularis*, Wagl. Isis, 1829, p. 754 ; Des Murs, Icon. Orn. pl. 9.

Dr. Cabanis (Mus. Hein. p.185 (note)) says that *I. mentalis*, Less. Cent. Zool. pl. 41, is not the same as this bird. He gives no reasons for his assertion, and, as far as I can judge from a comparison of descriptions and figures, I am inclined to think otherwise.

33. Icterus pectoralis (Wagl.). — *Psarocolius pectoralis*, Wagl. Isis, 1829, p. 755 ; Des Murs, Icon. Orn. pl. 10.

34. Hyphantes baltimorensis (Linn.).

Jalapa and S. Andres Tuxtla ; *v.* P. Z. S. 1856, p. 142.

35. Agelæus phœniceus (Linn.)?

Tlacotalpam, March 1856.

This bird is rather smaller in size than specimens from U. S., but seems hardly separable. I have a similar example from Guatimala.

36. Saltator grandis (Licht.), P. Z. S. 1856, p. 72.

Cordova.

A common Mexican species, which was in M. Sallé's first collection from Cordova, but accidentally omitted in my catalogue. Botteri has sent many specimens from Orizaba, some of which are immature and have the superciliaries yellowish-green and plumage more olivaceous, in which state it is *S. icterophrys*, Lafr.

37. Buarremon albinuchus (D'Orb. and Lafr.), P. Z. S. 1856, p. 86.

Jalapa.

38. Pyranga bidentata (Sw.), P. Z. S. 1856, p. 126.

Jalapa.

39. Chlorophonia occipitalis, DuBus ; P. Z. S. 1856, p. 270.

Jalapa.

40. Euspiza americana (Linn.), P. Z. S. 1856, p. 142.

S. Andres Tuxtla.

41. Chrysotis autumnalis (L.).

Jalapa.

42. Pteroglossus torquatus (Wagl.), Gould, Mon. Rhamph. ed. ii. pl. 20.

S. Andres Tuxtla, called "*Pito real*."

43. Geococcyx mexicanus (Gm.).

Jalapa.

44. Chamæpelia passerina (L.).

S. Andres Tuxtla, April 1856.

45. Geotrygon chiriquensis, Sclater, P. Z. S. 1856, p. 143.

M. Sallé has received a specimen from Jalapa seemingly referable to this species, which is now in Prince Bonaparte's collection.

46. Ortyx pectoralis, Gould, Mon. Odont. pl. 5.
Jalapa.

47. Dendrortyx barbata (Licht.), Gould, Mon. Odont. pl. 22.
Jalapa.

48. Platalea ajaja (L.).
Jalapa.

49. Cancroma cochlearia (L.).
S. Andres Tuxtla.

50. Herodias candidissima (Wilson).
Jalapa.

51. Nycticorax gardeni (Gm.).
Jalapa.

52. Ægialites vociferus (Linn.).
Jalapa.

53. Himantopus nigricollis (Vieill.).
Jalapa.

54. Parra gymnostoma, Wagl.; P. Z. S. 1856, p. 283.
Jalapa.

55. Aramides cayenensis (Gm.), P. Z. S. 1856, p. 143.
S. Andres Tuxtla.

56. Fulica americana (Gm.).
Jalapa.

57. Querquedula discors (L.).
Jalapa.

58. Dafila acuta (L.).
Jalapa.

59. Erismatura dominica (Linn.), Pl. Enl. 968.
Jalapa.

1a

1b

3

2a

2b

1. Cyclostoma Eugeniæ, Reeve. 2. Cyclostomæ tubulum Reeve
3. Strombus taurus, Reeve

1a

1b

2a

3a

3b

2b

4a

4b

1. Trochus (Euchelel) alabastrum, Reeve
2. Murex Barclayi, Reeve.
3. Pyrula (Rhizochilus) De Burghiæ, Reeve.
4. Cypræa Barclayi, Reeve.

G. B. Sowerby, del. et lith.

W. Wesley

60. Podiceps dominicus (L.), Spix, Av. Bras. ii. pl. 101; Max. Beitr. iv. p. 835; Gosse, B. Jamaica, p. 440.

Jalapa.

This little Grebe seems to be extensively diffused over the tropical portion of the New World.

61. Plotus anhinga (Linn.).

Jalapa.

62. Phalacrocorax mexicanus (Brandt.), Bp. Consp. ii. p. 173.

Jalapa.

July 28, 1857.

Professor Busk, F.R.S., in the Chair.

The following papers were read:—

1. Descriptions of Seven New Shells from the collection of the Hon. Sir David Barclay, of Port Louis, Mauritius. By Lovell Reeve, F.L.S., F.G.S.

(Mollusca, Pls. XXXVII., XXXVIII.)

Sir David Barclay, a gentleman resident at the Mauritius, and long known to conchologists as a zealous collector of shells, having availed himself of the occasion of visiting this country to bring a few of the rarer specimens of his cabinet for comparison, I have, at his request, examined them, and selected the following as being new:—

1. Strombus taurus (Pl. XXXVII. fig. 3). *Strom. testa ovata, crassissima, ponderosa; spira exserta, nodoso-tuberculata; anfractibus transversim striatis et tenuiliratis, ultimo superne obtuse angulatis et perampliter bi- tri-tuberculato, tuberculo obliquo peramplo infra in medio ornato; columella densissime callosa, superne fere ad apicem appresse dilatata; apertura subcontracta, labro dense incrassato, tuberculis peramplis obtusis armato superne bidactylo, dactylo supremo elongato, curvato; albida, aurantio-fusco variegata et sparsim vittata, columella et apertura fauce rubido-carneo tinctis.*

Long. $3\frac{1}{2}$ poll., lat. $2\frac{5}{8}$ poll.

Hab. Amirante Islands, a group of the Seychelles.

This remarkable shell, which Sir David Barclay has for some time past known as an undescribed species, and distinguished in his cabinet by the above name, is curiously intermediate in its generic

characters between *Strombus* and *Pterocera*. In detail of pattern and sculpture it resembles *S. laciniatus*, but there is a large central oblique tubercle on the back, and the tip is thickened into two very large obtuse oblong tubercles, the upper part being produced into two decided Pterocera claws, one of which is prolonged in a curved manner to the extent of an inch and a half. The specimen has rather the appearance of being malformed; but notwithstanding this seeming irregularity of growth, there is no doubt whatever of its being specifically distinct from any hitherto described form.

2. Cypræa Barclayi (Pl. XXXVIII. fig. 4). *Cypr. testa pyriformi-ovata, subumbilicata; dorso elevatiusculo, extremitatibus eleganter calloso-productis, subrostratis; basi convexa; dentibus utrinque octodecim ad novemdecim fortibus tumidiusculis; interstitiis conspicue sulcatis, profundis; dentibus exterioribus super labrum decurrentibus, medianis bifidis; nitente, alba, dorso aurantio-spadiceo undique eximie punctato et lentiginoso, extremitatibus aurantio-spadiceo tinctis.*

Long. 1 poll., lat. $\frac{5}{8}$ poll.

Hab. Island of Diego Garcia, a dependency of Mauritius (taken on a block of coral dredged up from deep water).

An exquisitely delicate species in the finest possible condition, perfectly unlike any of this favourite genus hitherto known. It is of an elegantly pyriform shape, with the extremities rather produced; the teeth on each side the aperture being especially characteristic, from their strong development and deeply grooved interstices. The painting is a delicate profusion of orange-buff dots of different degrees of tone upon a shining pearl-white ground; the extremities and teeth, the outer of which extend nearly across the base, being tinged with the orange-buff in a darker and brighter hue.

3. Pyrula (Rhizochilus) De Burghiæ (Pl. XXXVIII. fig. 3). *Pyr. testa pyriformi-ovata, subanguste umbilicata; spira breviuscula, turrita; anfractibus superne late angulato-expansis, ad angulum squamis subamplis plano-compressis flabellatim coronatis, infra basin versus attenuatis, undique dense liratis, liris subtilissime serratis; alba, aperturæ fauce sulcata.*

Long. $1\frac{3}{8}$ poll., lat. $1\frac{1}{4}$ poll.

Hab. China.

A beautifully turbinated pagoda-like shell, being coronated throughout the expanded angle of the whorls with large compressed fan-shaped scales. It is of the same peculiar typical form as the *Pyrula Mawæ*, the umbilicus being, however, much more contracted, and is believed to be an inhabitant of the same locality.

I have the pleasure of naming this very delicate and remarkable species in honour of Mrs. De Burgh, a lady, whose warm assiduity and zeal in collecting shells is equalled by her intelligent apprehension of their characters and correct estimation of their comparative rarity and beauty.

4. Trochus (Euchele) alabastrum. *Tro. testa subdepresso-conoidea, anguste profunde umbilicata; spira exserta; sutura peculiariter profunde excavata; anfractibus deinde concavis, et fortiter tricarinatis, carinis subirregulariter undatis et exquisite serratis; calcareo-alba, carinis punctis nigris subdistantibus peculiariter notatis.*

Long. $\frac{5}{8}$ poll., lat. $\frac{5}{8}$ poll.

Hab. Island of Diego Garcia, a dependency of the Mauritius.

Of this very striking species there is a second specimen in the collection of Mr. Cuming. It is of a pure chalk-white substance, strongly spirally grooved and keeled throughout, the keels being sparsely dotted with black.

5. Murex Barclayi. *Mur. testa trigono-ovata, canali breviuscula, recurva; spira brevi, acuminata; anfractibus transversim tenuissime serrato-liratis et striatis, longitudinaliter trivaricosis, varicibus basin versus conspicue fimbriato-laminatis, interstitiis triseriatim tuberculatis et nodatis; rosaceo-alba, purpurascente et ferrugineo-carneo tincta et maculata.*

Long. $3\frac{1}{4}$ poll., lat. $1\frac{3}{4}$ poll.

Hab. St. Brandon Shoal, near Mauritius (thrown on shore after a hurricane).

This very beautiful species is very closely allied to a shell in Mr. Cuming's collection, which has been attributed by Mr. Sowerby, in his 'Conchological Illustrations,' to *M. trigonulus*, Lamarck. It is also as closely allied to a shell in the collection of the King of Denmark, which was figured for that species by myself in the 'Conchologia Iconica.' From both, however, it is sufficiently distinct to establish its claim to rank as a new species.

6. Cyclostoma tubulum. *Cycl. testa imperforata, turbinata; spira elevatiuscula; anfractibus rotundatis, lævibus; apertura circulari; labro eleganter expanso; lutescente-alba, nigricanti-fusco multifasciata.*

Lat. $1\frac{1}{8}$ poll.

Hab. —— ?

This very elegant species partakes of the characters of *C. Belairi* and *Boivini*, but is quite distinct from either of those species. There is no umbilicus and very little umbilical callosity. The bands are peculiar in extending over the expanded lip to the extreme edge.

7. Cyclostoma Eugeniæ. *Cycl. testa subprofunde umbilicata, subdepresso-orbiculari; spira brevi; anfractibus ad suturam leviter impressis, deinde convexis, spiraliter dense elevato-striatis, in medio acute tenuicarinatis; apertura circulari, labro (in hoc specimine) simplici; fulvescente-spadicea, infra castaneo plus minus tenue vittata.*

Lat. 1 poll.

Hab. Mauritius (found in the heights of Flacq, at the roots of a Bois-de-Natte tree).

Most nearly allied to *C. filosum*, but of lighter texture and warmer colour.

2. Notice of a Large Species of Lineus?, taken on the Coast near Montrose. By Dr. John E. Gray, V.P.Z.S., F.R.S. etc.

(Annulosa, Pl. XLVIII.)

Mr. Beattie, the Secretary of the Museum of the Natural History Society of Montrose, has kindly presented to the Museum a fragment containing the head of a large marine animal which was taken off the coast near Montrose on the 18th July, 1857.

Mr. Beattie has accompanied the specimen with a figure, and the following note respecting it:—

"Length varies from 18 to 20 inches. After having been taken a few hours, it divided itself into two pieces of nearly equal length, the posterior of which divided itself into 32 different pieces, all of which seemed to me to move for a whole day; the head part, continuing to live for two days, moved about, changing its shape continually, and now and then throwing off an additional joint."

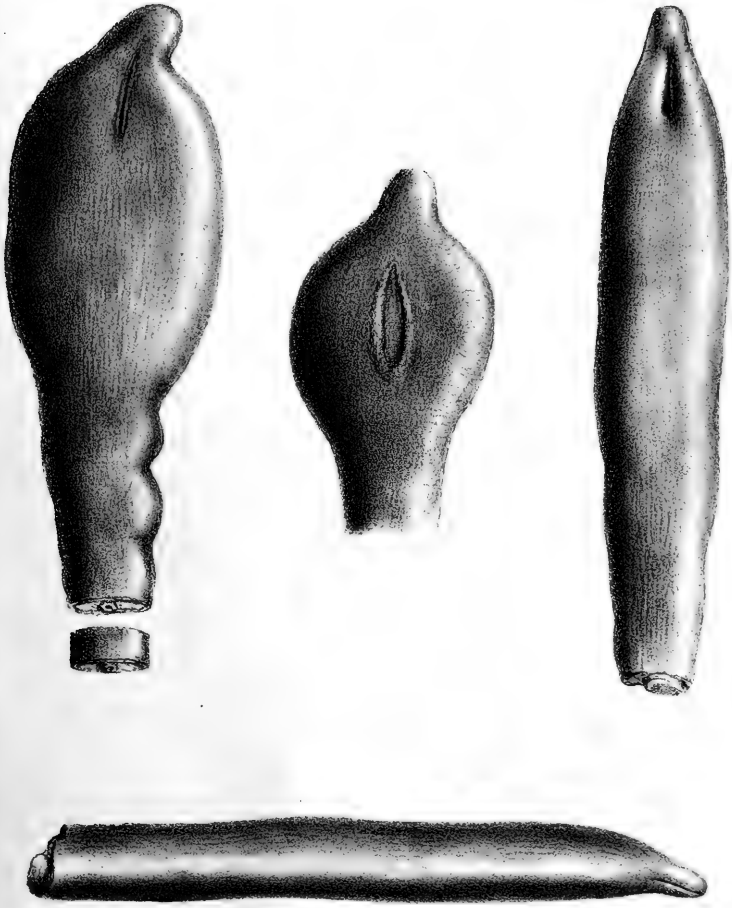
The head portion which is in the British Museum resembles the fragment of a very large *Lineus*, with a large longitudinal mouth opening into a longitudinal cavity, which extends the whole of its length, having a central, broad, longitudinal rounded ridge extending the whole length of the dorsal surface. The sides of the body are irregularly torn.

The specimen is in far too imperfect a condition to describe, but I think that it may be provisionally named *Lineus Beattiæi*, after its discoverer; and I hope that we may be favoured with a more perfect description of the animal made from a living specimen.

I may observe, that there is a large round hole in the centre of the lower part of the body, about one-fourth the entire length from the mouth, which has been mistaken by some persons for the vent; but it is evidently an artificial perforation extending entirely through the substance of the body, and piercing both surfaces of the central cavity.

3. On a Collection of Birds made by Signor Matteo Botteri in the vicinity of Orizaba in Southern Mexico. By Philip Lutley Sclater, M.A., F.L.S. etc.

Signor Matteo Botteri, the well-known Dalmatian botanist and traveller, has transmitted to Mr. S. Stevens a considerable collection of birds formed in the vicinity of Orizaba in Southern Mexico, where he has lately been resident in pursuit of his investigations in various branches of natural history. Having recently been engaged in studying the fine series of specimens of birds obtained by M. Sallé at



LINEUS BEATTIÆI.Gray.

H.Ford.

W.West. Imp.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ZOOLOGY
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localities not very distant from M. Botteri's head-quarters, it was with much pleasure I undertook, at Mr. Stevens's request, to look through this collection—concerning which I now beg to submit the following remarks to the Society. The greater part of the birds obtained by Signor Botteri belong, as might have been expected, to species which have already been mentioned as occurring in M. Sallé's collections. I do not think it necessary therefore to repeat the names of these birds, which are upwards of 120 in number; but I think it will be useful to note the species contained in Signor Botteri's collection, of which M. Sallé has not as yet obtained specimens, so as to render the list of S. Mexican birds as complete as possible.

Mr. J. H. Gurney has kindly communicated to me the names of the *Accipitres* in Signor Botteri's collection, and Mr. Gould has been so good as to examine the Humming-birds.

1. Cathartes aura (L.)?

2. Cathartes atratus (Bartram)?

I have not myself the means of instituting a comparison between these examples and specimens from the United States and from South America—so I cannot say whether they are really referable to the northern or southern species—if these are really truly distinct.

3. Polyborus tharus (Mol.).

This peculiar Accipitrine ranges over the whole of South America down to Patagonia, and northwards as far as Texas and Florida.

4. Buteo harlani, Aud.

Mr. Gurney considers this bird probably a variety of *Buteo borealis*. Mr. Gurney remarks, "There appears to me to be two varieties of *Buteo borealis* frequently met with: one with a rufous breast and belly, found in Mexico, Texas and California; the other with a smoky-brown breast, found in Mexico, Texas, and some of the Southern States, but not, as far as I have observed, westward of the Rocky Mountains, and therefore differing in this particular from the range of the red-bellied variety. This brown-bellied variety is the *Buteo harlani* of Audubon, as may be seen by reference to his original specimen in the British Museum."

The rufous-breasted bird spoken of by Mr. Gurney is doubtless the same as that called "*Buteo montanus*, Nuttall," by Mr. Cassin in Proc. Ac. Sc. Phil. viii. p. 39, and previously confounded by him with *Buteo Swainsoni*.

5. Buteo lineatus (Gm.).

6. Buteo pennsylvanicus, Wilson.

7. Buteo erythronotus (King): Strickl. Orn. Syn. p. 34.

8. Morphnus anthracinus (Licht.): Strickl. Orn. Syn. p. 25.

9. Circus hudsonius (Linn.).

10. Otus brachyotus (Linn.).

11. Cotyle flavigastra (Vieill.), Temm. Pl. Col. 161. fig. 2.

A single specimen in M. Botteri's collection seems undoubtedly referable to this species, which I little expected to find so far north.

12. Cyanomyia cyanocephala (Less.).

M. Botteri's collection contained specimens of three other *Trochilidæ*, namely *Delattria rhami*, *Amazilius arsinoe*, and *Trochilus colubris*, all of which also occurred in M. Sallé's series from Cordova.

13. Salpinctes mexicanus (Sw.), Bp. Consp. p. 224.

14. Helmitheros celatus (Say), Bp. Consp. p. 315.

15. Helmitheros —— ?

Botteri, no. 130.

An obscure species, probably the same as no. 64 of Sallé's collection.

16. Helmitheros —— ?

A small greenish species apparently of this genus, of which I have also specimens in my own collection from Guatimala and Mexico.

17. Regulus satrapa, Licht.

A young bird of this species, which has already been noticed as far south as Texas. See Sitgreave's Report, p. 67.

18. Turdus minor, Gm.; Bp. Consp. p. 271.—*Merula olivacea*, Brewer.—*Turdus olivaceus*, Giraud, B. Long Island, p. 91 (1844). —*Turdus swainsoni*, Cab. in Tsch. F. P. p. 48?

M. Botteri's examples do not appear to differ much from the N. American bird, and the New Grenadian *T. minimus*, Lafr., is hardly separable. I have also seen specimens from Guatimala, which are referable to this species.

19. Turdus solitarius, Wilson; Bp. Consp. p. 270.—*Turdus silens*, Sw. Phil. Mag. 1827, p. 369.

This species is easily distinguishable from the last by its rufous tail. It is common in New Jersey, U. S. A., where I obtained specimens in October 1856, and, I believe, in the United States generally. Botteri's examples do not differ from these.

20. Toxostoma curvirostre (Sw.), *vide antea*, p. 126.

21. Mimus polyglottus (Linn.).

Already noticed by Mr. Swainson (Phil. Mag. 1827, p. 369) as inhabiting Mexico, but M. Botteri's specimen seems smaller; and further examination and comparison of specimens should be made to prove this species identical with the N. American bird.

NEOCHLOE, gen. nov.

Neochloe *genus novum* Vireoni *affine, sed ad* Sylvicolam *et hujusmodi genera spectans. Rostrum magis carinatum, basi latiore, apice magis acuta : alæ breves, quadratæ, remige prima brevi, secunda longiore, quarta, quinta, sexta et septima fere æqualibus et tertiam paulo superantibus ; secundariis longis et primariam tertiam excedentibus : pedes ut in genere* Vireone.

22. NEOCHLOE BREVIPENNIS, sp. nov.

N. cinereus, dorso murino et viridi paululum lavato : capite toto supero cum marginibus alarum et caudæ flavicanti-viridibus ; remigibus et rectricibus intus nigricanti-cinereis : abdomine medio crissoque albis.

Long. tota 5·0, alæ 2·2, caudæ 2·1.

Of this little bird must, I think, be constituted a third genus of *Vireoninæ* ; the peculiar form of the wing rendering it impossible to arrange it as either a *Vireo* or *Vireosylvia*. It has much of the general form of a small species of the former genus, but is readily separable by the short and square wing, all the secondaries (except the three outer) exceeding the second primary in length.

M. Botteri's collection contains one example of this bird (numbered 277), which is labelled "Orizaba, 8 Oct. 1856."

23. VIREOLANIUS MELITOPHRYS, Bp. Consp. p. 330.

Botteri, no. 325.

A single specimen of this very curious bird in Sig. Botteri's collection is the first that has ever come under my notice. This being the type of the genus, the species called *Vireolanius icterophrys*, Bp. (P. Z. S. 1855, p. 151. pl. 103) will be rather abnormal—the bill being more like *Cyclorhis* and the tail shorter. This form seems to unite *Vireo* and *Cyclorhis*, and inclines me to agree with Prince Bonaparte's views in arranging them not far apart. *Icteria* also, to which the present bird shows much resemblance in colour, should probably be placed in the same family.

24. MYIADESTES OBSCURUS, Lafr. R. Z. 1839, p. 99.

M. Botteri has transmitted examples of this bird, as also of my *M. unicolor* (P. Z. S. 1856, p. 299), a nearly allied species.

25. MOLOTHRUS PECORIS (Gm.).

Agrees with N. American specimens. Also noticed by Mr. Swainson, Phil. Mag. 1827, p. 436.

26. AGELÆUS GUBERNATOR (Wagl.), Bp. Consp. p. 430.

27. HEDYMELES MELANOCEPHALUS (Sw.).—*Guiraca melanocephala*, Sw. Phil. Mag. 1827, p. 438.

28. PYRANGA HEPATICA (Sw.), P. Z. S. 1856, p. 124.

29. PYRANGA LUDOVICIANA (Sw.), P. Z. S. 1856, p. 125.

30. Spiza versicolor, Bp. P. Z. S. 1837, p. 20.

Specimens of this bird were obtained by Lieut. Couch in the State of New Leon, which are now in the Museum of the Philadelphian Academy,—so it appears to be distributed all through Mexico.

31. Ammodromus —— ?

M. Botteri has transmitted a single example—not in very good order—of a bird apparently belonging to this genus, which is probably undescribed. It somewhat resembles *Ammodromus ruficeps*, figured by Mr. Cassin in his 'Birds of California,' but is more cinereous in plumage. I wait for additional specimens before venturing to characterize as new a bird belonging to this complicated group.

32. Zonotrichia botterii, sp. nov.

Supra ex cinereo rufescens, capitis et dorsi medii pennis mediaaliter fusco-nigris, harum autem marginibus rufescentibus, colore rufescente fusco mixtis : alis nigricantibus, tectricibus omnibus pallido fusco late, remigibus rufo anguste, extus limbatis : cauda graduata, nigricante ; rectricum externarum apicibus valde dilutioribus, pallide cinereis : subtus albidus, pectore cinerascentiore, gula clariore, præcipue ad latera rufescente irroratus : carpo flavicante : alis et cauda subtus cinereis : rostro plumbeo ; tomiis pallidioribus : pedibus flavis.

Long. tota 6·0, alæ 2·5, caudæ 2·6.

I have in vain attempted to identify this bird with any of the known species of N. American *Zonotrichiæ*, and am forced to the conclusion that it is probably undescribed. It comes nearer to *Z. cassinii*, Woodhouse (Proc. Ac. Sc. Phil. vi. p. 60), than to any other species with which I am acquainted ; but differs from this entirely in the markings of the upper surface, the whole centre of the feathers being dark, whereas in *Z. cassinii* the dark colour is confined to a subapical spot. The structure of the two birds is very much alike, but the feet are rather stronger in the present species. I hope M. Botteri will forward better specimens of this interesting species (the examples in the present collection being badly preserved), so as to allow me to make a more accurate investigation of its differential characters.

33. Picus jardinii, Malh. R. Z. 1845, p. 374.

A single example, wanting the tail, is apparently referable to this rather curiously coloured species of *Picus*.

34. Coccyzus erythrophthalmus (Wils.).

One specimen, apparently of this species, seems to be rather smaller in size than N. American examples.

35. Leptoptila albifrons, Bp. Consp. ii. p. 74. — *Perist. brachyptera*, G. R. Gray, in Mus. Brit.

Much confusion has been caused in the nomenclature of this

Pigeon (as in numberless other instances) by the practice of publishing names without descriptions.

36. Tringoides macularius (Linn.), Wils. Am. Orn. pl. 59. fig. 1.

37. Glottis melanoleuca (Gm.). — *T. vociferus*, Wils. Am. Orn. pl. 58. fig. 5.

38. Querquedula carolinensis (Gm.), Wils. Am. Orn. pl. 70. fig. 4.

4. On the Presence or Absence of Air in the Bones of Birds. By Edward Crisp, M.D. etc.

In my last communication upon this subject (see p. 9), I stated that I purposed adding to the list of birds dissected, and afterwards describing the air-sacs in the thoracic and abdominal cavities; the method by which air is admitted to the hollow bones, and the flight of birds in relation to these matters; but as the communication is longer than I expected, I will reserve the second part of my subject, viz. the admission of air to the bones, for my next and concluding paper.

My dissections * have not been so numerous as I could have wished, but the following list, in addition to that of my first communication, will, I think, enable me to form tolerably accurate conclusions. The birds since examined are the following:—

Kestrel. *F. tinnunculus.*
Kite. *F. milvus.*
Common Buzzard. *F. buteo.*
Marsh Harrier. *F. æruginosus.*
American Eagle Owl. *S. Americanus.*
Long-eared Owl. *S. otus.*
Tawny Owl. *S. aluco.*
Barn Owl. *S. flammea.*
Glossy Starling. *Juida nitens.*
Spotted Fly-catcher. *M. grisola.*
Whin-chat. *S. rubetra.*
Wood Wren. *S. sibilatrix.*
Willow Wren. *S. trochilus.*
Blue Titmouse. *P. cæruleus.*
Marsh Titmouse. *P. palustris.*
Long-tailed Titmouse. *P. caudatus.*
Black-headed Bunting. *E. schæniclus.*
Canary. *C. canaria.*
Jay. *C. glandarius.*
Crow. *C. corvus.*
Cuckoo. *C. canorus.*
Spotted Woodpecker. *P. major.*
Grey Parrot. *P. erythacus.*
Crested Paraqueet. *P. Novæ Hollandiæ.*
Impeyan Pheasant. *P. Impeyanus.*
Heron. *A. cinerea.*
Turnstone. *S. interpres.*
Sarus Crane. *G. Antigone.*
Bean Goose. *A. segetum.*
Cereopsis Goose. *Cereopsis Novæ Hollandiæ.*
Eider Duck. *A. mollissima.*
Smew. *Mergus albellus.*
Red-necked Grebe. *P. rubricollis.*
Great Northern Diver. *C. glacialis.*
Cormorant. *C. cormoranus.*

* I have examined the *skeletons* of numerous birds not mentioned in the above lists; but for the sake of greater accuracy, I think it better to confine myself to birds dissected soon after death.

The above list of thirty-five birds (eight of them foreign) includes eight rapacious; of these the Falconidæ had air in the humeri, femora, and bones of the trunk. The four Owls, Strigidæ, had air only in the humeri. Of the twelve passerine birds the Carrion Crow, the Jay, and the Tits had air only in the humeri; whilst the remaining seven, including five birds of passage, had no air in the bones. The humeri of the Impeyan Pheasant were hollow. In the four climbers the humeri contained air, but the femora were full of marrow. Of the three Waders, the Turnstone had the bones of the limbs free from air, but the humeri of the Heron and Sarus Crane were hollow. In three of the web-footed birds, the geese and ducks had hollow humeri, but the other four birds were without air in the bones of the extremities. So that only five Falconidæ of the above thirty-five birds, had air in the limbs; the arm-bones of nineteen were hollow, and in twelve the limb-bones contained marrow.

General Summary.—Adding these specimens to the fifty-two before described, the deduction is as follows. Air in many of the bones, 5 (Falconidæ); air in the humeri and not in the inferior extremities, 39; no air in the extremities, and probably in none of the other bones, 48. I say probably, because I have not inspected the trunk bones in all; but in the Swallow, Martin, Snipe, and many birds of passage, I have found all the bones filled with marrow; and I infer that when the bones of the limbs contain no air, that those of the trunk are also air-less.

It will be remarked that I have spoken chiefly of the bones of the extremities; but in many birds that have air in the humeri and femora, the sternum, clavicles, scapulæ, furcula and vertebræ are also supplied with this fluid. In the sternum, the air-holes are seen along the base of the keel; in some birds one air-hole only is present; in others, many exist, giving this part a cribriform appearance; the vertebræ, too, of some birds (especially the Falconidæ), as shown by a section of the spine of the Golden Eagle (*A. chrysaëta*), are composed of a beautiful net-work of bone, rendering them extremely light.

The fact that I am especially anxious to bring before the Society is, that in no bird that I have inspected did the bones of the extremities beyond the humeri and femora contain air.

Air-sacs in the thoracic and abdominal cavities.—I have examined these in the various classes of birds, and have found a great resemblance in all. They are mostly larger in high-flying birds and in those of long and rapid flight. The best mode of inspecting these cavities, which are formed by doublings of the pleural or peritoneal membranes, is to inflate them in the dead bird by means of a blow-pipe inserted in the trachea. A ligature is then placed upon the air-tube, and the body of the skinned bird exposed to a slow heat for a few hours; the membranes are by this means rendered dry and stiff, so that the thoracic and abdominal viscera may be removed. The body of the Long-eared Owl (*S. otus*) on the table has been thus treated, and many of the air-sacs are plainly seen. But let me describe more minutely the situation and form of these sacs in a few

birds. In the Barn Owl (*S. flammea*) the upper part of the chest is closed (as in most birds) by a tough membrane; in the thoracic cavity are two anterior and two posterior sacs on each side, and a middle cavity, which may be called the sternal sac. The inferior boundary of these sacs is a transverse duplicature at the base of the heart. In the upper part of the abdomen are two large sacs surrounding both lobes of the liver, and a triangular sac between them. On each side is a long anterior sac, the left extending from the lung above, having the stomach and gullet on the inner side and the ribs on the outer, bounded below by a membranous expansion extending from the last ribs to the abdominal muscles. On the right side nearly the same arrangement prevails. Posterior to the last described are two large sacs covering the kidneys, and extending to the coccyx.

In the abdomen the apertures in the lungs, by which air escapes into these cavities, are seated below the membranous diaphragm on each side; they are best seen by inflating the trachea when the bird is under water; but in some birds, the geese for example, the apertures are so large, that they are readily seen without inflation. In the Long-eared Owl (*S. otus*), the Tawny Owl (*S. aluco*), Marsh Harrier (*F. æruginosus*), and Common Kite (*F. milvus*), there is nearly the same arrangement. In the Gulls (*Laridæ*), which, judging from those dissected, have no air in the bones, these sacs are very large, and the bodies of these birds may be blown out to a great size. In the Pelican (*P. onocrotalus*), they are comparatively larger than in any bird I have examined.

These cells are all readily distended by inflation through the trachea, and when one of them is punctured the others become lax. If the inflation is made through the femur in one of the Falconidæ, the air escapes by the trachea, but I have not succeeded in inflating the abdominal cells through the humeral aperture; numerous experiments, however, will be required before one can speak positively upon this subject.

The aperture by which the air is admitted into the humerus is seated upon the upper and inner part of the head of this bone. It is of a rounded or oval form, sometimes consisting of a single opening, and in other instances, especially in the smaller birds, of several small perforations in a thin layer of bone. In the Black Swan (*C. niger*) there is a curious net-work at the entrance, consisting of eighty or a hundred openings. In the Golden Eagle (*A. chrysaëta*) the external aperture is large, with numerous small perforations. In the Snowy Owl (*S. nyctea*) it is of a circular form, with a few small openings through a thin layer of bone. In the thigh bone this aperture (when present) varies in shape: in some of the Owls two small openings exist, with a ridge between them; in the Golden Eagle and in most of the Falconidæ I have examined, it is of large size.

I have examined the humeral aperture in many young birds, Hawks, Owls and Magpies, when full-fledged, and have found it closed by a thick covering, the spot being indicated by the bloody appearance of the membrane. In these young birds, which in the

adult state have hollow humeri, the cavity of these bones is filled with thin marrow; and probably it is not till some time after the wings have been used, that the air-hole is formed by the absorption of the membranous covering.

In my last paper I stated that in one Swift (*C. apus*) the humeri were filled with marrow, and in two others they were hollow. I have only been able to obtain one other specimen, and in this the humerus was hollow; so that the first described was probably a young bird: and the same remark will apply to the Goat-sucker (*Caprimulgus*), which I now find has in the adult state a hollow humerus.

The hollow bones are strengthened at their extremities by cross and transverse beams; but notwithstanding the assertion of many, that a hollow bone is stronger than one containing marrow, I believe these bones to be considerably weaker: they are readily splintered by shot, as all who are accustomed to shoot a variety of birds are aware, from the number of broken wings among the accipitrine and gallinaceous birds. Some humeri containing marrow are of great strength and thickness, and very difficult to break; indeed a shot may pass through them without splintering the bone. The humerus of the Great Northern Diver (*C. glacialis*) on the table, is as thick and heavy as that of most quadrupeds: the cavity for the marrow is very small, and the parietes of the cylinder measure 3 lines. In addition to its great weight, it is 3 inches in length, forming a remarkable contrast with the Swift (*C. apus*), the length of which is only 4 lines.

Before closing this division of my paper, I may mention that most writers, in describing the humerus of a bird, speak of the air-hole as if generally present; but I believe in the majority of birds it is not to be found in this or any other bone.

The manner in which air is supplied, and the muscular apparatus connected with the humeral and femoral apertures, will, as I have said before, be given in another communication. I may merely observe here, that a prolongation of the thoracic air-sac is continued over the joint, so as to allow of the most perfect mobility. The thigh-bone, when hollow, is supplied with air in a like manner.

The flight of birds in relation to the presence of air in the bones.—Notwithstanding the assertion before quoted, "*that in the diurnal birds of prey, as in almost all other birds of flight, the femur is filled with air*," it will be found, on reference to the table, that scarcely one bird of flight has a hollow femur, and that the great majority of the British birds of passage have no air in the bones, judging from those examined; thus of the twenty-one birds of passage named in the tables, only five, the Turtle-Dove, Swift, Goat-sucker, Cuckoo and Bean Goose had hollow humeri, but these had no air in the femur; the remaining sixteen had marrow in all the bones of the limbs. It will be seen also that many birds of short flight, as the Tits, Woodpeckers, and others, have hollow humeri.

The presence of air too in the humerus does not appear to in-

fluence the mode of flight, as instanced by the Swift, Swallow, and Martin, the Tits and the Wagtails, the Starlings and Partridges. It will probably be found, when this matter is more fully investigated, that all soaring birds, and those that remain stationary in the air for a short time, have hollow humeri, as the Falcon and Skylark. It will be interesting also to observe the influence of climate as regards the presence of air in the bones.

If we look to the form and length of the bones of the wing, how different are they in birds possessing almost equal powers of flight! Take this example before me, the wing of the Swift and of the Marsh Harrier. The length of the bones of the former is:—humerus, 4 lines; cubitus, 8 lines; metacarpus, 8 lines; phalanges, 4 lines; total 2 inches; longest primary feather, $5\frac{1}{2}$ inches. Total length of wing, $7\frac{3}{4}$ inches.

In the Marsh Harrier the humerus is 4 inches in length; cubitus, $4\frac{3}{4}$ inches; metacarpus, $2\frac{1}{2}$ inches; phalanges, 1 inch; and pollex, $\frac{3}{4}$ of an inch; the longest primary feather, 12 inches; the length of the bones, 13 inches. Total length of wing, 23 inches.

The difference in the comparative length of the wing-bones in these birds is very remarkable, and numerous instances of a similar kind might be adduced; but I am obliged to limit myself to a few examples.

From the above investigation I have come to the subjoined conclusions:—

1st. That in the majority of British birds no air-cavities connected with the lungs are present in the bones.

2ndly. That the presence of air in the bones is not necessary for swift and long-continued flight, as instanced especially by the Gulls, Snipes, Swallows and Martins.

3rdly. That in no bird that I have examined was air found in the bones of the extremities beyond the *humeri* and *femora*.

Dr. Crisp exhibited a nest he had found in June last in the eastern part of Suffolk, which he believed to be that of the Great Grey Shrike (*Lanius excubitor*). It was placed in a thick hawthorn fence, about 12 feet from the ground, upon a large forked branch. It was composed chiefly of dried grass and a little moss on the exterior, the lining of short grass; no horsehair nor clay was present; the form rather shallow, and the size about that of the Missel Thrush (*T. viscivorus*), the diameter 6 inches, the greatest depth from the rim 4 inches; from the top of the dome next described to the bottom of the nest $9\frac{1}{2}$ inches. It was closely domed over with twigs, varying in length from 8 to 12 inches, a small hole being left in the rim for the entrance of the bird. The nest resembled that of the Magpie (*P. caudata*) in miniature, but, as before stated, no clay entered into its composition.

Dr. Crisp was inclined to think that this was the deserted and unfinished nest of the Grey Shrike, as two birds of the colour of a Jay were seen about the spot early in the spring by a person well

acquainted with all our common birds, and who stated that "he never before saw any birds of a similar kind." Dr. Crisp also thought that near a wood where Squirrels, Jays and Magpies were abundant, as in this locality, the bird might sometimes cover its nest. Mr. Wolf informed him, "that he once found a nest of this description in Germany, which he believed was that of the Grey Shrike."

November 10, 1857.

Dr. Gray, F.R.S., V.P., in the Chair.

The following papers were read:—

1. On several New Species of Birds from various parts of the World. By John Gould, V.P., F.R.S. etc.

Mr. Gould called attention to three species of Australian birds collected by Mr. Elsey during the recent expedition under A. C. Gregory, Esq., from the Victoria River on the north-west coast to Moreton Bay: two of these birds were of especial beauty and interest, viz. a *Psephotus* and a *Malurus*. The former is allied both to the *P. pulcherrimus* and *P. multicolor*, but differs from either, among other characters, by the rich yellow mark on the shoulder; and the *Malurus* is distinguished from all the other members of its genus by its larger size and by the beautiful lilac circlet which adorns the crown. The third species alluded to was a *Petroica*, allied to the *P. superciliosa*, a bird discovered by the late Mr. Gilbert in the neighbourhood of the Burdekin Lakes, and which with the present would admit of separation from the other species of the genus.

For the Parrakeet Mr. Gould proposed the name of

Psephotus chrysopterygius.

Male.—Band across the forehead, extending above the eye to its posterior angle, very pale yellow; on the centre of the crown a patch of black; sides of the head, cheeks, neck, throat, upper portion of the abdomen, lower part of the back, rump and upper tail-coverts, verditer blue, somewhat greener on the cheeks and upper tail-coverts; immediately below the eye a tinge of yellow; back of the neck, back and scapularies, light greyish-brown, slightly tinged with green; shoulder and lesser wing-coverts fine yellow; primaries and secondaries black, margined externally with blue; feathers of the lower part of the abdomen, vent, and under tail-coverts, light scarlet, margined with greyish green; two centre tail feathers dark green at the base, passing into deep blue towards the extremity, and tipped with dull black; the remaining tail feathers light green crossed by an

irregular oblique band of dull bluish black, beyond which they become of a paler glaucous green, until they end in white; but each has a dark stain of bluish green on the outer margin near the tip; irides brown; bill and nostrils bluish horn-colour; feet mealy grey.

Total length, 11 inches; bill, $\frac{3}{8}$; wing, $4\frac{1}{4}$; tail, 7; tarsi, $\frac{1}{2}$.

Female.—Similar to the male in colour, but all the hues much paler, and the markings much less strongly defined.

Young.—In this state the whole of the head, all the upper surface, wing-coverts, throat, and breast are of a pale glaucous green; the rump and upper tail-coverts and the tail similar to the same parts in the male, but not so bright; and the lower part of the abdomen is greyish white, with faint stains of scarlet.

In the notes accompanying the specimens, Mr. Elsey states that they were procured on the 14th of Sept., 1856, in lat. 18° S. and long. 141° 30′ E., that their crops contained some monocotyledonous seeds, and that the *os furcatorium* was small, but well-developed; of this he was certain, as he had a discussion with Mr. Gregory on the subject, and dissected on the same day *Platycercus palliceps* and *Aprosmictus erythropterus*, and noticed that while the former was entirely destitute of that bone, and had only a weak ligamentous band in its place, the latter had a distinct os furcatorium closely resembling that of *Psephotus*. He remarked, too, that the flight of the *Psephotus* was swift and decided; and adds, that he never saw it on the ground, although the contents of its crop would indicate that it obtained its food there.

The Malurus he designated

MALURUS CORONATUS.

Male.—Crown of the head rich lilac purple, with a triangular spot of black in the centre, and bounded below by a band of velvety black, which commencing at the nostrils passes backwards through the eye, dilates upon the ear-coverts, and meets at the back of the neck; back and wings light brown; tail bluish green, becoming of a deeper hue towards the extremity; lateral feathers margined externally and tipped with white; under surface buffy white, becoming gradually deeper on the flanks and vent; irides brown; bill black; feet fleshy brown.

Total length, $6\frac{1}{2}$ inches; bill, $\frac{3}{4}$; wing, $2\frac{1}{4}$; tail, $3\frac{5}{8}$; tarsi, $1\frac{1}{8}$.

Female.—All the upper surface light brown; lores and space behind the eye white; ear-coverts chestnut; in other respects similar to the male.

Hab. Victoria River, North-Western Australia.

The Petroica he proposed to call

PETROICA? CERVINIVENTRIS.

All the upper surface, wings and tail chocolate-brown; line over the eye, throat, tips of the greater wing-coverts, base of the primaries, base and tips of the secondaries, and tips of the tail, white;

breast grey; abdomen deep fawn colour, becoming almost white in the centre; bill black; feet blackish brown; irides dark brown.

Total length, $6\frac{1}{2}$ inches; bill, $\frac{3}{4}$; wing, $3\frac{1}{4}$; tail, $3\frac{1}{4}$; tarsi, $\frac{7}{8}$.

Hab. Victoria River, North-western Australia.

The three birds above described are in the British Museum.

The next species to which he directed attention was a new Hawk belonging to the genus *Spilornis*, and which differs remarkably from the *S. undulatus* or Bacha of the continent of India, and the *S. holospilus* of Manilla.

For this bird he proposed the appellation of

Spilornis rufipectus.

Crown of the head and the lengthened feathers of the occiput deep black, the occipital plumes margined at the tip with rufous; feathers at the nape black, margined with rufous, showing conspicuously; all the upper surface and wings dark chocolate-brown, with paler edges; chin and sides of the neck greyish black; chest deep cinnamon-brown; primaries and secondaries blotched with white at intervals on their internal web; under wing-coverts, abdomen, vent, thighs, and under tail-coverts cinnamon-brown, crossed by bands composed of two large spots of white bounded above and below with a narrow line of black; tail dark brown, crossed near the base by a narrow and not very distinct band of greyish, and near the apex by broad bands of a lighter hue passing into whitish on the edges of the internal webs and narrowly edged at the tip with pale reddish-brown and white; bill blackish-brown; the cere, naked orbits, and feet appear to have been yellow.

Total length, $19\frac{1}{2}$ inches; bill, $1\frac{3}{8}$; wing, $13\frac{1}{4}$; tail, 9; tarsi, $2\frac{3}{4}$.

Hab. Celebes, vicinity of Macassar. From the collection of Mr. Wallace.

The next was a highly interesting species of Bullfinch, which he designated

Pyrrhula aurantiaca.

Male. Bill, face, wings, and tail deep purplish-black; rump, upper and under tail-coverts white; the remainder of the upper and under surfaces rich reddish-orange, deepest above; the lesser wing-coverts are also reddish-orange, as is the apical half of the innermost of the greater wing-coverts, while the outer ones are slightly tipped with buffy-white; irides black; feet pinky-flesh colour.

Total length, $5\frac{1}{8}$ inches; wing, $3\frac{1}{4}$; tail, $2\frac{3}{8}$; tarsi, $\frac{5}{8}$.

Female. Has the black circle round the bill; head and neck ash-coloured; back ash colour, tinged with orange-red; lower parts like those of the male, but much less brilliant and approaching to olive.

For his knowledge of this pretty species Mr. Gould was indebted to the researches of Dr. A. Leith Adams of the 22nd Regiment, who killed it on the Western Himalayas, and who informs me that he

first met with it in the month of March 1852, on one of the wooded slopes of the Pir Pinjal Mountains, westward of the valley of Cashmere; its habits closely resemble those of *P. erythrocephala*, frequenting as it does thick bushy places, and being usually seen in small societies. It is not uncommon in the valleys and jungles around Cashmere. Dr. Adams remarks that, although the two species are so similar in their habits and in the localities they frequent, he never met with them in company; but noticed that while the *P. erythrocephala* is tolerably abundant in the ranges around Simla, the present species was only seen on the hills in the neighbourhood and to the westward of Cashmere. Its call is not so loud as that of *P. vulgaris*, and somewhat resembles the chirp of the Greenfinch, *Chlorospiza chloris*.

For a new Motmot Mr. Gould proposed the name of

MOMOTUS ÆQUATORIALIS.

Crown of the head deep black, surrounded by a zone of verditer green, to which succeeds a line of fine deep blue from the anterior portion of one eye round the occiput to the anterior portion of the other; to this succeeds a fringe of deep black from the nostrils round the back of the neck; lores, space below the eye and ear-coverts black, with a very fine fringe of blue on the lower edge and a small tuft of verditer green at its hinder extremity; all the upper surface green, washed with cinnamon on the shoulders; primaries green on their external webs, black on the inner; tail dark bluish-green; under surface green, washed with cinnamon and with a tuft of broad round black feathers, margined at their base with verditer green, in the centre of the breast; bill black; feet blackish-brown.

Total length, 16 inches; bill, $2\frac{1}{8}$; wing, $6\frac{1}{2}$; tail, $8\frac{3}{4}$; tarsi, $1\frac{1}{4}$.

Hab. Archidona, near the Equatorial line, on a branch of the Rio Napo.

Remark.—This is a large and robust species, and differs from all others in the broad spatulate feathers of the breast tuft.

A very fine *Odontophorus*, remarkable for the rich chestnut-red colouring of its under surface, received the appellation of

ODONTOPHORUS HYPERYTHRUS.

Crown of the head, wings, and upper surface of the body dark brown, minutely freckled with black; orbits naked, beset with minute white feathers continued in a stripe behind the eye; on the centre of the back and wing-coverts are large blotches of velvety-black; and at the tip of the innermost secondaries a small oval spot of buff; throat, sides of the chest, breast, and abdomen dark chestnut-red; vent, thighs, and under tail-coverts blackish-brown, indistinctly banded with dark sandy red; tail nearly black; bill and feet blackish-brown.

Total length, 10 inches; bill, $\frac{7}{8}$; wings, $5\frac{3}{4}$; tail, $2\frac{1}{2}$; tarsi, $2\frac{1}{8}$.

Hab. Santa Fé de Bogota.

Remark.—For this bird Mr. Gould is indebted to the Messrs. Verreaux of Paris, who obtained it in a collection from Santa Fé de Bogota. In size it fully equals, if it does not exceed, *O. dentatus* and *O. speciosus*, from which latter it differs in the total absence of any black on the throat.

2. Notes on an unnamed Parrot from the Island of St. Domingo, now living in the Society's Gardens; and on some other Species of the same Family. By Philip Lutley Sclater, M.A.

(Aves, Pl. CXXVII.)

M. Auguste Sallé has called my attention to the fact, that the White-fronted Parrot of San Domingo, commonly regarded as the immature state of *Chrysotis leucocephala*, is in truth quite a different species from that bird. It may be distinguished at once by having no red on the throat and a narrower white frontal band than the true *leucocephala*, which is from Cuba. M. Sallé, who has had ample opportunities of observing this bird in its natural state, is confident as to its distinctness, and I have no doubt he is quite right. Under these circumstances, I propose to call the San Domingan bird, which has not yet received a specific designation, *Chrysotis Sallæi*,—a just tribute to one who has made such extensive discoveries in the Natural History of the New World, and is the only modern naturalist who has explored the still imperfectly-known zoology of the island which it inhabits.

The true *Chrysotis leucocephala* is figured in Edward's 'Gleanings,' vol. iv. pl. 166, as "*The White-fronted Parrot*," and by Buffon in the 'Planches Enluminées' as the "*Perroquet à front blanc du Sénégal*," and "*Perroquet de la Martinique*," nos. 335 and 549. It is also well represented by Le Vaillant as the male of "*Le Perroquet à face rouge*" (pl. 107 et 107 bis). It is included in the revised list of Cuban birds lately published in Cabanis' Journal; and specimens in the collection of the Academy of Philadelphia were procured by Mr. Richard Taylor in that island.

Examples of this bird likewise occur in the British Museum, and there is a specimen now living in the Society's gardens.

The *Chrysotis Sallæi* is figured by Buffon in his 'Planches Enluminées,' no. 548, as the "*Perroquet à ventre pourpre de la Martinique*." Specimens collected by M. Sallé in San Domingo are in the British Museum and at the Jardin des Plantes at Paris, and there are two fine examples now living in the Society's gardens.

There is likewise living in the Society's gardens an example of another nearly allied species of Parrot, which has also been sometimes confounded with the true *Chrysotis leucocephala*. This is the Red-fronted Parrot (*Chrysotis vittata*) figured in the 'Planches Enluminées' under the title of "*Perroquet de S. Dominique*," and often called by Gmelin's specific name "*dominicensis*." It is not,

however, as far as I know, found in the island of Dominica, but in Puerto Rico, whence examples now in the Museum of the Jardin des Plantes at Paris were transmitted by Maugé. Le Vaillant has represented this bird as the female of his "*Perroquet à face rouge.*"

Mr. Gosse's *Psittacus leucocephalus* from Jamaica, of which there is one specimen in the British Museum, seems different again, and ought probably to bear the name *Chrysotis vinaceicollis*; the bird described by M. de Lafresnaye as *Pionus vinaceicollis* (Rev. Zool. 1846, p. 321) being probably intended for the young of this; but a larger series of examples is perhaps requisite to confirm this species.

It is very interesting to notice how the different islands of the Antilles are thus tenanted by distinct, though corresponding, species of Parrots:—Cuba by *Chrysotis leucocephala* and *Conurus guianensis** (?), Jamaica by *Chrysotis vinaceicollis* and *Conurus nanus*, Puerto Rico by *Chrysotis vittata* and *Conurus maugæi*†, and San Domingo by *Chrysotis Sallæi* and *Conurus chloropterus*‡.

While upon the subject of Parrots, I may add some notes taken during a late inspection of specimens of these birds in several Museums.

Prince Bonaparte, in one of his last papers, proposed to call the little Mexican Conure, which so nearly resembles *Myiopsitta tigrina* of Souancé, *Bolborhynchus catharina* (Compt. Rend. March 1857). But there is no doubt that the Mexican bird (whether really distinct from the Venezuelan *tigrina* or not) should bear the name *lineola* of Cassin. Mr. Cassin's type, which is in the Philadelphian Academy's Museum, was obtained by Mr. Pease, near Puente Naçional, in the State of Vera Cruz, and there is no ground for supposing error in the locality. I have seen the same bird in the collection of Dr. Cabot of Boston. It was obtained by him in Yucatan, in the island of Cosumel in 1842.

The Parrots belonging to the genus *Tanygnathus* of the East Indian islands are in much confusion, which a more accurate knowledge of the localities whence specimens are brought would, I think, soon clear up. The type of the genus, *Tanygnathus macrorhynchus* (Pl. Enl. 713), distinguished by its enormous blood-red beak and green head, with the wings varied with black and yellow, is said to be from New Guinea. This is very likely to be the case, but more certain localities are the islands of Gilolo, where examples were procured by Forsten, and Ceram, where Reinwardt found it living, as I learn from the marked specimens in the Leyden Museum. Next to it comes *T. marginatus* (Pl. Enl. 287, *fig. mala*) from the Philippines. This species has the hind part of the head blue, and the wings varied with yellow and blue. A third bird of this genus is *Tanygnathus Mulleri*, Bp. Consp. p. 5, et Müll. et Schlegel, Verh.

* Probably not the true *guianensis* of Guiana, but so called by Cabanis, Journ. f. Orn. 1856, p. 106.

† *Psittacara maugæi*, Souancé, Rev. et Mag. de Zool. 1856, p. 59.

‡ *Psittacara chloroptera*, Souancé, Rev. et Mag. de Zool. 1856, p. 59.

Ned. Ov. Bez., Land en Volk. p. 108. The type specimen of this bird (which is in the Leyden Museum) was brought by Müller from the island of Bouton; but the same species occurs near Macassar, in the adjacent island of Celebes, whence Mr. Wallace has lately transmitted specimens; and living examples in the Zoological Gardens at Rotterdam are said to be from Timor.

We have now living in the Society's gardens examples of *Tanygnathus macrorhynchus* and *T. Mulleri*.

In our gardens we have also now living another very interesting bird, namely the large green Lory, described by Prince Bonaparte in a note in our 'Proceedings' in 1850 (p. 26) as *Psittacodis Westermanni*, and which may be easily distinguished from its near ally, the *Psittacus magnus* or *sinensis* of the older authors (of which we have also a living specimen), by the want of the red patch on the flanks, as well as by the different hue of the deep green colour. Prince Bonaparte has employed for these birds, which, as he well remarks, form the only *green* genus of true Lories, the term *Psittacodis*. But the true type of *Psittacodis* (as constituted by Wagler*, its originator) is the extraordinary Parrot, *Psittacus paragua*—a distinct form altogether, to which Prince Bonaparte has applied the name *Stavorinius*. Mr. G. R. Gray, in his last list of Genera (p. 88, genus 1491), applies the term *Mascarinus* to these Parrots. But Lesson's name *Mascarinus* cannot, I think, possibly be used otherwise than for the *Psittacus mascarinus* of Madagascar, which Lesson placed within the genus, although he did not arrange it as the first species. It seems quite absurd to call a group of birds occurring only in the Moluccas "*Mascarinus*." I therefore suggest the adoption of the term "*Polychlorus*," given by Scopoli as the specific designation of *Psittacus magnus*, as a generic name for these birds—which will so stand as *Polychlorus magnus*, and *Polychlorus Westermanni* (Pl. CXXVII.); and the third species, Prince Bonaparte's *Psittacodis intermedius*, of which there are examples in the British and Leyden Museums—as *Polychlorus intermedius*.

It is singular that the only other known example of *Polychlorus Westermanni*, from which Prince Bonaparte's description was taken, is also a living bird in the Zoological Gardens of Amsterdam, where the collection of *Psittacidæ* (which I had the pleasure of inspecting a few weeks since) is very good, embracing about sixty-four species.

It is however surpassed by that in our own Gardens, where at the present moment no less than seventy-five species may be seen living.

3. On a Collection of Birds received by M. Sallé from Southern Mexico. By Philip Lutley Sclater, M.A.

M. Sallé (whose fine series of Mexican birds I have twice already brought before the notice of this Society) has lately received a third

* Wagler, Mon. Psittacorum, p. 495.

collection from the same country, which he has kindly submitted to my inspection. This was made in the district of S. Andres Tuxtla in the State of Vera Cruz, by M. Adolphe Boucard, and embraces nearly 80 species contained in M. Sallé's previous collection, of which I need not repeat the names. But there are also other species in this last collection which did not occur in either of the former, and I purpose giving some account of these, so as to make the catalogue of South Mexican birds as perfect as possible.

1. Sarcorhamphus papa (Linn.).

Although this bird has been described by Hernandez as Mexican, I am not aware that its occurrence in any of the States of the Mexican confederacy has been noticed by any modern writer. Some of the United States ornithologists have claimed it as occurring within their territories, but, I believe, on insufficient grounds.

2. Morphnus urubitinga (Gm.).

3. Morphnus anthracinus (Nitzsch).

A young bird of the second year.

4. Morphnus schistaceus (Sund.), juv.

Santecomapam.

5. Asturina nitida (Lath.).

A young bird. Santecomapam.

6. Buteo ghiesbreghti, DuBus, Esq. Orn. pl. 1.

A fine adult bird of this spendid species.
S. Andres Tuxtla.

7. Ciccaba torquata (Daud.): Bp. Consp. p. 43.

Santecomapam; the forests—scarce.

8. Trogon melanocephalus, Gould, Mon. Trogon. pl. 12.

Beautiful specimens of males and females of this rare species procured at Cateman in November and December 1856.

9. Ceryle superciliosa (Linn.).

Agrees with S. A. specimens.

10. Phaethornis longirostris, Delattre, Echo d. M. S. 1843, no. 45.—*T. cephalus*, Bourc. et Muls. R. Z. 1848, p. 269.

This fine species was originally discovered in Nicaragua by Delattre, and specimens were obtained in the same country by M. Sallé during his former voyage.

11. Vireo flavifrons, Vieill. Ois. Am. Sept. pl. 54.

12. Vireo noveboracensis (Gm.).

Both these Greenlets from Santecomapam. They were collected in January 1857, and seem to agree with specimens from the United States.

13. Attila citreopygia, Bp. Notes Orn. p. 86.

This species, which was established by Prince Bonaparte on specimens brought by Delattre from Nicaragua, is closely allied to *A. brasiliensis* of Brazil and *A. spadicea* of Cayenne (*uropygialis*, Cab. in Schomb. Guiana). It may be distinguished by its dark brown back, and the darker flammulation of the neck. Two specimens were obtained at Santecomapam in March 1857. It is represented as migratory and very rare—found only in the deep forests, and perched very high in the trees.

14. Icterus gularis (Wagl.); Bp. Consp. i. p. 435; P. Z. S. *antea*, p. 205.

Specimens of this species of a deeper reddish hue than any I have yet seen from S. Andres Tuxtla in March 1857.

15. Icterus giraudi, Cass. (*melanopterus*, Hartlaub); Bp. Consp. i. p. 434.

At one time I was inclined to agree with Prince Bonaparte (Notes Orn. p. 13) that these two names might belong to different species. Having lately examined individuals from different localities, I think otherwise. The type-specimens of Mr. Cassin in the collection of the Academy at Philadelphia and those from Bogota only vary slightly in the amount of yellow on the bend of the wing, and can hardly be considered distinct. The present examples from Santecomapam, obtained in January, are rather longer in the wing than the Bogota skins, but otherwise agree.

With the five species previously mentioned, the present two make up seven *Icteri* inhabiting the province of Vera Cruz, and I have specimens of an eighth (*I. Wagleri*, mihi, P. Z. S. 1857, p. 7) from Orizaba in the same State. I have also seen *Icterus parisiorum*, Bp. (*scottii*, Couch.), from Coahuila, and *I. pustulatus* from Mazatlan in Northern Mexico; so that this portion of America may be considered as the head-quarters of the brilliant birds of this genus.

16. Ocyalus wagleri, Gray, Gen. B. p. 342. pl. 85.

The most northern locality I have hitherto noticed for this species. It is common in Guatimala, whence specimens have been sent by Mr. Skinner; there are examples in the British Museum from Chiriqui (Capt Kellett), and the bird appears to extend into New Grenada.

17. Goniaphæa parellina (Bp.); P.Z.S.1856, p. 302. sp.149.

18. Goniaphæa concreta (DuBus), ibid. sp. 150.

The present collection contains males and females of both these

interesting species, obtained at Santecomapam in January 1857. The females of the latter bird are of a uniform chocolate-brown, quite different in tinge from those of the other species of the genus. I have in my collection a male of *G. concreta* from Orizaba.

19. Euphonia Gouldi, mihi, P. Z. S. 1857, p. 66. pl. cxxiv.

A male of this beautiful *Euphonia* from Santecomapam in January 1857, which confirms my impression that the bird in Sallé's original collection, described as a probable female (P. Z. S. 1856, p. 303. sp. 168), was of this species. Among some drawings of birds made by Mr. Bell on the Mosquito Coast, is an accurate representation of the ♂ and ♀ of this species, which indicates the extension of its range further southwards.

20. Lanio aurantius, Lafr. P. Z. S. 1856, p. 303, sp. 158.

The present collection contains several males of this splendid bird from Santecomapam, obtained in March 1857. The former collections contained only a single female.

21. Celeus badioides (Less.); Cent. Zool. pl. 14; Bp. Consp. p. 130.—*Meiglyptes badiosus*, Reichb. !

"Very rare at Cuesalapa and Santecomapam, in the forest. Migratory. January 1857."

22. Centurus pucherani (Mahl.); Bp. Consp. i. p. 120.

Santecomapam, March 1857.

My collection contains an example of this species from Orizaba.

23. Dryocopus guatimalensis, Hartl. — *Dryocopus regius*, Reichb. Handb. d. Sp. Orn. pl. 649. fig. 4331–32. p. 393.

Santecomapam, March 1857.

This same bird was in M. Sallé's first collection, and was wrongly inserted in my list (P. Z. S. 1856, p. 306. sp. 197) as *D. erythrops*. The true *D. erythrops* is from Brazil. The other Mexican species, *D. scapularis* of my list, has also been figured by Reichenbach as *D. leucorhamphus*, pl. 648. p. 393.

24. Diplopterus excellens, sp. nov.

Similis D. nævio *ex Amer. Merid. sed major, supra magis rufescens, caudæ tectricibus superioribus cinnamomescenti-rufis nigro longitudinaliter striatis: subtus purius albus, pectore non cinerascente, sed paululum rufo tincto: crisso rufescente: rostro breviore, altiore; tarsis longioribus.*

Long. tota 11·7, alæ 4·5, caudæ 6·3, tarsi 1·4.

M. Jules Verreaux, whose experienced eye is ever active in distinguishing new species, called my attention to this bird of M. Sallé's last collection, after I had somewhat doubtfully referred it to *D. nævius*. Upon a close re-examination it certainly appears distinct from the South American species, and I have set forth above the grounds of difference, though I have some doubts whether the pre-

vailing rufous tinge of the back may not be owing to the bird being not quite adult. I have not adopted the term *mexicanus*, which M. Verreaux has used for this species in his MS. as we have already a *Dromococcyx mexicanus*, which is of a genus not separated by many authors from *Diplopterus*.

25. Conurus petzi (Wagl.).—*Sittace petzi*, Wagl. Mon. Psitt. p. 650.

Acapulco.

This species very closely resembles the South American *C. aureus*. I have already mentioned three parrots as occurring in M. Sallé's collections, namely *Pionus senilis* and *Psittacula lineola* (P. Z. S. 1856, p. 306) and *Chrysotis autumnalis* (*antea*, p. 205). This makes a fourth. Besides these M. Sallé found *Chrysotis viridigenalis*, Cassin (Pr. Ac. Sc. Phil. vi. p. 371 ; Journ. iii. pl. 13. p. 153), which seems to be the same as Souancé's *C. coccineifrons* (R. Z. 1856, p. 154) common in the *tierra caliente*, as also *C. ochroptera*, Gm., (*xanthops*, Spix). In the same country M. Sallé observed *Conurus astec*, Souancé (R. Z. 1857, p. 97), and two Aras, one of which was most likely *Ara militaris*, known to occur in Mexico. These ten species are probably all that occur in this part of Mexico. But on the table-land is found *Rhynchopsitta pachyrhyncha*, which extends up to the Rio Grande, where it was obtained by John Audubon within the limits of the State of Texas.

26. Nycticorax gardeni (Gm.).
Cateman, December 1856.

27. Cancroma cochlearia (Linn.).
Cateman, January 1857.

28. Ibis alba (Linn.), juv.
Santecomapam, March 1857.

29. Calidris arenaria (Linn.).
Santecomapam, January 1857.

4. Liste des Oiseaux rapportés et observés dans la République Dominicaine (ancienne partie Espagnole de l'Ile St. Domingue ou d'Haiti), par M. A. Salle, pendant son voyage de 1849 à 1851. (Communicated by Philip Lutley Sclater.)

M. A. Sallé has at my request drawn up the following list of birds met with by him in the island of San Domingo, together with some interesting observations on their habits. We know so little of the ornithology of this interesting island (and indeed of the Antilles gene-

rally, except Jamaica and Cuba), except from the older writers, that any addition to our information will I am sure be acceptable. I have taken some pains in the verification of the nomenclature of M. Sallé's list, and have added a few observations on this subject and on the range of the species.

1. Tinnuculus sparverius (Linn.).

On le nomme vulgairement *Cernicaro* ; il est assez commun dans les plaines de Nisao ; se pose sur les buissons.

2. Athene dominicensis, Bp. Consp. p. 38.

Cucu, vit dans des terriers creusés dans les berges, aubord des chemins ; l'ouverture est garnie de fiente de cheval ; lorsqu'on passe il sort et se met à l'entrée du terrier et fait la réverence.

3. Vireo altiloquus, Vieill.

4. Galeoscoptes plumbeus (Linn.).

Aux environs de S^to^ Domingo.

(This species must not be confounded with *G. rubripes* of Cuba. It is more like a Thrush than a Mocking-bird in its habits, according to M. Sallé.—P. L. S.)

5. Seiurus aurocapillus (Linn.).

Se trouve dans les jardins, où il vit de fruits et d'insectes.

6. Setophaga ruticilla (Linn.).

Dans les bois, où elle chasse les insectes.

7. Sylvicola palmarum (Vieill.).

8. Sylvicola coronata (Linn.).

9. Sylvicola canadensis (Linn.).

Dans les montagnes couvertes de pins de l'intérieur de l'île.

10. Sylvicola pensilis (Gm.).

11. Spindalis multicolor (Vieill.).

Très rare ; je n'ai tué que 3 ou 4 ind. dans les gorges des montagnes dans l'intérieur de l'île sur des arbres élevés ; il a un chant agréable.

12. Loxigilla violacea (Linn.).—*Pyrrhulagra violacea*, Bp. Consp. p. 493.

On le nomme *Gallito* ; il est rare, et vit de grain dans les fourrés et terrains en friche.

(Quite distinct from *Loxigilla portoricensis* ex Porto Rico.—P. L. S.)

13. Euphonia musica (Linn.).

Sur les grands arbres dans les gorges des montagnes ; le chant en

est magnifique et très fort, ou le nomme *Sirguero* : c'est le nom espagnol du Chardonneret.

14. Dulus dominicus (Linn.).

Me semble ne pas s'éloigner des *Saltator* : voir la Rev. Zool. 1851, p. 583.

15. Phœnicophilus palmarum (Linn.).

Cet oiseau est mal nommé Palmiste, car il ne fréquente pas les palmiers; il parait avoir été confondu avec le *Dulus*: on le nomme *Sigua de cabeza prieta* ; il vit isolé dans les petits bois ou taillis voisins des lieux habités ; il se reûnit par paire au printemps pour nicher, et fait son nid bas avec des brins d'herbes.

16. Mimus dominicus (Linn.).

On le nomme *Risenseñor* ; il se tient dans les plaines et niche sur les petits arbres.

17. Tyrannus intrepidus (Linn.) ?

18. Tyrannus matutinus, Vieill.

Oiseaux très querelleux et mechants envers les autres oiseaux; on les nomme *Pijir.*

19. Cypselus cayennensis, Gm. ?

Vol très haut et en grand nombre après la pluie et surtout l'après midi.

20. Progne dominicensis (Gm.).

Golondrina.

21. Phonipara olivacea (Linn.).

"*Juan amaruco,*" dans les plaines et dans les broussailles.

22. Icterus dominicensis (Linn.).

Il fait son nid sur les feuilles de Palmier ; c'est un tissus très clair et très fin, mais il ne pend pas en bourse, comme celui d'autres espèces du continent ; on le nomme "*Sigua amarilla* ;" on le tue aux environs de la ville de S^to^ Domingo, mais pas très commun.

23. Quiscalus barita (Gm.).

On le nomme *Chonclino,* et on le trouve partout aux environs des habitations.

24. Corvus leucognaphalus, Daud. Tr. d'Orn. ii. p. 231.

Il se trouve dans les grands bois et a le cri comme le nôtre ; on le mange après en avoir ôté la peau ; on le nomme *Cuerbo.*

25. Corvus Jamaicensis, Gm. ; Bp. Consp. p. 385.

On le nomme *Cao,* qui est son cri sur différens *tons* ; c'est un

oiseau insupportable par son cri, et il sort par bandes de 8 ou 10 ind. et poursuive les voyageurs avec acharnement, et même les animaux en criant ; on le trouve dans les lieux secs de l'île entre Bany et Azua.

26. Certhiola —— ?

Sur les fleurs des Agaves.

27. Lampornis aurulenta (Vieill.).

Sur les fleurs de Cactées.

28. Sporadinus elegans (Aud. et Vieill.).

Dans les montagnes de l'intérieur, sur les fleurs des arbres (*Inga*).

29. Mellisuga minima.

Dans les clarières sur les fleurs. Voir Rev. Zool. 1849. p. 498.

30. Ceryle alcyon (Linn.).

(—Reichenbach suspects that this species is different from *C. alcyon*, and calls it *domingensis*, Handb. d. Sp. Orn. p. 26.—P. L. S.—)

31. Todus dominicensis, Lafr. Rev. Zool. 1847, p. 331.—*T. subulatus*, Gould.—*T. angustirostris*, Lafr. Rev. Zool. 1851, p. 478.

Je crois ces trois espèces des âges et sexes différent de la même oiseau.

On le nomme *Barancoli* ou *Baranquero* à cause de son habitude de creuser son nid dans les berges ou falaises des *Barrancas* (précipices). On le trouve par toute l'île ; il se perche sous le bois sur des branches basses ; il se tient triste, le bec haut, le cou ramassé et tournant stupidement et lentement la tête, de temps en temps il s'envole brusquement à la poursuite des insectes ; il a un vol très court et très rapide ; il fait un bruit particulier avec ses ailes, comparable à celui produit par une feuille de parchemin à laquelle on imprimerait une forte secousse ; il fait aussi claquer son bec d'une force extraordinaire. Au printemps ces oiseaux se réunissent par paire ; les ♂ se battent en faisant claquer leur bec et se poursuivent avec acharnement, quand ils faisent la cour à leur ♀, on les voit prendre toutes sortes des positions, hérisser les plumes, gonfler la gorge, laisser trainer les ailes à la manière du Dindon faisant la roue, et les agitant de temps en temps pour faire du bruit ; si la ♀ fuit, le ♂ la poursuit. Cet oiseau niche dans les *Barancas*, ou il y a éboulis produit par les eaux ; là dans un petit trou à forme évasé et rondu intérieurement il y fait son nid. J'ignore si le trou a été complètement creusé par l'oiseau (les gens du pays l'affirment) mais évidemment l'intérieur a été amélioré et il y a des petites herbes sèches ; pendant que l'un des sexes est dans le trou on voit ordinairement l'autre veillant, perché presqu'à l'entrée, soit sur une petite racine ou une petite liane pendante ; il niche aussi dans les trous des rochers. Il

se nourri dans la manière et a un peu l'habitude des Jacamars (*Galbula*).

32. Centurus striatus (Lath.), Bp. Consp. p. 119.

On le nomme *Carpintero* ; il est assez commun aux environs de la ville de S^to^ Domingo. J'en ai tué un ayant une larve de Diptère parasite (*Aricia pici*). Voir Ann. de la Soc. Entomologique de France, p. 657, 1853.

33. Chloronerpes passerinus (Linn.).

Très rare dans les forêts de l'est près d'Higuey.

34. Saurothera dominicensis, Lafr.

35. Saurothera Vieilloti, Bp. Consp. p. 97.

Ces sont des oiseaux peu farouches, qui sont presque toujours à terre, courants très vite dans les buissons à travers les haies et se nourrissant des lézards et des insectes. On les nomme *Pajaro bobo*.

36. Coccyzus dominicus (Linn.).

37. Coccyzus seniculus (Lath.).

(In the Paris Museum, from Guadeloupe, Martinique and Porto Rico.—P. L. S.)

38. Crotophaga ani, Linn.

Très commun dans les plaines ou terres en friches ; on les nomme *Judio* à cause de leur cri, qui produit ce nom.

39. Bucco cayennensis ?

(*Tamatia de St. Domingue.*) Tué un seul dans des grands bois sombres.

(I do not know what bird this can be.—P. L. S.)

40. Chrysotis Sallæi, Sclater, *antea*, p. 224.

Différent de celui de Cuba cet oiseau est un peu plus gros et n'a pas autant de rouge sous la gorge, &c. ; on les nomme *Cotora* ; ce n'est que le matin et le soir qu'on les voit voler comme les Pigeons à des très grandes distances à la recherche de leur nourriture ; ils se tiennent très loin des villes, et durant tout le jour, pendant la chaleur, ils sont occupés à manger sur les arbres. Mais comme ils sont très babillards de leur naturel, c'est là ce que les fait découvrir parmi le feuillage, car, s'ils étaient silencieux, le chasseur les découvrirait difficilement à cause de leur couleur ; leur chair est assez bonne à manger, quoique ferme.

41. Conurus chloropterus. — *Psittacara chloroptera*, Souancé, Rev. et Mag. de Zool. 1856, p. 59.

Je n'ai tué qu'une seule de cette Perruche dans les grands bois de l'intérieure de l'île ; elle y est donc rare.

42. Trogon roseigaster, Vieill.

Se tient sur le haut des plus grandes montagnes de l'intérieur de l'île ; ils sont en bande d'une 10e, et ont un chant plaintif ; en l'imitant on les fait venir à portée pour les tirer ; ils se perchent sur les plus grands arbres, et mangent des baies assez grosses et qu'ils avalent entières. Ils font leur nids dans des vieux trous des *Pics*, en en perçant un autre du côté opposé ; les œufs sont blancs et arrondis. On les nomme *Piragua*.

43. Columba leucocephala, Linn.

Toute l'année ce Pigeon se trouve au marché de Santo Domingo, ou à cause de son abondance il se vend à un prix si modique qu'on peut le considérer comme une véritable manne pour les habitants de ce pays. On les tue 1°, au vol à la passée, car tous les matins ils passent au dessus de la ville, allant manger dans l'ouest, et tous les après midi ils repassent allant se coucher dans l'est ; 2°, au moyen d'appeaux faits de beaux échantillons préparés, et séchés au four, avec des morceaux de bois mis à l'intérieur pour les soutenir. On les attache on bout d'une perche, au sommet des arbres dont ces pigeons recherchent les fruits et bientot des bandes apperçus la tête blanche de l'appeau, viennent s'abattre comme des flêches sur l'arbre au-dessous duquel se trouve le chasseur, qui les tire à son aise. Ils nichent vers le mois de mars et alors vivent par paire isolés dans les bois ; en Avril elles se réunissent en bandes considérables jusqu'au Octobre ; on les nomme *Paloma*.

44. Columba corensis, Gm.

Vit dans les montagnes de l'intérieur de l'île dans l'épaîsseur des fôrets vierges et se tient au sommet des arbres dont il mange les baies ; ils sont recherchés par les chasseurs, étant un excellent gibier ; on les nomme *Paloma morada*.

45. Leptoptila ——?

Qu'on nomme *Torcasa* ; elle ressemble un peu à la *Leptoptila rufaxilla*, vit isolée dans les bois sur les chemins, souvent à terre.
(This is perhaps *Leptoptila jamaicensis* (Linn.).—P. L. S.)

46. Zenaidura carolinensis, Bp. Consp. ii. p. 84. ?

On la rencontre dans les plaines par petite bande de 5 à 6 ; elles se perchent à l'ombre des Gayacs.

47. Geotrygon montana (Linn.).

On les appelle *Perdrix* et on distingue la rouge et la grise ce qui est le ♂ et ♀. Elles habitent dans les montagnes couvertes des fôrets épaisses et solitaires, elles se tiennent à terre et cherchent leur nourriture sous les bois sans jamais s'écarter dans les champs pour y vinre des grains cultivés. Elles font leur nid à hauteur d'homme et souvent plus bas, et elles sont tristes et silencieuses comme les forêts sombres ou elles vivent.

48. Chamæpelia passerina (Linn.).

On la trouve dans les plaines et sur les chemins suivant les sentiers et aussi dans les champs cultivés.

49. Numida meleagris.

Originaire des côtes d'Afrique elle y est devenue sauvage, ainsi que d'autres animaux domestiques (Bœufs, Pores, Abeilles, &c.), par la paresse des habitants, les révolutions dont cette île a été souvent le théâtre, et surtout par le manque de soins dont ces animaux sont l'objet. Elles sont assez nombreuses dans les endroits secs et sablonneux au nord et au sud de l'île, surtout entre les villes de Bany et San Juan de la Maguana, Santiago et Monte Cristo, ou elles trouvent un refuge assuré parmi le grand nombre de Cacteés qui couvrent ces plaines ; elles perchent le soir à la cime des plus grands arbres. Elles sont très difficiles à chasser et sont très méfiantes, aussi on ne peut les tuer qu'avec des chiens ou à cheval, se laissants approcher des animaux. Elles diffèrent de la domestique par sa taille plus petite et ses pattes noires ; sa chair excellente la fait rechercher ; on les nomme *Guinea.*

50. Herodias leuce (Ill.).

On les nomme *Garza blanca.*

51. Herodias candidissima (Gm.).

52. Butorides virescens (Linn.).

Garza morada.

53. Phœnicopterus ruber (Linn.).

Je ne l'ai pas tué mais vue près la *Laguna de Neiba.*

54. Ægialites vociferus (Linn.).

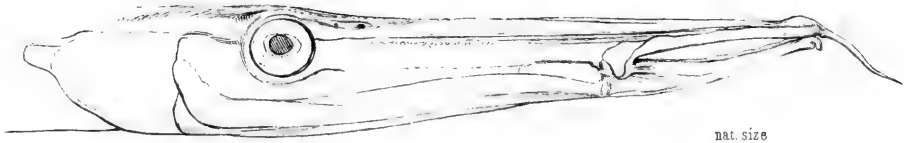
Commun dans les plaines humides, au bord des marais ou des ruisseaux ; il courre très vite, et pousse un cri perçant en s'envolant ; on le nomme *Frailecitto.*

55. Aramus scolopaceus, Vieill.

Se promène sous les arbres dans les fôrets sombres et humides, ou il vit de petits reptiles, mais surtout des mollusques, dont il rompt la coquille pour en extraire l'animal. Il perche le soir au sommet des grands arbres près des ruisseaux, et de là après le coucher du soleil durant la nuit et avant le lever du soleil il fait retentir les bois de son cri fort et sonore. On les appele *Carao,* sans doute à cause du cri, qui est analogue.

56. Rallus ——.

Petit, se tenant dans les roseaux.



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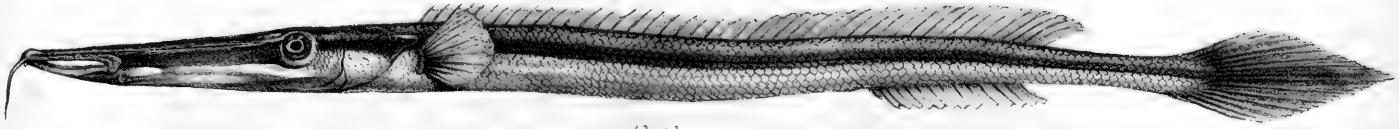


½ length.

SIPHONOGNATHUS ARGYROPHANES, Richardson.

C. H. Ford

W. West Imp.

57. Gallinula galeata, Licht.

À l'embouchure de la rivière Jayna sur les plantes aquatiques qui flottent sur la rivière dont le courant est insensible.

58. Podiceps dominicus, Linn.

Dans les marais dans les plaines près Higuey ; on le nom *Zambullidor*.

59. Himantopus mexicanus.

Id.

60. Querquedula discors.

Id. On le nomme *Pato*.

61. Sula fusca (Linn.).

Sur le bord de la mer dans les lieux déserts.

5. On Siphonognathus, a new Genus of Fistularidæ. By Sir John Richardson, F.R.S., Hon. F.R.S.E. etc.

(Pisces, Pl. VI.)

Siphonognathus, gen. nov.

Facies elongata, fistulosa, Aulostomatum, *ex osse nasali et frontali, ossibusque palatinis, preoperculis, pterygoideis cum tympanicis productis formata. Præmaxillaria sub lateribus ossis nasalis, fere immobilia. Rictus oris mediocris, horizontalis in rostro extremi, motu solo cardinali mandibulæ subincurvæ aperiens et claudens. Maxillæ pars descendens, gracilis in disco parvulo subrotundo ad angulum oris expansa. Labia præmaxillaria et mandibularia arcta, super ossa propria replicata : priora ex utroque latere ante os nasali approximantia coalescentiaque et filamentum parvulum, impar, terminale, gracile præ ore instar proboscidis dependens, efficientia.*

Foramina narium utrinque bina in acie faciei ad oculum approximata : apertura anterior, operculata vix oculo nudo discernenda, posteriori hianti nec marginatæ vicina. Dentes omnino nulli. Pharynx angusta, lævis. Cranium nec cristatum nec spinosum. Apertura branchialis obliqua, infra antrorsum tendens. Ossa branchiostega quatuor utrinque, gracilia. Branchiæ quatuor. Vertebræ costiferæ 29–30 *circiter. Costæ breves, graciles.* (*Vertebræ caudales non numeratæ.*) *Anus pone medium.*

Squamæ cyclodei læves, ovales, in tempora, genas et occiput procurrentes ; vultus esquamosus, lævis. Forma corporis elongata, subcylindrica ; caudæ pyramidata.

Pinnæ ventrales nullæ. Pinna caudæ cordato-lanceolata, acuminata. Pinnæ pectoris radiis paucis apicibus simplicibus,

planis non dilatatis. Radii anteriores pinnæ dorsi, elastici, non pungentes, nec tamen articulos ostendentes. Pinnæ ani radius primus eodem modo subspinosus. Radii omnes pinnarum simplices membrana tenui connexi.

Intestina simplex, sine versura rectè in anum tendens; dilatatio ventriculi parva. Cæca pylorica nulla nobis detecta. Vesica pneumatica ampla.

SIPHONOGNATHUS ARGYROPHANES.

In general form this fish approaches *Aulostoma*, the structure of the head and the tubular elongation of the palate and os hyoides being similar. The body is less compressed, being roundish, but yet with somewhat flattened sides, and a slight tapering towards the anus. The compression increases in the tapering tail. As in *Aulostoma*, the great length of head is due to the prolongations of the prefrontals, palatines, vomer, nasal, pterygoids, tympanics and hyoid bones, constituting a tube terminated by the horizontal opening of the mouth. The premaxillaries form the upper border of the mouth, and have little or no motion. They conceal the slender limb of the maxillary, but the irregularly triangular or small suborbicular plate of the latter protects the corner of the mouth. Equal in length to the maxillaries, the mandible is articulated to the extremities of the tympanics, and is slightly curved, producing a lateral gaping when the mouth is closed. Both it and the premaxillaries are edged by narrow lips which fold back on the limbs of their respective bones. At the extremity of the snout the premaxillary lips unite to form a fine awl-shaped proboscis-like barbel, which hangs down before the mouth. No teeth whatever could be discovered in the jaws or in the tubular mouth,—not even in the pharynx, which is narrow. Form of the head a slender four-sided obelisk, the space between tbe eyes being occupied by the forked mid-frontal into which the nasal is dovetailed. The latter as it runs forwards is feebly convex, and shows a smooth and scarcely prominent medial line, which terminates in the slightly swelling extremity of the bone and of the snout. Under each edge of the nasal, the long slender premaxillary appears as already mentioned. On the sides, the facial tube is completed by dark brown membrane, and on the ventral surface also a membrane stretches from the interopercula and tympanics of one side to those of the other, being supported on the mesial line, interiorly by a very slender lingual bone, which is neither prominent nor covered with flesh so as to form a tongue. Continuous with this under-surface of the mouth follows the branchiostegous membrane, whose deeply crescentic distal edge makes no flap at the isthmus to which it is attached. Four slender, moderately long, elastic branchiostegals support the membrane on each side. One specimen, it may be noticed, has only three branchiostegals on the right side. The gill-plate is connected to the nuchal region by scaly membrane, and terminates in a small flexible strap-shaped apex, above which only a small corner of the gill-opening appears, nine-tenths of the opening being below it.

No bony crests or spinous points exist on the cranium. The nostrils are on the edge of the head, close before the eye, the hinder one being an open pore, not above a line from the orbit, and the other is situated a quarter of an inch before it in a pulpy membrane, and being closed by a flap is not very perceptible. The space between each pair is of course equal to the breadth of the head in that region.

Scales cycloid, oval, most of them oblique, or unequal at the base, of moderate size and delicate texture, showing very fine concentric lines of structure, and from five to fifteen faint basal grooves. Scaly integument covers the upper half of the operculum, and also a rectangular space bounded anteriorly by the vertical limb of the preoperculum and the eye. On the top of the head the scales end by a crescentic line, whose ends touch the angles at the eye. The facial part of the head is clothed with scaleless integument, and there are many pores and mucous canals extending along the under edge of the prefrontal. A soft tubular ring supplies the place of suborbital bones, and the small preorbitar scale bone is almost membranous, but becomes rough in drying, from the number of mucous canals which run through it. Between the gill opening and the caudal fin, there are 102 scales in a longitudinal row, six rows above the lateral line, and nine below it. The lateral line is formed by a row of small pores, each placed on the tip of a small scale, of whose disk little appears, because of the overlapping of the adjoining scales above and below. A taper-pointed scale terminates the scaly integument on the base of the caudal on each side.

Fin-rays.—Br. 4—4; D. 23|23, last two approximated at the base; A, 2|13, last two approximated at the base; C. 17; P. 10; V. 0. Dorsal commencing over the bones of the pectorals and just behind the tips of the gill-covers. It runs considerably past the anus, and some way further than the anal, its outline being even, though rising slightly in its course. Its rays are simple and unbranched like those of the other fins (except the caudal), and half of them are without visible joints, elastic at the base and tapering with flexible points. The anal commencing near the anus does not reach so far down the tail as the dorsal. It is composed of similar rays, and in the anterior two the joints are obsolete. The caudal, semilanceolate at the base, tapers to a slender, very acute point. Its rays are sparingly divided at the tips. Pectorals supported by ten simple rays with flattened but not dilated tips. No ventrals.

The intestines of the smaller specimen were examined, but not satisfactorily, as they had received injury, particularly the air-bladder, from a glass rod that had been thrust down the throat of the fish. The alimentary canal is quite straight and simple, with a slight widening below the œsophagus, but no defined stomach. No pyloric cæca were detected. The inside of the gut was thickly lined by a fine, flocculent mucus-like matter, and on scraping it away a multitude of longitudinal striæ were seen extending along the inner membrane. The liver, partly perished, was on the right side, and did not descend far. Air-bladder torn, so that its size and form

could not be ascertained. It appeared to have been large, and its coats to have been soft, fibrous, and nacry, and though thick, very readily torn. The melt was enclosed in a delicate capsule with a long seminal duct.

Under the lateral line there is a bright silvery stripe extending the whole length of the fish, and above it a stripe of equal breadth of a brownish-purple colour. This stripe reaches the tip of the caudal in one direction, and in the other passes over the upper part of the gill-cover, along the sides of the head to the mouth. Above, the back is of a lighter brown, and along the base of the caudal there is a purplish-black line. These colours are described as they exist after two or three years of maceration in spirits, and they have doubtless undergone alteration since the fish was taken.

Science is indebted for this novel and highly interesting form of fish to the late Captain Sir Everard Home, who never lost an opportunity of adding to our Natural History collections. He obtained it in King George's Sound. Some half-digested pieces of fish were found in the mouth, but nothing except mucus in the intestines.

Dimensions.

	Inches.
Length from tip of the snout to extremity of caudal, exclusive of rostral barbel	16·50
——— from tip of the snout to tip of the gill-cover	4·80
——— from tip of the snout to fore-edge of the orbit	3·00
——— from tip of the snout to anus	10·00
Distance between the orbits	0·38
Length of diameter of the eye	0·45
——— of rostral barbel	0·62
——— from posterior angle of the eye to the tip of the gill-cover	1·43
——— of the opening of the mouth	1·10
Height of the head behind the preoperculum	0·65
Greatest breadth of shoulders or nape	0·70
Height of body behind the pectorals	1·00
Length of naked space between dorsal and caudal	2·00
——— of caudal fin	2·50
——— of attachment of anal fin	1·80
——— of pectorals	0·95
Height of posterior dorsal rays	0·80

November 24, 1857.

John Gould, Esq., F.R.S., V.P., in the Chair.

The following papers were read :—

1. On Four New Species of Mus and one of Hapalotis from Australia. By John Gould, F.R.S., V.P., etc.

Mr. Gould alluded to the prevailing opinion that none but Marsupial animals were to be found in Australia, and observed that this opinion may be correct to a certain extent, yet the *Placentalia* are well represented in that country by numerous species of the genera *Hapalotis, Mus,* &c.; and remarked that in few countries are the smaller members of the *Rodentia* more abundant both in species and individuals. It is to this latter order that the four new species now exhibited by him pertain.

For the first of these he proposed the name of *Mus assimilis*; this animal is about the same size as the *Mus decumanus* of Europe, and has a very similar aspect; its hair, however, is more soft and silky, and its incisor teeth very long and narrow.

Mus assimilis.

Face, all the upper surface and sides light brown, very finely pencilled with black; under surface greyish-buff, the base of the fur all over the body dark slaty-grey; whiskers black; tail nearly destitute of hairs; all the feet clothed with very fine silvery-white hairs.

Total length from nose to base of tail....	$7\frac{1}{4}$	inches.
———— of the tail	6	,,
———— of fore-arm	1	,,
———— of the tarsus and toes.....	$1\frac{1}{4}$	,,

Remark.—The minute silvery-white hairs of the feet give these organs a very delicate appearance; yet they are not positively white, neither are they brown.

The two specimens from which the above description was taken and to which the remarks refer are from the banks of the Clarence in New South Wales, where they were procured by the late Mr. Strange. Three other specimens collected by Mr. Gilbert at King George's Sound differ only in being about a fifth smaller in all their admeasurements; it is just possible that it will hereafter be found that these latter animals are distinct from the former, but at present they are regarded as identical; and if such be the case, the range of the species extends along the whole southern sea-board of the continent from east to west.

The second species is a short robust, compact Rat, equal in size to the common Water Vole of England (*Arvicola amphibius*), but rather smaller than the *Mus fuscipes* of Australia. It is in every

respect a true *Mus*, and is an inhabitant of the open plains of Darling Downs, New South Wales; its incisor teeth, when compared with those of *M. assimilis*, are broad and less elongated; its hair also is coarser, and more wiry. Its colouring is as follows:—

Mus sordidus.

Head, all the upper surface, and flanks clothed with a mixture of black and brown, the former hue prevailing along the centre of the back, and both nearly equal in amount on the flanks; whiskers black; under surface greyish-buff; hind feet silvery-grey; fore feet greyish-brown; tail thinly clothed with extremely fine black hairs.

Total length from nose to base of tail....	$6\frac{3}{4}$	inches.
——————— of the tail	5	,,
——————— of the fore-arm	$\frac{3}{4}$	,,
——————— of the hind leg and toes....	$1\frac{1}{2}$	,,

Hab. Open plains of Darling Downs.

Remark.—The name of *sordidus* has been assigned to this animal from the dark colouring of its upper surface.

The third species to which Mr. Gould called attention is a remarkable black Rat of nearly the same size as, and of a similarly delicate form to the, Black Rat of Europe (*Mus Rattus*), but from which it differs in having the tip of the nose, the front part of the lips, a longitudinal stripe on the breast, the hind and fore feet, white. For this he proposed the name of

Mus manicatus.

Head, ears, and all the upper surface black, gradually passing into the deep grey of the under surface; nose, fore part of the lips, stripe down the centre of the throat and chest, hind and fore feet, white; whiskers deep black; tail denuded of hairs.

Length from nose to base of tail	7	inches.
——— of the tail	5	,,
——— of the fore-arm	$1\frac{1}{2}$	,,
——— of tarsi and toes	$1\frac{2}{5}$	,,

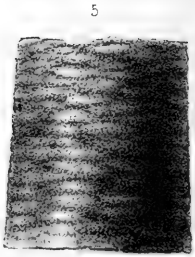
Hab. Port Essington.

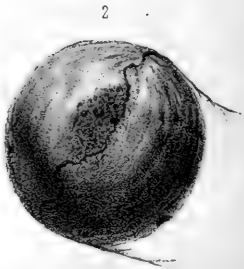
Remark.—This animal was presented to Mr. Gould by J. B. Turner, Esq.

The fourth is a very diminutive Rat, with coarse hair and a somewhat short tail; it is even smaller in size than the *Mus Gouldi* and *M. gracilicauda*, but is more nearly allied to the latter than to any other. Three or four specimens, all of the same size, are contained in the collection at the British Museum, and there are others in the Derby Museum at Liverpool, all of which were collected by Mr. Gilbert on the Victoria Plains, Western Australia.

Mus nanus.

Head, all the upper surface, flanks, outer sides of the limbs, and





C.H.Ford.

1.2.3. Furcella gigantea
4. Chæna annulata. 5. C. tesselata.

W. West

hairs clothing the tail, brown, with numerous interspersed fine black hairs; under surface greyish-white, becoming much lighter and forming a conspicuous patch immediately beneath the tail; whiskers black; feet light brown; base of the whole of the fur bluish-grey.

Length from nose to base of tail	4 inches.
——— of the tail	$3\frac{1}{4}$,,
——— of the fore-arm	$\frac{1}{2}$,,
——— of the tarsus and toes	$\frac{3}{4}$,,

This animal is known to the Aborigines of Moore's River in Western Australia by the name of *Jilbeetch*.

On the part of Dr. Gray, Mr. Gould brought under the notice of the Meeting a new and very distinct species of *Hapalotis*, which is nearly allied to, but considerably exceeds in size, the *Hapalotis melanura*. This animal was collected by Mr. Elsey in the interior of Australia during the recent expedition from the north-west coast of Australia to Moreton Bay. It is a harsh wiry-furred animal, and differs from *H. melanura* not only in size, but in the apical half of the tail being white.

HAPALOTIS HEMILEUCURA.

Head, all the upper surface, and flanks very light sandy-brown, with numerous, but thinly placed, fine long black hairs; under surface buffy-white, with even lighter feet and fore-arms; tail brown, deepening into black about the middle, beyond which the apical portion is white; the white hairs being prolonged into a small tuft at the tip.

Length from nose to base of tail	8 inches.
——— of the tail	$6\frac{1}{2}$,,
——— of the fore-arm	$1\frac{1}{2}$,,
——— of the tarsus and toes	$1\frac{1}{2}$,,

2. Observations on the genus Furcella, Oken, a Conchifer without concha or normal valves, and on the genera Teredo and Chæna. By John Edward Gray, Ph.D., F.R.S., V.P.Z.S. etc.

(Mollusca, Pl. XXXIX.)

The shelly tube of this animal has been described under several names. Linnæus considered it as a *Serpula*; Pallas, Home, and more recently Messrs. Adams have regarded it as a *Teredo*. Oken (1815) considered it a genus under the name of *Furcella*, to which the following names have been given:—*Septaria*, Lamk., *Clossonaria*, Férussac, *Clausaria*, Menke, *Kuphus*, Gray, altered to *Kyphus* by Agassiz.

There is no doubt that it is allied to *Teredo*, and it has been separated from that genus by the older conchologists because the apex

of the tube is solid and furnished with two separate tubular apertures, evidently for the siphons of the animal, which in some specimens are said to be produced beyond the end of the larger tube into two slender, elongated, cylindrical tubules, as figured by Rumphius; hence the name given to it by Oken: but I have never seen a specimen which exhibited this character.

The habit of the animal at once separates it from *Teredo*, which always lives in wood, while the *Furcella* lives sunk perpendicularly in the sandy mud of the tropical seas.

The external appearance of the shelly tube agrees with this habitat; for instead of being nearly cylindrical and more or less twisted according to the hardness or knots in the wood, it is club-shaped and closed at the larger end with a convex plate like the tube of *Chæna mumia*, which lives in the sand in a similar manner; but the tube of the *Furcella* is much larger, and generally rather distorted and irregular on the surface, divided into sections by more or less distinct constriction of its diameter or by the slight alteration in the direction of the tube, marked *a*, *b*, *c*, on the Plate, which on examination are evidently produced by the periodical stoppages in the growth of the animal, which at each period of suspended activity evidently closes up the end of the tube; the animal absorbs this terminal plate when it again returns to activity, and requires a larger tube for its increasing dimensions. In the specimen before me, the space between these interruptions in growth increased in length as the animal grew and enlarged in diameter.

The tube is thickened above as the animal leaves it, and is much thinner near the lower or closed extremity. The whole length of the tube is solid, without any perforations, except quite near the closed end, where it is pierced with a number of unequal-sized rather irregularly disposed small perforations, generally scattered; but sometimes there is a short series of five or six placed in a longitudinal line, and these holes appear to be filled up by an internal coat when the animal absorbs the end and lengthens its tube.

The larger end of the tube is entirely closed over by two convex, arched, shelly laminæ, continuous from each side of the tube, and meeting and slightly overlapping one another in the central line, which is opposite to the septum between the two tubes in the smaller end of the shell-sheath of the animal.

These small holes are evidently intended for admission of water to the animal, and the shelly septa at the bottom to protect the animal from the sand in which it lives. The holes are similar to the tubes of *Penicillus aquarius* and *Clavagella*, which live in sand, and *Bryopa melitensis*, which lives in porous stone.

I have not observed any similar perforations in the tube of the *Teredo*; and indeed they would not be of any use, as the tube is deeply sunk in the substance of the wood in which they burrow.

The *Teredines* appear during their period of rest to close the end of their tube, with a shelly septum formed of a single convex plate. There are two fragments of tubes in the British Museum which appear to belong to that genus, from their external appearance and

prismatic structure, which are so closed at the bases: in one specimen the closing septum is uniformly convex, and like the tube-structure; in the other the septum is divided into two equal portions by a transverse groove or depression; but on neither of the specimens can I observe any traces of the septum being formed of two plates overlapping in the middle like the septum of *Furcella*.

The calcareous tubes of *Septaria*, mentioned by Home, Phil. Trans. 1806, p. 276, Dillwyn, R. Shells, ii. p. 1088, and in the 'Mag. Nat. Hist.' 1838, p. 408, as having a succession of *Septa*, proved on re-examination, Mr. Woodward informs me, to be the shell of *Vermeti*.

The character of the Family *Teredinidæ* is, that the animal always lives in a tube; that it is provided with two appendages, one on each side of the siphons called *palettes*, which differ considerably in structure in the different genera; and that the front of the body of the animal over the mouth is encased in two very small valves like those of a *Pholas* in structure and form, but in a more rudimentary state of development; the tubular case of the animal, apparently taking the place or being in fact a great development of the dorsal additional shelly plate usually found more or less developed in the different genera of *Pholadidæ*.

Now it is clear that by Pallas, Home, and Messrs Adams referring this shelly tube to the genus *Teredo*, they believed that it had all these peculiarities.

I was, therefore, very much pleased when a perfect specimen of this interesting genus came into my hands yesterday, to believe that I might have the opportunity of bringing before the Society the palette and valves of this genus, which until now have been desiderata, especially as the sound made by shaking the tube showed that some shelly pieces were contained within it.

But on making a small aperture on the side near the base of the tube to examine the structure of the valves, I was astonished to find that, though the genus had two of the characteristics of the family of *Teredinidæ*, it wanted one of them; the plates within were only the *palettes*, which are simple and somewhat like those of the more common *Teredo norvegica*, and that there were no proper shelly valves, not even any rudiments of them; and that the animal forms a genus in that family which has the abnormality of wanting the true shelly valves which are so universal in the *Conchifera*.

The reason of this absence may be explained by the fact that the animal does not require them to protect its head and nervous centre, living as it does in a soft sandy mud; while they are required in *Teredo* and the allied genera which have to bore their way into hard wood or stone to form the hole that is to be lined with the shelly tube.

Sir Everard Home in his 'Lectures,' when describing the animal of *Teredo navalis* (ii. t. 81), refers this shell-tube to the genus *Teredo*, and gives a very good figure of the *palettes*, or as he called them, "operculum," of it (tab. 81. f. 4 & 5), but he was not aware of this absence of the shelly valve; for he figures what he considers the "boring shell of the same *Teredo*" (fig. 6): but what he has

here taken for the "boring shell," or true valves of the animal, is evidently a fragment of the plates which closes the end of the tube.

It may be supposed that, perhaps, the valves might be very small and had fallen out; but I think it is impossible, as the holes at the narrow part of the tube are very small and scattered with fragments of shell and sand. The tube otherwise is quite closed, and the animal had evidently been eaten out by dipterous larva, as there were abundance of the cases of their pupa-skins in the cavity.

I may observe, that in the genus *Penicillus*, Brug. (*Aspergillum*, Lamk.), which also lives in sand, and has a fringe of tubes round the convex base of the tube, the shelly valves are immersed in the substance of the tube; but *Furcella* is the only genus of bivalve shells I am acquainted with that is entirely destitute of true valves, like the *Tunicata*.

The possession of the two separate apertures at the upper extremity of the tube does not appear to be exclusively confined to this genus; for in the British Museum we have three specimens of tubes which belong to *Teredo norvegicus*, or to a species allied to it, procured at the same time probably from the same place, but without any habitat.

They all have a succession of transverse laminæ at the upper extremity of the tube. In No. 1 these plates are pierced with an oblong central hole for the passage of the siphons, as is the case with most specimens of *T. norvegicus*. No. 2 is similar, but there is a projection on one side of the perforation of the plates dividing the aperture on that side into two parts; and in No. 3, instead of having a single oblong aperture as in the other specimens, there are two subcircular ones separated by a central transverse septum as in *Furcella*, as if the imperfect rib in No. 2 was transformed into a shelly plate extending right across the aperture, and which must be deposited between the two siphons of the animal.

In general the tubes of *Teredo* are entirely imbedded in the wood, but sometimes, as in a specimen we have in the Museum from the mouth of the River Nunn, the apices of the tubes of the shell project as if they were produced by the animal as the shelly tube enlarged beneath; but I believe this arises from, and at least is probably, if not entirely, produced from the surface of the wood disintegrating and leaving the apices of the tubes exposed. In the same collection are a series of the tubes of a species of *Teredo*, from Van Diemen's Land, which are more or less covered with *Serpulæ* and *Vermeti*; I suspect these must be specimens which have been partially or entirely exposed by the rotting of the wood in which they were enclosed.

These specimens from Van Diemen's Land, so covered with *Serpulæ*, also exhibit another peculiarity: in one case two tubes are parallel to each other, and firmly united by the outer surface of one of their sides into one body, which induced me to believe that they might be *Serpulæ*, until I examined the structure of the shell and observed the simple contracted apex of the upper extremity.

In those genera of *Teredinidæ* which have a number of half-septa

across the upper or smaller aperture of the tube, forming a kind of incompletely valvular structure on the sides of the siphons, or as in *Furcella*, where the space between the siphons is entirely closed up, leaving only a tube for the passage of the siphon on each side of the upper cavity, these septa and the solid calcareous matter forming the tubes must be deposited by the surface of the siphons themselves, as the canal of the univalve *Zoophagous Gasterops* is deposited by the siphon of the mantle of these animals.

And as the *palettes* or *opercula*, as they have been erroneously called, of this family, are fixed on each side between the base of the two more or less elongated siphons, in all those genera, which have a siphonal septum like *Furcella* or lamina like *Teredo* at the apical end of the tube, these *palettes* are always enclosed in the tube, and cannot be exserted as they are sometimes represented.

The character of this genus must be thus amended :—

FURCELLA.

Animal without any true shelly valves ; siphonal palettes distinct, large ; apex dilated, transverse, spathulate, with a central midrib and an elongated slender cylindrical base.

Tube clavate, irregular, sometimes bent ; apex with two tubular siphonal apertures separated by a broad hard shelly longitudinal dissepiment ; base pierced with small scattered perforations ; end inclosed by two overlapping convex septa, arising from the sides and completely closing the ends.

These arched terminal plates appear to be absorbed before each period of activity, and the end is again closed with similar plates at each period of rest, after a sufficient elongation and enlargement of the tube for the protection of the enlarged animal. Living sunk in sandy mud on the shore in tropical climates.

The perfect specimens of *Chæna mumia* are covered with a thin external coat (sometimes covered externally with particles of sand and Foraminifera, which are imbedded in its surface), which is only partially attached to the general substance of the tube by thin lines, concentric with the lines of growth, leaving the rest of the coat separated from the surface of the tube by a distinct hollow space.

In some specimens, as those in the British Museum from Mozambique, the attached part of the outer coat is in nearly concentric ring-like transverse lines round the tube, leaving a more or less complete hollow ring between each attached portion. In others, as that from the Philippines in the same collection, the attached portion of the outer coat is oblique and interlaced so as to leave only narrow, elongated, oblong, hollow tessellated interspaces on the surface, which are acute at each end.

I am not certain that these characters are permanent ; but if so, one may be called *Chæna annulosa*, and the other *Chæna tessellata*. In the latter the outer coat is simple and smooth externally. In the specimen from the Philippines the tube is covered with a close coat of sand and a few Foraminifera, which are deeply imbedded in

the substance of the thin outer coat, giving it a very peculiar appearance.

The shell on the newly hatched animal, which remains as a nucleus on the coat of the older shells, is smooth, uniformly convex, without any appearance of the anterior truncation or of the radiating ridges, which is so peculiar in the adult shells; and it seems also to have a straight lower edge without any appearance of the large ventral gape of the genus.

The cavity of the tube is contracted by an internal ring just above the hinder end of the shells, leaving an oblong central aperture of about half the diameter of the tube. This contraction is formed of several shelly plates with interspaces between them.

The animal has the power of repairing a fracture of the tube. There is a specimen in the Museum which had evidently been completely broken across about half its length, and the direction of the tube altered; the two portions have been united by an internal irregular white shelly coat.

EXPLANATION OF PLATE XXXIX.

Fig. 1. *Furcella gigantea*, half the natural length; *a*, *b*, *c*, *d*, *e*, the remains of former closing of the tube.
Fig. 2. *Furcella gigantea*, view of terminal closing of the tube; of the natural size.
Fig. 3. Palettes, showing the inner and outer sides.
Fig. 4. *Chæna annulata*, enlarged.
Fig. 5. *Chæna tessellata*, enlarged.

3. Review of the species of the Fissirostral Family Momotidæ. By Philip Lutley Sclater, M.A., F.Z.S. etc.

(Aves, Pl. CXXVIII.)

Considerable additions have been made of late years to this rather peculiar family of birds, of which one member only was known to Linnæus; and there are now at least sixteen or seventeen different Motmots, of which examples occur in European collections. Two or three very interesting articles have been written upon the habits and certain structural peculiarities of these birds; but no modern writer except Lesson, in his little-known volume, entitled 'Description des Mammifères et Oiseaux' (where descriptions of eleven species known to the author are given), has attempted a complete review of the species. The following paper has been drawn up with a view to meet this deficiency, and to bring together in one place short characters sufficient for distinguishing these birds, so as to obviate the necessity of referring to all the different publications where the species were originally described.

Latham's term *Momotus*, being long precedent to Illiger's *Prionites*, which is sometimes employed for this group, has every claim for adoption. I therefore propose to call the group *Momotidæ* (as

⅞ nat. size.

PRIONIRHYNCHUS CARINATUS. (Du Bus.)

ennens, lith.

W. West Imp.

I think they have quite sufficient distinctive characters to entitle them to rank as an independent family), and not *Prionitidæ*, as is done by some modern systematists.

The Motmots are a purely tropical American family, occupying an area nearly coequal with that of several other characteristic groups belonging to the same fauna. From Southern Mexico, where two species occur, they extend through Central America and some of the more southern Antilles over the whole of the eastern portion of South America as far southwards as south-eastern Brazil and Paraguay, where a single species is found. Their true focus seems to be Central America, where the greatest number of species and the most characteristic forms occur.

Concerning the spatulation of the two medial rectrices in some of these birds, which has occasioned so much discussion, I am not inclined to agree with Waterton, who thinks that it is performed by the bird with his own beak (see Wanderings, ed. 4, p. 114); nor with Schomburgk, who attributes it to the form of the nest (Naumannia, 1, pt. iv. p. 20); but I consider it a purely natural formation, which, like the denudation of the base of the bill in *Corvus frugilegus*, does not become complete except in the adult bird.

A similar formation occurs in certain groups of Humming-birds (*Spathura*, *Loddigesia*, &c.) and among the Parrots in the genus *Prioniturus*; but in these cases the feathers are, I believe, produced with the stem already denuded, and do not (as in *Momotus*) become spatulated by the falling away of the intermediate barb.

Familia Momotidæ.

Rostrum longius quam caput, modice incurvum, plerumque compressum, apice paululum uncinata; mandibularum marginibus serratis; oris angulis vibrissis munitis: nares basales, apertura parva et rotundata: alæ breves, rotundatæ, remigibus quarta, quinta et sexta fere æqualibus et longissimis: cauda, e rectricibus decem aut duodecim, quarum duæ externæ abnormaliter breves, elongata valde graduata, rectricibus duabus mediis longissimis et harum apicibus plerumque spatulatis: tarsi breves, antea scutellati: pedes prehensorii, digito exteriore longo et cum mediali usque ad medium, interiore autem brevi et ad basin tantum cum medio conjuncto; posteriore hoc paulo breviore; unguibus incurvatis et compressis.

Genus I. Momotus.

Momotus, Lath. Ind. Orn. i. p. 110 (1790).
Prionites, Ill. Prodr. Syst. p. 224 (1811).
Baryphonus, Vieill. Analyse, p. 48 (1816).

Rostrum elongatum, compressum; mandibulis fortiter serratis: cauda elongata.

Div. a. *Caudæ rectricibus duodecim, harum duabus mediis spatulatis.*

1. Momotus brasiliensis.

Momotus, Briss. Orn. iv. p. 465.

Ramphastos momota, Linn. S. N. i. p. 152.

Momotus brasiliensis, Lath. Ind. Orn. p. 140; Gray, Gen. p. 68. sp. 1; List of Sp. in B.M. ii. 1. p. 39; Less. Descr. d. Mamm. et Ois. p. 264.

Prionites momota, Schomb. Guian. iii. 704; Bp. Consp. p. 165; Vol. Anisodact. p. 8; Hahn, Ausl. Vög. ii. pl. 3.

Momotus momota, Jard. & Selby, Ill. Orn. l. p. to pl. 23.

Baryphonus cyanocephalus, Vieill. N. D. d. H. N. xxi. 315.

Prionites brasiliensis, Tsch. F. P. p. 251 (?).

Motmot du Brésil, Buff. Pl. Enl. 370.

Le Motmot, Le Vaill. Ois. de Par. i. pl. 37, 38.

Clare viridis subtus rufescente indutus : pileo medio et lateribus capitis cum macula pectorali nigris ; pileo antice thalassino, postice cæruleo cincto : cervice postica læte castanea.

Long. tota 17, alæ 5·75, caudæ 11·0; rostri a fronte 1·4, a rictu 1·95.

Hab. Cayenne, British Guiana (*Schomb. & Waterton*); Para (*Wallace*); Eastern Peru (*Tsch.*); R. Ucayali (*Hauxwell*).

Mus. Brit., Paris., &c.

The specific term *brasiliensis* is rather an unfortunate one for this bird, which seems most frequent in collections from Cayenne and Guiana, though since, as Mr. Wallace has informed me, it is common at Para and all along the Lower Amazon, the name cannot be said to be altogether inaccurate. But in what is generally known to ornithologists as Brazil—about Bahia and Rio—the present bird does not occur, and is replaced by another member of the family.

This species seems to extend up the valley of the Amazon as far as the confines of Eastern Peru. Specimens from the Ucayali in Mr. Gould's collection are rather more brightly coloured, but present the same characteristic castaneous blotch on the nape as the Cayenne bird, and are not separable from this species.

2. Momotus æquatorialis.

Momotus æquatorialis, Gould, P. Z. S. *antea*, p. 223.

Clare viridis, cervice postica et corpore subtus vix rufescente tinctis : pileo medio et lateribus capitis cum macula lata pectorali nigris : pileo undique cyaneo (his plumis cyaneis postice cæruleo præpilatis) et item nigro circumcincto.

Long. tota 17·0, alæ 6·3, caudæ 8·0; rostri a fronte 1·7, a rictu 2·15.

Hab. Archidona in rep. Equatoriana.

Mus. Joh. Gould.

Mr. Gould has obligingly lent me the type of his description of this Motmot, which, as might be expected from the locality, appears to be different from any other described species. It approaches most nearly to *M. Lessoni*, which it resembles in the blue border of the

back of the crown being again edged with black. But it is still larger than that species, the bill being stronger, and the wings longer, the hue of the blue on the head is less thalassine, the green of the body below is purer, and the black blotch on the breast is particularly large. The single specimen sent is in not quite perfect plumage, that is to say, the tail is not yet spatulated; but there are indications of the commencement of this process. The exact locality in which the specimen was obtained is marked 'Archidona,' which is a small Indian village on the Rio Misagualli, above its confluence with the Napo in the Canton of Quixos.

3. Momotus microstephanus, sp. nov.

Momotus brasiliensis, Sclater, P. Z. S. 1855, p. 135.

Clare viridis, collo postico et corpore subtus rufescente tinctis; spatio verticali medio et lateribus capitis cum macula pectorali nigris: pileo antice thalassino, postice cæruleo late cincto.

Long. tota 14·5, alæ 4·6, caudæ 9·0, rostri a fronte 1·2, a rictu 1·8.

Hab. Interior of New Grenada.

Mus. P. L. S.

In my list of Bogota birds I noticed the peculiarities of the *M. brasiliensis* coming from that locality. Since then I have seen a considerable number of Motmots from that country, and, as they all present similar appearances, I think myself justified in elevating them to specific rank. The dimensions are smaller than in the *brasiliensis*, the black space on the head much more confined, the thalassine front being much broader and extending nearly to the vertex, leaving only a small black patch between it and the bright blue behind. And the castaneous patch behind the head is wanting, there being, however, in some specimens a brownish-bronze tinge on the upper back.

As a general rule the species from the mountain ranges of New Grenada are distinct from those of the eastern littoral of South America, and I think it seems likely that this Motmot does not form an exception to this rule.

4. Momotus natterери, sp. nov.

Prionites brasiliensis, Lafr. et d'Orb. Syn. Av. in Mag. de Zool. 1838, p. 34?

Supra pure viridis, subtus fulvo tinctus, ventre medio et tectricibus subalaribus pure pallide rufescenti-ochraceis: pileo medio et lateribus capitis nigris: pileo antice thalassino, postice cæruleo circumcincto, his pennis cæruleis thalassino mixtis, striga pectorali parva, fere omnino cyanea, medialiter nigra.

Long. tota 17·0, alæ 5·5, caudæ 9·0, rostri a fronte 1·4, a rictu 1·9, tarsi 1·1.

Hab. Yungas in Bolivia (*d'Orb.*); Goyaz, Brazil (*Natterer*).

Mus. Paris., Ac. Phil., Vindobiensi et P. L. S.

I have one Bolivian specimen, of what would at first appear to be

M. brasiliensis, and have seen others. They closely resemble the Cayenne bird certainly, but seem to merit separation as much as its four or five other allies, which are now generally admitted as species. My Bolivian bird is nearly equal in size to the *brasiliensis*; but the bill is not quite so thick, and narrower and more compressed, and the wings are rather shorter. The plumage above is pure green up to the nape, presenting no tinge of rufous, but a slight bronzy gloss on the neck; below there is a strong rufous cast, the belly and under wing-coverts being nearly pure pale buff. The head is coloured nearly as *brasiliensis*, but the blue feathers behind are mixed with a little thalassine.

A Motmot in the Vienna Museum, which I refer to this same species, was obtained by Natterer in the neighbourhood of Goyaz in Brazil, and I therefore propose to distinguish this bird by the title of *M. Nattereri*. There are also examples of this species in the collections of the Academy of Natural Sciences of Philadelphia and of Mr. Gould.

5. Momotus subrufescens.

Momotus subrufescens, Sclater, Rev. et Mag. de Zool. 1853, p. 489.

Supra viridis rufescente tinctus, subtus cinnamomeo-rufescens: pileo medio cum capitis lateribus et macula pectorali nigris; pileo undique thalassino cincto, sed his pennis thalassinis postice cæruleo terminatis.

Long. tota 16·0, alæ 4·8, caudæ 9·5, rostri a fronte 1·2, a rictu 1·7.

Hab. Santa Martha (*Verreaux*); Cartagena (*Mus. Berol.*).

Mus. Brit., Ac. Phil. et P. L. S.

I first described this apparently distinct species of Motmot from some specimens in MM. Verreaux's collection. It approaches nearest to *M. bahamensis*, but is not nearly so dark below as that bird; and has the upper back strongly tinged with rufous, which passes off as we descend towards the rump, whereas the upper surface of the other is nearly pure green. There are specimens of a Motmot which I refer to this species in the Berlin and British Museums, and the collections of Sir William Jardine and Mr. Gould.

6. Momotus bahamensis.

Prionites bahamensis, Sw. An. in Men. p. 332; Bp. Consp. p. 68; Jard. & Selby, Ill. Orn. n. s. pl. 45; Bp. Consp. Vol. Anisodact. p. 8.

Momotus bahamensis, Gray, Gen. p. 68; List of Sp. ii. 1. p. 39.

Clare viridis, subtus suturate rufo-castaneus: pileo lateribus capitis et macula pectorali nigris: pileo undique thalassino cincto; occipitis pennarum apicibus cæruleis.

Long. tota 16·0, alæ 5·5, caudæ 9·0, rostri a fronte 1·4, a rictu 1·85.

Hab. Bahamas (*Sw.*)?; Tobago (*Kirk.*); Trinidad.

Mus. P. L. S.

I am much inclined to doubt whether this Motmot is really found in the Bahamas. It is common in Tobago and Trinidad. It is easily distinguishable from its affines by the deep uniform chestnut colouring of the lower surface.

7. Momotus lessoni.

Momotus Lessoni, Less. R. Z. 1842, p. 174; Des Murs, Icon. Orn. pl. 62; Less. Descr. d. Mamm. et Ois. p. 266; Sclater, P. Z. S. 1856, p. 285.

Prionites Lessoni, Bp. Consp. p. 165.

Clare viridis, gula cyanescente, pectore paululum rufescente; pileo, lateribus capitis et macula pectorali nigris: pileo undique cyaneo, his plumis cyaneis apud nucham cæruleo præpilatis, et postice item nigro marginato.

Long. tota 16·0, alæ 5·5, caudæ 8·5, rostri a fronte 1·45, a rictu 2·0.

Hab. Nicaragua, Realejo (*Less.*); South Mexico, Xacatepec (*Deppe in Mus. Berol.*); vicinity of Cordova (*Sallé*).

Mus. Paris., P. L. S.

This fine large green northern representative of *M. brasiliensis* may be recognized from its congeners by having the blue hind-border to the cap edged with black towards the nape. This is also the case in *M. æquatorialis*, but I have already mentioned its differences from that species.

8. Momotus cæruleiceps.

Momotus cæruleiceps, Gould, P. Z. S. 1836, p. 18; Gray, Gen. p. 68; Less. Desc. d. Mamm. et Ois. p. 265.

Prionites cæruleiceps, Bp. Consp. p. 165, et Consp. Vol. Anisodact. p. 8.

Prionites cæruleocephalus, Jard. & Selby, Ill. Orn. n. s. pl. 42.

Momotus subhutu, Less. Descr. Mamm. et Ois. p. 265.

Luride viridis: capitis lateribus et striga parva pectorali nigris: pileo viridescenti-cæruleo; fronte et superciliis clarioribus; occipitis pennis nigro mixtis.

Long. tota 16·0, alæ 5·5, caudæ 8·5, rostri a fronte 1·15, a rictu 1·8.

Hab. Southern Mexico, Xalapa (*Mus. Berol. et Heineano*); Tamaulipas (*Mus. Jard.*); Vera Cruz (*Sallé*).

Lesson's *M. subhutu*, described in the little summary of this group given in his 'Description des Mammifères et Oiseaux,' is attached by Prince Bonaparte to his *M. psalurus* with a mark of doubt. But on attentively considering Lesson's description, I think there can be little doubt this is the bird really intended by it.

9. Momotus mexicanus.

Momotus mexicanus, Sw. Phil. Mag. 1827, p. 442; Zool. Ill. n. s.

pl. 81; Gray, Gen. p. 68; List of Sp. in B.M. ii. pt. 1, p. 40; Less. Descr. &c. p. 266; Bp. Consp. Vol. Anisod. p. 7.

Prionites mexicanus, Bp. Consp. p. 165.

Momotus Martii, Jard. & Selby, Ill. Orn. pl. 23 (err.).

Viridis, supra rufescentior, subtus valde albescentior: pileo et cervice supra brunneo-rufis: striga pone oculos et macula pectorali nigris: macula suboculari cyanea.

Long. tota 12·5, alæ 4·4, caudæ 6·5, rostri a fronte 1·15, a rictu 1·5.

Hab. Southern Mexico, Golan (*Delattre*); Quicaltan (*Deppe in Mus. Berol.*); Lucappa (*Bates in Mus. Derb.*).

10. Momotus castaneiceps.

Prionites castaneiceps, Gould, P. Z. S. 1854, p. 154.

Similis M. mexicano *sed major, pileo saturatiore castaneo et macula suboculari subobsolete alba nec cyanea.*

Hab. Guatimala, Coban (*Delattre*).

Mus. Derbiano, Ac. Phil. et Bremensi.

Besides the specimens noticed by Mr. Gould, I have seen examples of this species in the Bremen Museum also from Guatimala, and in the collection of the Academy of Natural Sciences of Philadelphia. It appears to be probably different from the preceding.

11. Momotus semirufus.

Prionites Martii, Spix, Av. Bras. i. p. 64. pl. 60?; Tsch. F. P. p. 252 certè.

Momotus semirufus, Sclater, Rev. Zool. 1853, p. 489.

Baryphonus semirufus, Bp. Consp. Vol. Anisodact. p. 8.

Viridis; capite colloque supero et corpore infra ad medium ventrem castaneo-rufis, lateribus capitis et macula pectorali nigris: ventre imo crissoque cum alis extus paululum cærulescentibus.

Long. tota 19·5, alæ 7·3, caudæ 11·5, rostri a fronte 1·75.

Hab. New Grenada, Santa Martha and Bogota: Rio Napo, Ecuador (*Jameson*); Upper Peruvian Amazon, Rio Javarri (*Cast.* et *Dev.*).

Mus. Brit., Paris.

This fine large Motmot I first saw in 1853 in the hands of MM. Verreaux, who had then lately received two specimens of it from their collector at S. Martha. Shortly afterwards in looking through the birds of this family in the collection of the Jardin des Plantes I observed three individuals of the same species, one of which was labelled 'Bogota,' and another as having been collected by MM. Castelnau and Deville on the Rio Javarri. I at that time considered the bird as without doubt unnamed, and described it accordingly in Guérin's 'Revue et Magazin de Zoologie.' But about a year afterwards, in looking through Tschudi's types at Neuchatel, I was surprised to find a specimen of this bird labeled '*P. Martii*, Spix,' as that name has been generally thought to apply to the *M. platyrhyn-*

chus of Leadbeater—belonging to the genus *Prionirhynchus*. Now upon referring again to Spix's figure and description, I think that he is as likely to have intended one bird as the other for his *P. Martii*, and it will be difficult to pronounce decisively which of the two ought to bear that name, until the type in the Munich Museum, if still existing, be examined, and the fact ascertained whether it is a specimen of *Momotus semirufus* or *Prionirhynchus platyrhynchus*.

Div. b. *Caudæ rectricibus decem, et harum mediis non spatulatis.*

12. Momotus cyanogaster.

El tutu, Azara, Pax. i. p. 243.

Baryphonus cyanogaster, Vieill. N. D. d'N. H. xxi. 317, et Enc. Méth. p. 898.

Prionites ruficapillus, Hartl. Ind. Azar. p. 4; Max. Beitr. iii. 1257; Licht. Verz. p. 21; Tsch. F. P. p. 251.

Baryphonus ruficapillus, Vieill. Gal. pl. 190; Bp. Consp. Vol. Anisodact. p. 8.

Prionites tutu, Ranz. Elem. di Zool. iii. pt. 3. p. 157.

Momotus levaillantii, Less. Man. d'Orn. ii. 104; Gray, Gen. p. 68; List of Sp. in B.M. ii. pt. 1. p. 39; Less. Descr. d. Mamm. et Ois. p. 265.

Prionites levaillanti, Bp. Consp. p. 163.

Le Motmot oranroux, Levaill. Prom. Supp. pl. B.

Viridis: capitis lateribus et macula duplici pectoris nigris: pileo toto et fascia lata ventrali castaneis: ventre imo cærulescente.

Long. tota 16·5, alæ 5·5, caudæ 9·0, rostri a fronte 1·4, a rictu 2·0.

Hab. Paraguay (*Azara*); South-eastern Brazil (*P. Max.*); Eastern Peru (*Tsch.*).

The Prince Maximilian found this Motmot singly or in pairs in the woods of the south-eastern provinces of Brazil. He says it was generally observed sitting quietly upon a branch like a *Bucco*, and allowing the hunter to approach without fear. Especially in the morning and evening it emits its prolonged, soft, flute-like note, resembling that of our European Hoopoe. Its food consists of insects.

This bird, which is well figured by Le Vaillant in the Supplement to his 'Promerops, &c.,' pl. B, is sometimes called *ruficapillus*; but that name is more strictly applicable to the species represented by the same author in his 'Oiseaux de Paradis,' pl. 39, and of which some account will be found hereafter.

Although I have never yet had an opportunity of examining Paraguay specimens of this species, there seems little doubt that Azara's "*Tutu*" is referable to it, and we must therefore employ Vieillot's term "*cyanogaster*" as its first-given specific appellation, although in most examples the blue tinge on the belly is but slightly apparent.

Genus II. Hylomanes.

Hylomanes, Licht. Abh. Ac. Berol. 1838, p. 449.

Rostrum debilius et minus incurvum, non compressum sed dilatatum, marginibus tenuissime serratis: cauda brevis, rectricibus decem et harum mediis non spatulatis.

1. Hylomanes momotula.

Hylomanes momotula, Licht. Abh. Ac. Berol. 1838, p. 449. pl. 4; Bp. Consp. p. 164.

Momotus momotula, Gray's Gen. p. 68. pl. 24; List of Sp. in B. M. ii. 1. p. 40.

Viridis: pileo rufo: superciliis cyaneis: regione auriculari nigra: subtus albescens, viridi tincta.

Long. tota 6·0, alæ 3·0, caudæ 2·25, rostri a fronte ·9.

Hab. Mexico, Valle Real (*Licht.*); Jalapa (*Sallé*).

Mus. Brit., Berolin., Bruxelliano.

2. Hylomanes gularis.

Prionites gularis, Lafr. R. Z. 1840, p. 130; Bp. Consp. p. 165, et Consp. Vol. Zygodact. p. 8.

Momotus gularis, Gray's Gen. i. p. 68; Strickl. Cont. Orn. 1848, p. 33. pl. 17; Less. Descr. Mamm. et Ois. p. 266.

Viridis; gula et ventre imo cyaneis: regione ophthalmica rufescente: macula auriculari utrinque et pectoris duplici nigris: cauda subtus fusca, supra apice cærulescente.

Long. tota 10·0, alæ 4·0, caudæ 5·5, rostri a fronte 1·1.

Hab. Guatimala (*Lafr.* et *Strickl.*).

Mus. Paris.

This bird seems to me to be most naturally arranged as a second species of *Momotula*, though, as Mr. Strickland has observed, it partakes of the characters of the other genera. Mr. Strickland's examples were, I believe, from the neighbourhood of the city of Guatimala.

Genus III. Prionirhynchus.

Crypticus, Sw. Class. B. ii. p. 338 (1837).

Rostrum elongatum, dilatatum, carinatum, incurvum, marginibus tenuissime serratis: caudæ rectricibus decem, harum mediis elongatis et spatulatis.

1. Prionirhynchus platyrhynchus, Leadbeater.

Momotus platyrhynchus, Leadb. Linn. Trans. xvi. p. 92; Jard. & Selby, Ill. Orn. pl. 106; Gray's Gen. p. 68. sp. 8.

Prionites Martii, Spix, Av. Bras. i. p. 64. pl. 60?

Crypticus Martii, Bp. P. Z. S. 1837, p. 119, *certè*; Consp. p. 165; Less. Descr. d. Mamm. et Ois. p. 267.

Viridis, capite et cervice supra et corpore infra ad medium pectus castaneis: cauda cærulescenti-viridi: striga lata per oculos ad aures et maculis duabus in pectore nigris.

Long. tota 14·0, alæ 4·9, caudæ 8·2.

Hab. Eastern Peru, wood region (*Tsch.*); Sarayaçu (*Cast. & Dev.*); Bolivia.

This bird was first well described by Mr. Leadbeater before the Linnean Society. I have already stated that I think it possible that Prince Bonaparte and subsequent naturalists have been in error in considering Spix's *Prionites Martii* as intended for this bird, and I have therefore thought it safer to employ for it Leadbeater's name *platyrhynchus*.

I have made the new generic term *Prionirhynchus* for this form in the place of *Crypticus*, because the latter term is in use for a genus of Coleopterous insects, founded by Latreille in 1817.

2. Prionirhynchus carinatus. (Pl. CXXVIII.)

Prionites carinatus, Du Bus, Bull. Ac. Brux. xiv. pt. 2. p. 108, et R. Z. 1848, p. 249.

Crypticus carinatus, Bp. Consp. p. 165.

Supra olivascenti-viridis: fronte juxta marginem maxillæ rufescente: superciliis cyaneis: tænia a naribus infra oculos ad regionem paroticam ducta et pennulis quibusdam pectoris nigris: infra virescenti-rufus, mento viridi-cærulescente: remigibus fusco-nigris, pogonio externo viridi-cærulescente: cauda supra viridi-cærulescente: rectricibus duabus intermediis spatulatis et nigro terminatis: rostro et pedibus nigris, illius apice cornea.

Long. tota 14·0 poll.

Hab. Guatimala (*Du Bus*).

The Vicomte Du Bus has kindly sent me a beautiful figure of this Motmot, from which the accompanying plate has been reduced. I have never seen this bird, and I believe his specimen is the only one known.

Genus IV. Eumomota, gen. nov.

Rostrum Prionirhynchi *sed minus carinatum et dilatatum, paulum incurvum, mandibularum marginum media solum parte serrata: caudæ rectricibus decem, harum quinque utrinque extimæ graduatæ, ad apicem quadriformes; mediæ duæ ceteris duplo longiores, magna parte denudatæ et spatulis terminatæ.*

1. Eumomota superciliaris.

Crypticus superciliaris, Sandbach, MS.

Prionites (*Crypticus*) *superciliaris*, Jard. & Selby, Ill. Orn. n. s. pl. 18.

Momotus superciliaris, Gray, Gen. p. 68. sp. 10; List of Sp. in B. M. ii. 1. p. 40.

Crypticus superciliosus, Sw. An. in Men. p. 267; Less. Desc. d. Mamm. et Ois. p. 267.

Crypticus apiaster, Less. R. Z. 1842, p. 174.

Momotus yucatanensis, Cabot, Pr. N. H. Soc. Boston, iv. 467; Gray, Gen. p. 68. sp. 13.

Prionites yucatanensis, Bp. Consp. p. 165.

Olivaceus; dorso medio, macula post-oculari et ventre imo castaneis: superciliis latis et maculis suboculariibus læte glaucocyaneis: vitta per oculos utrinque transeunte nigra: vitta gulari longitudinali nigra, utrinque cyaneo marginata: alis nigris extus cyaneo marginatis: rectricibus subtus nigricantibus, supra cærulescentibus, nigro terminatis: duarum mediarum rachide nuda longissima, apice spatulata.

Long. tota 14·0, alæ 4·5, caudæ 8·0.

Hab. Central America, Yucatan (*Cabot*); Bay of Campeachy (*M. B.*); Guatimala and Honduras.

This beautiful bird, with the peculiar incurved bill—the serration of which is confined to the middle of the mandibles—and comparatively short tail, with the two medial rectrices far projecting and denuded to a much greater extent than in other Motmots, seems to present characters quite as distinctive as *Hylomanes* or *Prionirhynchus*, and I have accordingly proposed for it the new generic name *Eumomota*. Prince Bonaparte has remarked (Notes Orn. p. 89) that there seems to be two varieties of this bird, one from the western coast of Central America more red, the other from the eastern coast more blue.

The preceding account embraces all the species of Motmots with which I am acquainted. There are a few others mentioned by authors, concerning which I subjoin the following remarks:—

1. *Le motmot dombé*, Levaill. Ois. de Par. i. p. 113. pl. 39.

Baryphonus ruficapillus, Vieill. Nouv. Dict. d'H. N. xxi. p. 315.

Prionites dombeyanus, Ranz. Elem. di Zool. iii. pt. 3. p. 158.

Momotus dombeyi, Less. Tr. d'Orn. p. 251; Less. Man. d'Orn. p. 103.

Momotus rubricapillus, Steph. Zool. xiv. p. 84.

Prionites dombeyi, Sw. Class. ii. p. 338.

Momotus ruficapillus, Gray's Gen. p. 68. sp. 4.

Prionites ruficapillus, Bp.'s Consp. p. 165. sp. 4.

Momotus tutu, Less. Descr. d. Mamm. et Ois. p. 265.

Le Vaillant, upon the authority of whose figure some systematists have formed and others adopted the several scientific names above given, writes as follows concerning this Motmot:—"Whatever may be the case with the second species of Motmot of the older writers, which all nomenclatists have spoken of, but none have seen, here is one well-characterized, and differing from the first in that it has all the top of the head red, and that it has not part of the tail-feathers ebarbed, nor a black spot on the stomach. All is otherwise quite similar in colour between the two species, except that the green of

the back and wings and the blue of the middle tail-feathers and primaries are more pure in this species than in the other. The size also of the two birds is nearly the same: in the tail there is this difference, that the four middle feathers of the present Motmot are of equal length. We owe this second species of Motmot to Dombé, a zealous naturalist. . . . . The *Houtou* is found in Guiana; the *Motmot Dombé* inhabits the forests in the environs of Lima. The traveller I have named assures me that it is very common there, and that he had not remarked any difference between many individuals that he had seen of this species and the two he had brought back, of which one was deposited with many other beautiful birds of Peru in the cabinet of the king. It is a pity that this individual has been entirely destroyed by fumigations of sulphur and by insects; as to the other, we know not what has become of it."

Such is Le Vaillant's account. Supposing it to be accurate, the species appears distinct from any other known. But no such bird has been recognized by any other author, nor is to be found, as far as my experience goes, in any collection. As for its frequency in the vicinity of Lima, I am inclined to doubt the fact. Von Tschudi gives us accounts of three Motmots that inhabit the Cisandean wood-region of Peru, but says nothing of one occurring in the coast-region; nor do I believe that any species of the family occurs on the western side of the Andes. Had this bird been common about Lima he could hardly have missed it, collecting so much as he did in that quarter. I cannot help thinking therefore that Le Vaillant's figure and description are inaccurate, having been made after the "moths and fumigations" had operated upon the specimen, or perhaps from Dombé's recollections. In such case the *Motmot dombé* was probably the *Momotus cyanogaster*, which does occur in *Eastern* Peru, and has the medial rectrices whole.

2. "*Momotus psalurus*, Puch."; Bp. Compt. Rend. 1854. xxxviii. p. 659, et Notes Orn. s. l. coll. Delattre, p. 88.

Prince Bonaparte, in his communication to the French Academy on the collections made by M. Delattre in Nicaragua, has given a short account of this species, which I subjoin:—"Les exemplaires rapportés de Nicaragua par M. Delattre sont intermediaires entre *momotus* et *bahamensis* pour les couleurs comme pour la localité (!). La calotte noire est en effet moins étendue que dans le *P. bahamensis*, mais plus que dans *P. momotus* et entourée par la teinte aigue-marine même postérieurement, le bleu n'occupant que la pointe des longues plumes: les couvertures inférieures des ailes sont rousses ainsi que la ventre et les cuisses: les appendicules des pennes de la queue sont beaucoup plus larges que dans les autres espèces: le coup d'œil exercé de M. Pucheran a distingué à cause de cela dans nos galeries ce beau Volucre, notre seconde espèce, sous le nom de *Pr. psalurus*."

I can make no other suggestion concerning this species than that it is probably the same as *M. lessoni*. Dr. Pucheran utterly disclaims the paternity of the name which Prince Bonaparte has thus attempted to affiliate on him.

3. *Momotus parvirostris* is a name mentioned by Prince Bonaparte in the same passage. He merely says it is "*encore intermédiaire*," *i. e.* between *M. brasiliensis* and *psalurus* I suppose. The bird intended, I should judge from the locality, to be perhaps *M. subrufescens*.

4. *Momotus varius*, Briss. Orn. iv. p. 469 ; Gm. S. N. i. p. 357, is an old name founded on Ray's Yayauhquitoll (!), concerning which it is difficult to say much.

The annexed table will serve to give a general idea of the geographical distribution of this family as far as I have been able to gain information upon it.

MOMOTIDARUM SCHEMA GEOGRAPHICUM.

	Southern Mexico.	Central America.	Littoral of New Grenada.	Interior of New Grenada.	Interior of Ecuador.	Eastern Peru.	Bolivia.	Paraguay.	S.E. Brazil.	Lower Amazon.	Guiana and Cayenne.	Trinidad.
I. Momotus.												
1. brasiliensis	...	...	...	...	...	*	...	...	...	*	*	...
2. æquatorialis	...	...	...	...	*	...	...	...	...	...	...	...
3. microstephanus	...	...	...	*	...	...	...	...	...	...	...	...
4. nattereri	...	...	...	...	...	...	*	...	...	...	...	...
5. subrufescens	...	...	*	...	...	...	...	...	...	...	...	...
6. bahamensis	...	...	...	...	...	...	...	...	...	...	...	*
7. lessoni	*	*	...	...	...	...	...	...	...	...	...	...
8. cæruleiceps	*	...	...	...	...	...	...	...	...	...	...	...
9. mexicanus	*	...	...	...	...	...	...	...	...	...	...	...
10. castaneiceps	...	*	...	...	...	...	...	...	...	...	...	...
11. semirufus	...	...	...	*	*	*	...	...	...	...	...	...
12. cyanogaster	...	...	...	...	...	*	*	*	*	...	...	...
II. Hylomanes.												
1. momotula	*	...	...	...	...	...	...	...	...	...	...	...
2. gularis	...	*	...	...	...	...	...	...	...	...	...	...
III. Prionirhynchus.												
1. platyrhynchus	...	...	...	...	...	*	*	...	...	...	...	...
2. carinatus	...	*	...	...	...	...	...	...	...	...	...	...
IV. Eumomota.												
1. superciliaris	...	*	...	...	...	...	...	...	...	...	...	...
	4	5	1	2	2	4	3	1	1	1	1	1

4. On a Collection of Birds transmitted by Mr. H. W. Bates from the Upper Amazon. By Philip Lutley Sclater, M.A.

Mr. S. Stevens has lately received a small but interesting collection of birds from Mr. H. W. Bates, now resident at Ega on the Upper Amazon. Although many travellers and collectors have passed through this country, we are still without any detailed information concerning the general character of its ornithology. Those into whose hands collections from new localities come, are in general too prone to pick out single objects and describe them as new, instead of what is much more important in a scientific point of view, giving an accurately determined catalogue of the whole of the species. Such accounts are always useful—in the first place increasing our knowledge of the facts of geographical distribution, and, secondly, giving great assistance to future investigators who are studying collections from the same quarter. The species transmitted by Mr. Bates are the following. They are mostly from Ega or from the Rio Javarri, the frontier stream of Peru and Brazil, but the exact locality is in every case affixed.

Mr. J. H. Gurney has determined the Accipitres in this collection.

1. Morphnus urubitinga (Gm.).
Rio Javarri.

2. Morphnus schistaceus (Sund.).—*F. ardesiacus*, Licht. in Mus. Berol.
Rio Javarri.

3. Buteo pennsylvanicus (Wils.).
Rio Javarri.

4. Asturina magnirostris (Gm.).
Ega.

5. Micrastur gilvicollis (Vieill.).—*Sparvius gilvicollis*, Vieill. Nouv. Dict. x. p. 323; Puch. R. Z. 1850, p. 91.—*M. concentricus*, auct.
Rio Javarri.

6. Harpagus diodon (Temm.).
Rio Javarri.

7. Scops ——?
Ega.

8. Trogon melanurus, Sw.
Ega and Rio Javarri, ♂ et ♀.

9. Bucco macrodactylus (Spix); Sclater, Syn. Bucc. p. 14.
Rio Javarri.

10. Bucco pulmentum, Sclater, P.Z.S. 1855, p. 194, pl. 106.

Rio Javarri.

11. Bucco ordi, Cass.; Sclater, Syn. Bucc. p. 9; Pelzeln, Sitz. Ac. Wiss. Wien, 1856, p. 492.

Ega.

12. Monasa peruana, Sclater, P.Z.S. 1855, p. 194.

13. Urogalba paradisea (Linn.).

Ega.

M. Pelzeln has made some remarks in the 'Sitzungsberichte' of the Vienna Academy on my separation of *Urogalba amazonum* from *U. paradisea*. I confess I was probably wrong in regarding the latter as a species, and that it is apparently only a variety of *U. paradisea*.

14. Galbula chalcocephala, Dev.; P.Z.S. 1855, p. 14.

Rio Javarri.

15. Galbula tombacea, Spix.

Rio Javarri.

Since I have seen additional specimens of this bird, I am rather uncertain as to the reality of the distinctness of *G. fuscicapilla* of New Grenada (P. Z. S. 1855, p. 13. Pl. LXXVII.). In one of the Amazon specimens there is nearly as much fuscous colouring on the head as in the New Grenadian bird; and this may possibly be referable to age or sex.

16. Brachygalba albigularis.—*Galbula albigularis*, Spix, Av. Bras. i. pl. 57. f. 1. p. 54.

Rio Javarri.

Æneo-nigra, pileo fusco: superciliis et regione auriculari cum gula albis: plaga elongata in ventre medio castanea: rostro flavicanti-albo, pedibus nigris.

Long. tota 6·2, alæ 2·6, caudæ 2·0, rostri a rictu 1·9.

When I saw Spix's somewhat deteriorated type-specimen of the present species in the Museum at Munich, I somewhat hastily concluded that it was a young bird of *G. paradisea*. But the examination of the example in Bates's collection, and of another similar one in the British Museum, have convinced me that this is certainly not the case. It seems in truth a *Brachygalba*, with the same short square tail as in *B. inornata*, but with the bill rather stouter and straiter. Herr v. Pelzeln states in one of his interesting communications to the Vienna Academy, 'Ueber neue und wenig gekannte Arten der K. ornitholog. Sammlung,' that he thinks that this bird may be possibly the young of my *B. melanosterna*. I am sorry I have no means at present of comparing it with examples of that Jacamar; but the very pure white throat of the present species,

which is quite absent in *B. melanosterna*, seems to render this supposition improbable.

17. Jacamerops grandis (Gm.).
Rio Javarri.

18. Lampornis mango (Linn.).
Santarem.

19. Eupetomena macrura (Gm.); Gould, Mon. Troch. pt. 6. fig. 1.

20. Lampornis aurescens, Gould, P. Z. S. 1856, p. 88.
Rio Javarri.
A young bird.

21. Chrysuronia josephinæ (Bourc.).
Rio Javarri.
A young bird which Mr. Gould is inclined to refer to this species.

22. Chlorophanes atricapilla (Vieill.).
Ega.

23. Dacnis flaviventris, Lafr. & D'Orb.
Rio Javarri.

24. Dacnis cayana (Linn.); Contr. Orn. 1851, p. 106.
Ega.
A nearly allied species to this widely distributed bird is *Dacnis nigripes* from Brazil, lately described and figured by Herr A. von Pelzeln in the Proceedings of the Vienna Academy (1856, March, vol. xx. p. 157). It may be distinguished by its black feet, and the female is more like that of *D. angelica*. I have specimens of both sexes in my collection.

25. Dacnis angelica, De Filippi; Contr. Orn. 1851, p. 107.
Ega.
Prince Bonaparte has named * the Bogota variety of this bird *archangeliea*. But if the Bogota bird be considered distinct, it ought to bear the name "*angelica*," as originally given to it by De Filippi, while that from Cayenne is more particularly Mr. Strickland's *Dacnis melanotis*.

26. Cœreba cyanea (Linn.).
Ega.

27. Cœreba cærulea (Linn.).
Ega.

* Catalogue des oiseaux recueillis à Cayenne par M. E. Desplanches, p. 7.

28. Cœreba nitida, Hartl.
Rio Javarri.

29. Pitylus grossus (Linn.).
Rio Javarri.

30. Tachyphonus surinamus (Linn.).
Ega.

31. Tachyphonus cristatus (Gm.).
Ega.

32. Tachyphonus rufiventris (Spix).
Rio Javarri.

33. Lanio versicolor (Lafr. & D'Orb.).
Rio Javarri.
This is the only example I have ever met with of this bird besides the types brought by D'Orbigny from Bolivia.

34. Calliste schranki (Spix).
Ega and Rio Javarri.

35. Calliste boliviana, Bp.
Rio Javarri.

36. Calliste gyroloides, Lafr.
Rio Javarri.

37. Tanagrella iridina.
Tanagra iridina, Hartl. R. Z. 1841, p. 105.
Tanagrella elegantissima, Verr. R. Z. 1853, p. 195; Sclater, P. Z. S. 1856, p. 267, et Syn. Av. Tan. p. 93.
Rio Javarri.
On the receipt of this specimen from the Rio Javarri, it immediately occurred to me that Dr. Hartlaub's *Tanagra iridina* from Mogobamba in Peru was much more likely to belong to this species (generally known as "*elegantissima*") than to the *T. velia* of Cayenne, with which it is usually associated. I therefore despatched specimens of both birds to Bremen, with a request to Dr. Hartlaub to compare his type with them. Dr. Hartlaub states in reply, that although in his specimen there is a distinct greenish hue on the sides of the head, he considers his *T. iridina* to be without doubt the same as *T. elegantissima*, and not as *T. velia*. It becomes necessary, therefore, to use the specific appellation *iridina*, as the earliest given for this Tanager.

38. Nemosia flavicollis, Vieill. ?
Rio Javarri.

39. Leistes guianensis (Gm.). — *Trupialis guianensis*, Bp. Consp. p. 430.
Santarem.

40. Quiscalus lugubris, Sw.? Bp. Consp. p. 424.

41. Cacicus yuracarius (D'Orb. & Lafr.).
Rio Javarri.
I very much doubt whether Prince Bonaparte's *C. devillii* is anything more than the female of this bird.

42. Cyanocorax azureus (Temm.).
Rio Javarri.

43. Dendrocolaptes cayennensis (Gm.).
Ega.

44. Picolaptes —— ?
Ega.

45. Hypocnemis nævia (Gm.); Pl. Enl. 823. f. 1.
Rio Javarri.

46. Tityra cayana (Linn.); P. Z. S. 1857, p. 69.
Rio Javarri.

47. Cephalopterus ornatus, St. Hilaire.
Rio Javarri.

48. Gymnoderus fœtidus (Linn.).
Rio Javarri.

49. Querula rubricollis (Gm.).
Rio Javarri and Tunantins.

50. Cotinga maynana (Linn.); Bp. Consp. p. 176.

51. Pipra rubricapilla, Temm. Pl. Col. 54. f. 3.
Ega.

52. Pipra leucocilla, Linn.
Ega.

53. Pipra coronata, Spix, Av. Bras. ii. pl. 7. f. 1.
Rio Javarri.

54. Pipra striolata, Bp.; Gray's Gen. pl. 67. f. 2.
Rio Javarri.

55. Cirrhipipra filicauda (Spix), Av. Bras. ii. pl. 8.
Rio Javarri.

56. Chiroxyphia regina, Sclater, Ann. N. H. June 1856, p. .
Rio Javarri.
I am quite pleased at meeting with another example of this pretty Manikin, which I described from Natterer's types in the Vienna Museum.

57. Iodopleura isabellæ (Parz.); Icon. Orn. pl. 68.
Rio Javarri.
Prince Bonaparte gives Venezuela as the habitat of this species. Mr. Bates's specimens are from the Rio Javarri, and Mr. Wallace obtained specimens on the river Tocantins in September 1848. The *I. pipra* is from S. Eastern Brazil, while *I. laplacii*—a scarce species, only possessed, I believe, by the Paris Museum—is said to be from British Guiana.

58. Ara aracanga (Linn.).
Rio Javarri.

59. Ara severa (Linn.).
Rio Javarri.
Mr. Bates has sent two examples of the species, one of which is very much varied with red below.

60. Conurus guianensis (Linn.).

61. Conurus melanurus (Spix).
Tunantins.

62. Pionus menstruus (Linn.).
Rio Javarri.

63. Caica barrabandi (Kuhl).
Rio Javarri.

64. Caica histrio (Bodd.), Pl. Enl. 744.
Rio Javarri.

65. Caica xanthomeria, G. R. Gray in Mus. Brit.
This apparently new species, of which the only two specimens sent have passed into the collection of the British Museum, closely resembles *C. leucogastra*, Kuhl (*badiceps*, Lear), but has the flanks and thighs yellow instead of green, and exhibits some minor variations in shades of colouring.

66. Psittacula ——?
A bird of this difficult little group, different from any I have before seen—perhaps referable to Souancé's *P. cyanopygia*.

67. Ramphastos cuvieri, Wagl.; Gould, Mon. Ramph. ed. 2. pl. 8.
Ega.

68. Pteroglossus humboldti, Wagl.; Gould, Mon. Ramph. ed. 2. pl. 22.

Rio Javarri.

A pair of this rare species have passed into the collection of the British Museum.

69. Pteroglossus flavirostris, Gould, Mon. Ramph. ed. 2. pl. 29.

Ega and Rio Javarri.

70. Selenidera langsdorfi (Wagl.); Gould, Mon. Ramph. ed. 2. pl. 33.

Ega.

71. Pteroglossus beauharnaisi, Wagl.; Gould, Mon. Ramph. ed. 2. pl. 25.

Ega.

72. Capito peruvianus (Cuv.).

Rio Javarri.

73. Eubucco hartlaubi (Lafr.), fem. aut juv.?

Rio Javarri.

I have hitherto regarded this bird as the young of *E. hartlaubi*, from which it differs in the want of the aurescent head and of the blue tinge on the throat, sides of the head and supercilia, and by its lemon-yellow and not orange neck-band. I am not sure that I am right. Examples in the same state of plumage in the Paris Museum are marked "*Capito glaucogularis*, Tschudi," which is certainly wrong.

74. Eubucco aurantiicollis, sp. nov.

Viridis, pileo et mento summo intense sanguineo-rubris, torque cervicali postica clare flavicanti-viridi: cervice antica aurantia; pectore coccineo, ventre flavo et viridi strigato: rostro flavo, pedibus nigris.

Long. tota 5·5, alæ 2·6, caudæ 1·9.

This beautiful species of Barbet closely resembles *E. richardsoni* figured in Gray and Mitchell's Genera of Birds, but may be distinguished by its light green posterior neck-band, orange and not lemon-yellow throat, and deeper scarlet breast. Mr. Bates has transmitted five examples from the Rio Javarri, which are all alike. The *Eubucco richardsoni* is from New Grenada (Bogota collections).

The British Museum contains an example of this new species, collected by Hauxwell on the Ucayali in August 1852 and marked "Irides red."

I am now acquainted with seven species of the section *Eubucco*, namely, (1) E. richardsoni (*sulphureus*, Eyton, Contr. Orn. 1849, p. 130) ex Nov. Grenada; (2) E. aurantiicollis; (3) E. bourcieri (Lafr. Rev. Zool. 1845, p. 79, et 1849, p. 116, pl. 3) ex Nov.

Grenada et fl. Napo; (4) E. PICTUS (Pl. Enl. 330; *Bucco elegans*, Gm., *Capito maynanensis*, Gray); (5) E. ERYTHROCEPHALUS (Tsch. Faun. Per. p. 260) ex Peruv. Orientali; (6) E. HARTLAUBI (Lafr. Rev. Zool. 1845, p. 180, et 1849, p. 176, pl. 6; *Capito capistratus*, Eyton, Contr. Orn. 1849, p. 131, et *Megalamia capistrata*, ibid. 1850, p. 29, pl. 45) ex Bogota, fl. Napo, et Peruv. Orientali; (7) E. GLAUCOGULARIS (Tsch. Faun. Per. p. 259, pl. 24. f. 2) ex Peruv. Orient.

Of the genus *Capito*, besides the *C. cayanensis* and *C. peruvianus* and the intermediate *C. amazoninus*, there is a very beautiful fourth species, *C. aurovirens* (Le Vaill. Prom. Suppl. pl. E., *Bucco aurovirens*, Cuv.). This bird was met with at Sarayaçu on the Ucayali by MM. Castlenau and Deville during their voyage, and there are specimens in the Paris Museum from their collection. Mr. Gould possesses specimens obtained by Hauxwell on the same river.

The third and only remaining American genus of the family is *Tetrayonops*, a very peculiar form from the Quitian Andes, described by Sir William Jardine in the Edinb. N. Phil. Journ. 1855, n. s. ii. p. 404.

75. CHLORONERPES ERYTHROPS (Vieill.).
Ega.

76. CROTOPHAGA MAJOR, Linn.
Rio Javarri.

77. EURYPYGA HELIAS (Pallas).
Rio Javarri.

78. TIGRISOMA BRASILIENSE (Linn.).
Rio Javarri.

79. TIGRISOMA TIGRINUM (Gm.).
Rio Javarri.

December 8, 1857.

Dr. Gray, F.R.S., V.P., in the Chair.

The following papers were read:—

1. ON A NEW SPECIES OF CASSOWARY.
BY JOHN GOULD, F.R.S., V.P., ETC.

(Aves, Pl. CXXIX.)

I think it has been shown, that not only many species, but whole genera, and even great families of birds, formerly existed on the surface of the globe, of which no living representatives now remain, but

G.F.Angas ad. nat: del. J.Jennens lith.

CASUARIUS BENNETTI, Gould.

W.West Imp.

whose previous existence is made manifest to us by their foot-prints, the remains of their osseous structure, or portions of their egg-shells; some of these lived in periods of the most remote antiquity, while others are doubtless coeval with Man: of these latter probably not a few owe their extirpation to his wanton disregard for their perpetuity, such as the Dodo, the Dinornis, the Norfolk Island Parrot, &c.; their extinction being aided by their large size rendering them conspicuous objects, and by the circumstance of their being denizens of very limited areas, of small groups of islands, such as Mauritius, Madagascar, Norfolk and Philip Islands, &c. The great group of extinct struthious birds with which Owen and the younger Mantell have made us so well acquainted, is one which all ornithologists must regard with especial interest, and this interest will I doubt not be greatly enhanced when I state that I have undoubted evidence that a species pertaining to it, and hitherto unknown to us, is still living on our globe. These few prefatory remarks are given before introducing to the notice of the Society a most interesting communication which I have just received from George Bennett, Esq., of Sydney, respecting a new species of Cassowary lately discovered in the Island of New Britain, an example of which, apparently fully adult, is either now living at Sydney, or *en route* to Europe: that it may soon arrive, or if it should unfortunately die its skin may be duly preserved and sent to us, is my anxious hope. I am sure I need not expatiate upon the warm interest which our corresponding member, Dr. Bennett, has always manifested for the welfare of this Society, nor upon the value of the varied contributions he has made to natural science; it cannot fail to afford pleasure to us all to find, as will be seen, that this interest on his part is still undiminished. I think, therefore, that it will only be a just tribute of respect if we name the bird, of whose existence he has been the first to make us acquainted, in honour of himself, Casuarius Bennetti (Pl. CXXIX.).

Of this particular section of the *Struthionidæ*, then, there are the *C. galeatus*, a native of New Guinea, the *C. australis* inhabiting the Cape York district of Australia, and the *C. Bennetti*, whose domicile is the Island of New Britain.

The following are the details respecting this new species with which Mr. Bennett has favoured me:—

"Sydney, Sept. 10, 1857.

"My dear Gould,

"I send you an account of a new species of Cassowary recently brought to Sydney by Captain Devlin in the cutter 'Oberon;' it was procured from the natives of New Britain, an island in the South Pacific Ocean near to New Guinea, where it is known by the name of '*Mooruk*.' The height of the bird is 3 feet to the top of the back, and 5 feet when standing erect; its colour is rufous mixed with black on the back and hinder portions of the body, and raven black about the neck and breast; the loose wavy skin of the neck is beautifully coloured with iridescent tints of bluish-purple, pink, and an occasional shade of green, quite different from the red and purple ca-

runcles of the *Casuarius galeatus*; the feet and legs, which are very large and strong, are of a pale ash-colour, and exhibit a remarkable peculiarity in the extreme length of the claw of the inner toe on each foot, it being nearly three times the length which it obtains in the claws of the other toes; this bird also differs from the *C. galeatus* in having a horny plate instead of a helmet-like protuberance on the top of the head, which callous plate has the character of and resembles mother of pearl darkened with black lead; the form of the bill differs considerably from that of the Emu (*Dromaius Novæ-Hollandiæ*), being narrower, longer, and more curved, and in having a black and leathery cere at the base and behind the plate of the head a small tuft of black hair-like feathers, which are continued in greater or lesser abundance over most parts of the neck.

"The bird is very tame and familiar, and when in a good humour frequently dances about its place of confinement. It is fed upon boiled potatoes and meat occasionally. The egg is about the same size as that of the Emu, and is of a dirty pale yellowish-green colour; I give this description from an egg obtained from the natives by Capt. Devlin.

"The bird appears to me to approximate more nearly to the Emu than to the Cassowary, and to form the link between those species. In its bearing and style of walking it resembles the former, throwing the head forward, and only becoming perfectly erect when running; it also very much resembles the Apteryx in the carriage of its body, in the style of its motion, and in its attitudes. It has been exhibited by Messrs. Wilcox and Turner in Hunter Street, Sydney.

"The accurate drawing which accompanies this letter was taken from life by Mr. G. F. Angas, whose correct delineation of objects of natural history is so well known; it conveys an excellent idea of the bird.

"Before closing my letter I have again examined the bird, and have to add, that its bill presents a good deal of the character of that of a Rail, and that it utters a peculiar whistling chirping sound; and I am informed that it also emits a loud one resembling the word 'Muruk,' whence no doubt is derived its native name. The existence of the species in New Britain or some of the neighbouring islands has been suspected for the last three years, and some time since a young specimen was procured, but unfortunately lost overboard during the voyage.

"Ever, my dear Gould,
"Your sincere friend,
"GEORGE BENNETT."

As the bird has not yet reached this country, the fact of its being a new species must for the present rest upon Mr. Bennett's authority.

The account published by Mr. Wall of the discovery of the bird he has named *Casuarius australis* being but little known in this country, I have thought it might not be uninteresting to the meeting if I give a copy of it here as it appeared in the 'Illustrated Sydney Herald' of June 3, 1854.

ANABAZENOPS GUTTULATUS Sclater

Oudart del. J. Jennens lith.

W West Imp

"The first specimen of this bird was procured by Mr. Thomas Wall, naturalist to the late expedition commanded by Mr. Kennedy. This was shot near Cape York, in one of those almost inaccessible gullies which abound in that part of the Australian continent. The Cassowary, when erect, stands about 5 feet high. The head is without feathers, but covered with a blue skin, and, like the Emu, is almost without wings, having mere rudiments. The body is thickly covered with dark brown wiry feathers. On the head is a large protuberance or helmet of a bright red colour, and to the neck are attached, like bells, six or eight round fleshy balls of bright blue and scarlet, which give the bird a very beautiful appearance. The first, and indeed the only, specimen of the Australian Cassowary was unfortunately left at Weymouth Bay, and has not been recovered. Mr. Wall being most anxious for its preservation had secured it in a canvas bag and carried it with him to the spot where, unfortunately for himself and for science, it was lost. In the ravine where the bird was killed, as well as other deep and stony valleys of that neighbourhood, they were seen running in companies of seven or eight. On that part of the north-eastern coast, therefore, they are probably plentiful, and will be met with in all the deep gullies at the base of high hills. The flesh of this bird was eaten, and was found to be delicious; a single leg afforded more substantial food than ten or twelve hungry men could dispose of at one meal. The Cassowary possesses great strength in its legs, and makes use of this strength in the same manner as the Emu. Their whole build is, however, more strong and heavy than that of the latter bird. They are very wary, but their presence may be easily detected by their utterance of a peculiarly loud note, which is taken up and echoed along the gullies; and it would be easy to kill them with a rifle."

The above account was furnished to the 'Illustrated Sydney Herald' by Mr. Wall's brother, Mr. William Sheridan Wall, Curator of the Australian Museum.

No skin of this species having yet been sent home, I am unable to say if the bird be really a new species, or identical with the New Guinea bird *Casuarius galeatus*. I trust, however, that the time is not far distant when some expedition more fortunate than the one to which Mr. Wall was attached may procure examples, and by making us better acquainted with the bird, enable us to decide this point.

2. Description of Eleven New Species of Birds from Tropical America. By Philip Lutley Sclater.

(Aves, Pl. CXXX.)

1. Campylorhynchus pardus.

Supra albo nigroque tessellatus, alis nigris albo regulariter transvittatis: cauda nigra, rectricibus maculis magnis albis in utroque pogonio crebro transfasciatis: nucha brunnea: pileo

griseo, nigro punctato : superciliis et capitis lateribus albis, striga postoculari et rictali utrinque nigricantibus : subtus albus, gutture concolore, pectore, ventris lateribus et crisso maculis parvis rotundis notatis : tectricibus subularibus albis; rostro breviore, debiliore, pallido, culmine corneo : pedibus nigris.

Long. tota 6·8, alæ 3·0, caudæ 3·0, rostri a rictu ·9.

Hab. In Nova Grenada in vicin. urbis S. Marthæ.

Mus. Brit.

This bird resembles most nearly *Camp. nuchalis* of Cabanis, or at least a member of this difficult group from Trinidad, which in my collection bears that name. In their upper surfaces these two species are not unlike, although the head is paler, the nape more brown, and both the inner and outer webs of the tail-feathers are banded in the present bird, which is not the case in the former. But below, *C. pardus* is readily recognized by its pure white colour, varied sparingly with round black spots on the breast, sides of the belly and vent. My type-specimen was received from S. Martha by Mr. Lawrence of New York, who kindly entrusted it to me for examination. I have called it "*pardus*" because it is the bird so named (but not described) by Prince Bonaparte in his Ornithological Notes upon Delattre's collections (page 43). The specimen there alluded to, which was received by MM. Verreaux of Paris from S. Martha, is now in the British Museum. It is apparently a younger bird than my type, but easily recognizable as of the same species.

2. Campylorhynchus striaticollis.

Nigricanti-griseus; uropygium versus magis rufescens, pennis obsolete nigro marmoratis : alis caudaque nigricantibus, marginibus externis nigro et rufo anguste variegatis : subtus albogriseus, gula albicante; cervice et pectore nigricante longitudinaliter striatis, ventre medio maculis rotundis obsoletis notato : ventre imo crissoque rufescentibus, nigro obsolete transvittatis : rostri pallide cornei culmine nigro; pedibus nigris.

Long. tota 6·5, alæ 3·1, caudæ 2·7, rostri a rictu 1·0.

Hab. In Nova Grenada.

This is a typical *Campylorhynchus*, of which I have met with only one example, now in my own collection, selected from amongst a large number of Bogota birds. It does not seem very like any of the fourteen species of the genus which I have enumerated in the 'Proceedings of the Academy of Nat. Sciences of Philadelphia' (1846, p. 264). The upper surface is nearly uniform, being only obsoletely marbled, an appearance caused by the centres of the feathers being darker. The fore-neck is longitudinally striated and not spotted, as is more usual among these birds; but there are round spots, not however very strongly marked, on the belly.

3. Anabazenops guttulatus, sp. nov. (Pl. CXXX.)

Olivaceus, superciliis ab oculo in nucham productis rufis : pilei pennis medialiter olivaceis, nigricante marginatis; interscapulii

pennis medialiter pallide ochraceis, nigricanti-ochraceo utrinque limbatis, et quasi illo colore guttatis : alis intus nigricantibus, extus brunnescentibus : cauda unicolore ferruginea ; subtus gula albida, pectoris et ventris superioris plumis ochracescenti-albidis fulvo tinctis, marginibus fusco-olivascente circumdatis : lateribus et ventre imo terricolori-brunneis ; crisso rufo : rostri cornei apice et basi flavidis : pedibus flavido-fuscis.

Long. tota 7·0, alæ 3·3, caudæ 3·0.

Hab. In Venezuela, prope urbem Caracas (*Levraud*).

Mus. Paris.

4. Synallaxis multo-striata, sp. nov.

Supra terricolori-brunnea, fronte et pileo antico rufis nigro variis : dorsi totius pennarum scapis flavo-albidis, strias longas formantibus : cauda, e rectricibus duodecim, nigricante, brunneo marginata, subtus pallide brunnea : corpore subtus terricolori-brunneo, albo confertim vario, plumis medialiter albis, nigrescenti-brunneo irregulariter circumcinctis ; gula pure rufa : rostro nigro, pedibus fusco-nigris.

Long. tota 6·5, alæ 2·4, caudæ 2·8.

Hab. In Nova Grenada.

Mus. Paris.

A specimen of this apparently new *Synallaxis* is in the Gallery of the Jardin des Plantes at Paris. It is marked "Bogota, Rieffer, 1843." It does not very closely resemble any species with which I am acquainted, and is rather remarkable as being striated both above and below.

5. Turdus fulviventris, Verreaux, MS., sp. nov.

Nigricanti-cinereus, alis caudaque obscurioribus ; capite toto cum gutture nigris ; cervice antica fuscescenti-cinerea : abdomine toto cum tectricibus subalaribus saturate cinnamomeo-rufis : crisso fusco : rostro flavo, pedibus pallide brunneis.

Long. tota 10·5, alæ 4·8, caudæ 4·0.

Hab. In Nova Grenada (Bogota).

Mus. Acad. Philadelph. et P. L. S.

I have received a single example of this fine Thrush from MM. Verreaux, with the MS. name attached, which I have adopted. It is quite distinct from every other bird of the group hitherto described, but may be placed near *Turdus migratorius* of the U. S.

6. Turdus ignobilis, sp. nov.

Cinerascenti-fuscus unicolor, subtus dilutior, gula abicante, striis paucis cinereis : abdomine medio cum crisso albis, lateribus cinerascentibus : tectricibus subalaribus fusco-cinereis, rufo vix tinctis : rostro corneo, pedibus fusco-nigris.

Long. tota 9·0, alæ 4·5, caudæ 3·9.

Hab. In Nova Grenada.

Mus. Acad. Philadelph. et P. L. S.

I have had examples of this Thrush some time in my possession, and have indicated it without naming it in my first list of birds from Bogota (P. Z. S. 1855, p. 145, sp. 168). Having lately obtained other specimens, I have no hesitation in describing it as apparently unnamed, unless indeed it chance to be Prince Bonaparte's *Turdus luridus* (Notes Orn. p. 28), which however it is impossible to determine from so brief a notice. In its uniform style of colouring it resembles *Turdus fumigatus* of Brazil and *T. grayi* of Mexico, but may be immediately distinguished by the colour of the under wing-coverts, which are cinereous like the breast, with a faint tinge only of rufous. There are two examples of this same bird in the collection of the Academy of Natural Sciences of Philadelphia, also labelled "Bogota."

7. Cinclus leuconotus, sp. nov.

"*Cinclus leucocephalus*, Tsch." ; Lafr. Rev. Zool. 1847, p. 68.

Niger: pileo cum nucha, dorso medio et corpore subtus ad imum ventrem albis: crisso et hypochondriis nigris: pileo nigro striolato: rostro nigro, pedibus corneis.

Long. tota 5·5, alæ 3·8, caudæ 1·6, rostri a fronte ·6.

♀(?). *Mari similis sed minor, rostro breviore.*

Long. tota 5·0, alæ 3·1, caudæ 1·5, rostri a fronte ·4.

Hab. In Nova Grenada et rep. Equatoriana.

Mus. Paris., Gul. Jardine Baronetti, et P. L. S.

This species is not the *Cinclus leucocephalus* of Tschudi, as I ascertained this summer by taking my specimens to Neufchatel and there comparing them with the type. Tschudi's bird is much larger and has the white below confined to the breast, and no white back. It is in short quite a different bird. The most peculiar thing however about my two specimens is, that one is larger than the other, and has the bill strikingly longer. After some hesitation I have attributed this to sex, though I am not aware of a similar difference occurring in the bills of other *Cincli*. I may remark, however, that though this bird is seemingly much like *Cinclus* in form, I cannot help thinking that, when we know more about it, we may find occasion to refer it to a different genus. My examples were picked out of a large number of ordinary Bogota skins, of which they have the usual unmistakeable appearance. The bird described by Lafresnaye was brought from Pasto by Delattre, and a specimen in the Paris Museum—marked *Cinclus leucocephalus*—is said to be from the vicinity of Quito. Sir William Jardine possesses examples from the same locality.

8. Tyrannus atrifrons, sp. nov.

T. supra pallide cineraceo-brunneus; vitta frontali inter oculos nigra, crista pilei medii celata aurea: alis nigricanti-brunneis, extus rufo late marginatis: tectricibus caudæ superioribus cum cauda tota rufis, rectricum (precipue mediarum) parte media nigricante: subtus flavus; gula albicante, pectore rufo paulum mixto, tectricibus alarum inferioribus pallide flavis,

remigum pogoniis internis subtus ochraceis : rostro et pedibus nigris.

Long. tota 8·2, alæ 4·6, caudæ 3·75.

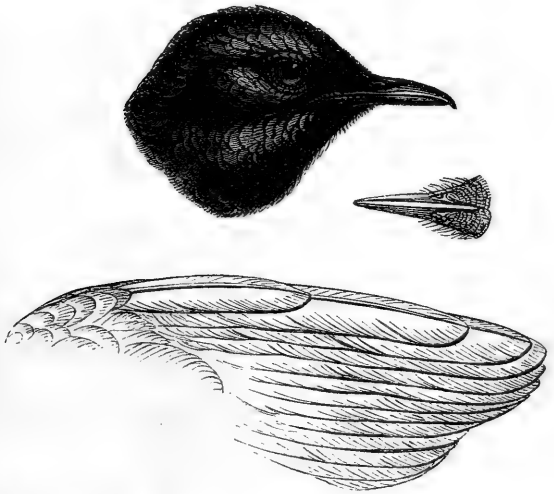
Hab. In littoribus reipub. Equatorianæ.

Mus. Brit. et T. C. Eyton.

Mr. Eyton's collection contains the type-specimen of this very well-marked species of Tyrant, which I believe to have been hitherto overlooked. It is labelled "Guyaquil," and that is no doubt its right locality, for two examples of the same bird in the British Museum were obtained on the island of Puna in the gulf of Guyaquil by Mr. Barclay.

Melanoptila, gen. nov.

Melanoptila, *genus novum e familia* Turdidarum. *Rostrum rectum, modicæ longitudinis, fere ut in genere* Turdo, *sed tenuius et vibrissis rictalibus nullis : alæ breves, ad finem subcaudalium attingentes, remige prima brevi, secunda secundarias co-æquante, tertia longiore, sed a quarta, quinta, et sexta, æqualibus et longissimis, superata : cauda longa, apice rotundata : pedes antice scutellatæ prout in genere* Turdo.



9. M. glabrirostris, sp. nov.

M. nigra unicolor, cæruleo-nitens : alis caudaque æneo magis splendentibus : rostro et pedibus nigris.

Long. tota 7·8, alæ 3·5, caudæ 3·3, tarsi 1·05.

Hab. In rep. Honduras, prope urbem Omoa.

I first observed specimens of this curious bird in the Derby Museum at Liverpool. They were procured in Honduras by Delattre, and an excellent example from the same source is in the British Museum. A single specimen in my own collection was obtained, with other birds, by Mr. Joseph Leyland in the vicinity of Omoa at the extremity of the Bay of Honduras. I know of no other American form which much resembles it in plumage or in structure, and am rather puzzled as to its proper arrangement in the Natural System. It must however, I think, come within the limits of the family *Turdidæ*, and for the present I am rather inclined to place it along with the Mock-birds (*Miminæ*), with the general structure of some of which it seems most nearly to accord, except in the absolute want of any signs of rictal bristles, whence I have called it *glabrirostris*.

Mr. Leyland informs me, with regard to this bird at Omoa, that he believes it is rare there, as he only saw one other individual during his stay. It frequents the low thick bushes.

Further information concerning the difference of the sexes, habits and internal structure of this interesting bird are requisite, before its true position can be satisfactorily established.

10. Lipaugus rufescens.

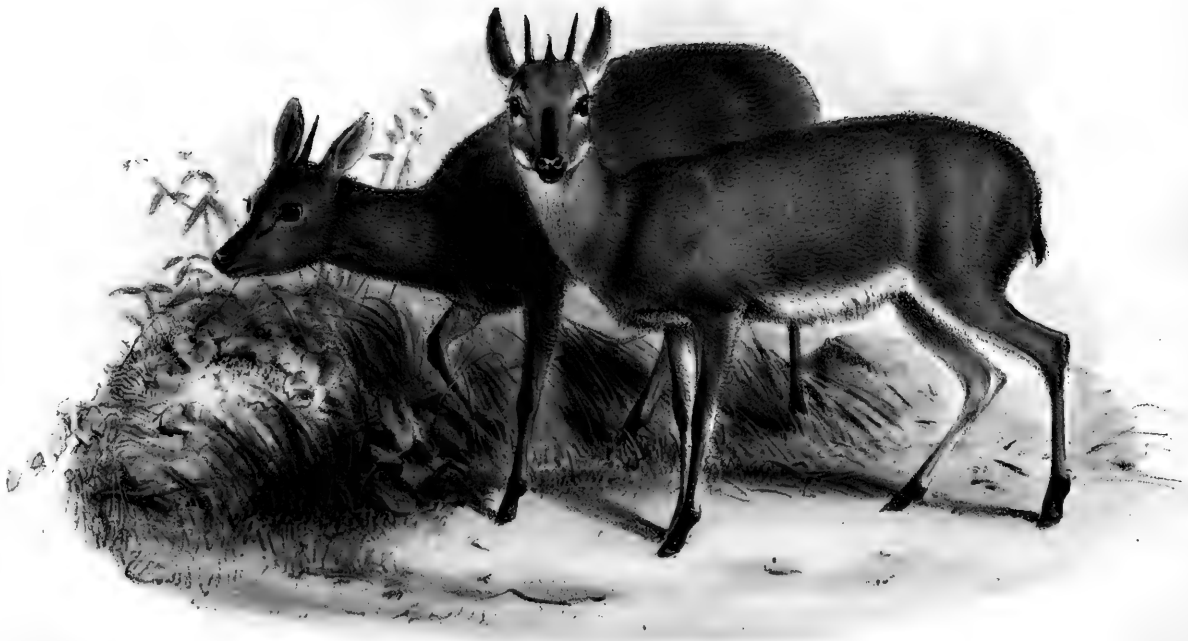
Rufescenti-brunneus, subtus clarior, capite et pectore subtilissime nigro, vittas obsoletas formante, transfasciatis: pennarum maculis apicalibus rotundis in pectore et ventre medio et in crisso sparsis, nigris: remigibus nigricantibus intus et extus rufo marginatis: alarum tectricibus superioribus rufis nigro variegatis, inferioribus rufis, fascia axillari crocea: cauda unicolore, rufescenti-brunnea: gula et crisso pure rufis: rostro nigricante, pedibus fuscis.

Long. tota 5·7, alæ 4·4, caudæ 3·3.

Hab. In rep. Guatimalensi prope urbem Coban (*Delattre*).

Mus. Britannico et Derbiano.

I examined an example of this bird with much care during an inspection of some of the riches of the Derby Museum at Liverpool, two years ago, and attached to it the MS. name which I now publish. Through the kindness of Mr. Thomas Moore I have lately had the opportunity of studying it a second time. Mr. G. R. Gray has obligingly pointed out to me a stuffed specimen in the British Museum, which is evidently the adult of this species, that in the Derby Museum being in an immature state; and I have therefore modified my original description, so as to render it applicable to the more perfect bird. In the younger stage the marking on the wings is not so decided, and the characteristic black spots on the breast, belly and crissum, and the axillary tufts, are absent. The specimen in the British Museum was procured from MM. Verreaux, and is labeled with the MS. name "*Lathriosoma typicum*, Bp." It is not however necessary to create a new generic name for this bird, as it certainly cannot be separated from *Lipaugus hypopyrrhus* (Vieill.),



1. CEPHALOPHUS GRIMMI, *Gray*
2. BURCHELLII *Gray*.

for which the term *Aulea* * (taken from Dr. Schiff's MS.) has been already published by Prince Bonaparte. It forms, in fact, an excellent second species of this division, which seems to serve as a connecting link between the genera *Lipaugus* and *Heteropelma*, and is perhaps worthy of generic rank.

11. TINAMUS CASTANEUS, sp. nov.

Saturate castaneus, capite et cervice undique cum gula nigricanti-cinereis, pileo nigricantiore, gula magis cinerascente: alarum pennis nigricantibus, tectricum et secundariarum marginibus externis dorso concoloribus: ventre imo cum cauda (tectricibus supra-caudalibus omnino abscondita) nigro et cervino flammulatis: rostri mandibula superiore nigricante, hujus autem tomiis cum mandibula inferiore flavidis: pedibus carneis.

Long. tota 8·5, alæ 5·5, caudæ 1·3, rostri a rictu 1·1, tarsi 1·9.

Hab. In Nov. Grenada interiore (Bogota).

Mus. P. L. S.

I obtained a single specimen of this Tinamou out of a large collection of Bogota skins in the hands of a dealer. I have in vain attempted to find a name for it, and have looked through the examples of these birds in the great Museums of Leyden, Paris and Philadelphia without finding a similar one. In the British Museum, however, is a specimen possibly referable to the young stage of this species.

The present bird agrees in size and shape tolerably well with *T. parvirostris* and *T. tataupa*, but is quite different in colouring from any member of the group with which I am acquainted.

3. On the Duiker Boks in the Society's Gardens. By Dr. J. E. Gray, F.R.S., F.L.S., V.P.Z.S. and Ent. Soc.

(Mammalia, Pl. LVII.)

In the text to the 'Knowsley Menagerie,' and in the 'Catalogue of the Hoofed Quadrupeds' in the British Museum, I divided the Duiker Boks into three species. The distinctness of these species has been doubted.

As there is now in the Gardens of the Zoological Society specimens of two of the species, and as each of these has bred there, I considered that it might be advantageous to give a figure of the male of each species, side by side, on the same plate.

1. The Impoon, *Cephalophus Grimmi*, Gray, Catalogue, Ungulata, p. 78, orbit and beneath white. There are in the Gardens a female and three young males.

2. The Burchell's Buck Bok, *Cephalophus Burchellii*, Gray, Cat.,

* Prince Bonaparte writes this word '*Aulea*,' but if, as I suppose is the case, it comes from *αὐλὸς*, *tibia*, the proper adjectival form would be *aulius*.

Ungulata, p. 81, dark, orbits and under side dark. There is a female, and a young male, her offspring.

The two sexes, and the young and the old specimens of each of the species are exactly similar.

4. Notice of a New Species of Jaguar from Mazatlan, living in the Gardens of the Zoological Society. By Dr. J. E. Gray, V.P.Z.S., F.R.S., etc.

(Mammalia, Pl. LVIII.)

The Society has recently received from Miss Mary Knight a very curious and valuable animal from Mazatlan, which appears not hitherto to have been noticed in the systematic catalogues, which is the more extraordinary, as the zoologists in the United States are now very active in describing the animals of North America, and are evidently renaming several of those which are well known in the European Museums.

This species greatly resembles the Jaguar in size, character, and marking, having the short legs and short tapering tail of that species; but it chiefly differs from that animal in the form of the head, which is more elongate, and in the disposition of the spots; instead of the spots being all placed in rings or roses, as they are usually called, the spots on the front part of the body are single and scattered, and those on the hinder part of the body are alone placed in rings or roses.

I propose to distinguish the species provisionally with the name of *Leopardus Hernandesii*, waiting until its skull and other characters can be more carefully examined and compared before I undertake to give its proper specific character.

5. Synopsis of the Families and Genera of Axiferous Zoophytes or Barked Corals. By Dr. John Edward Gray, F.R.S., F.L.S., V.P.Z. and Ent. Soc., etc.

(Radiata, Pl. IX.)

This group of animals has been called

Polypiers corticifères by Lamarck, Hist. A. S. V. ii. 288.

Polypes corticaux by Cuvier, Règne Anim. iv. 78, 1817.

Corallea by De Blainville, Dict. Sci. Nat. lxx., et Man. Actinol. 501, 1834.

Gorgoniadæ, Johnston, Brit. Zooph. 182, 1838; Gray, List of B. Mam. 55, 1848.

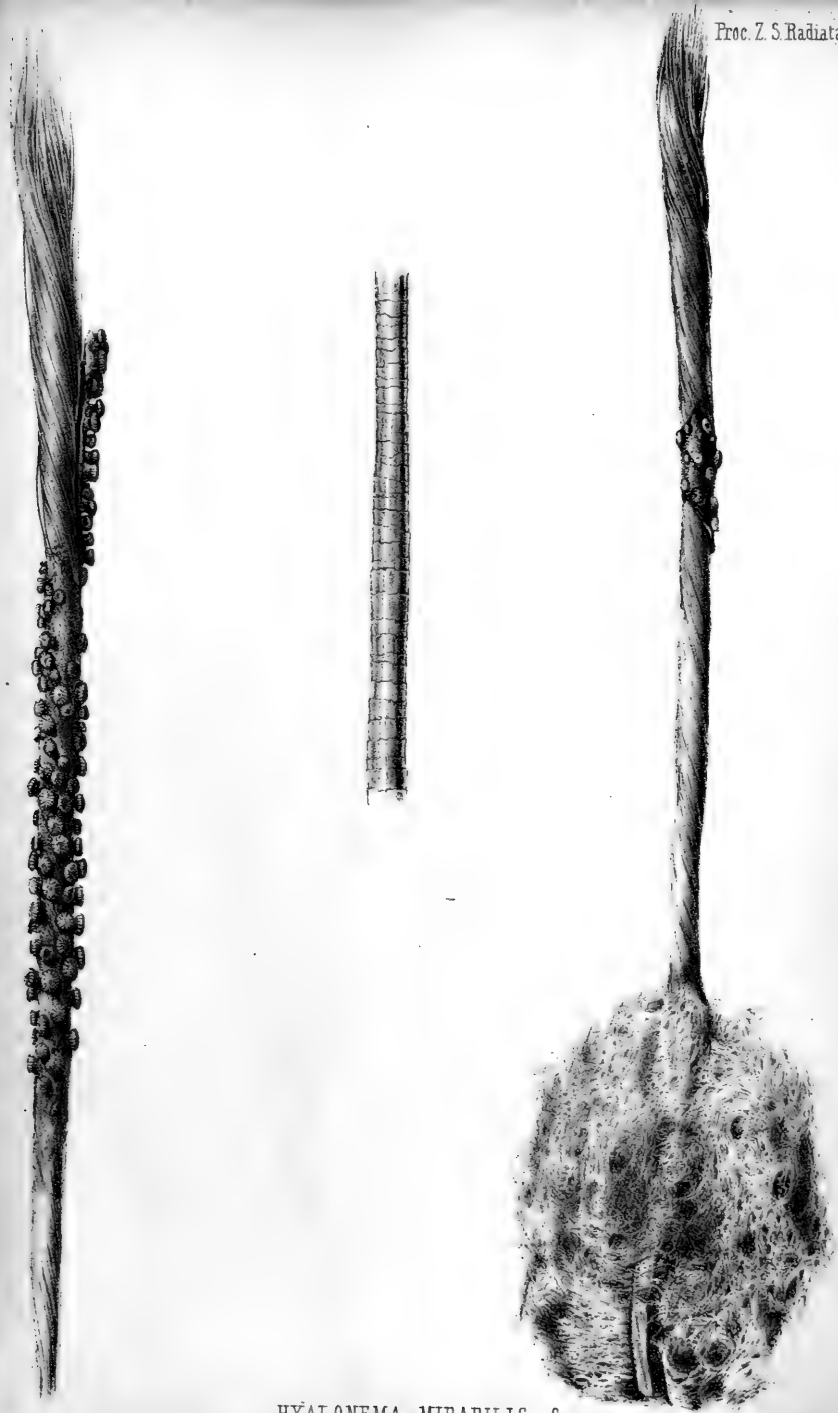
Gorgonidæ, Dana, Zooph. 637, 1846.

Cerato-corallia, Ehrenb. Corall. B.M. 1834.

Coralliadæ, Gray, Syn. B.M. 134, 1840.

This group of animals is easily distinguished from the other zoo-

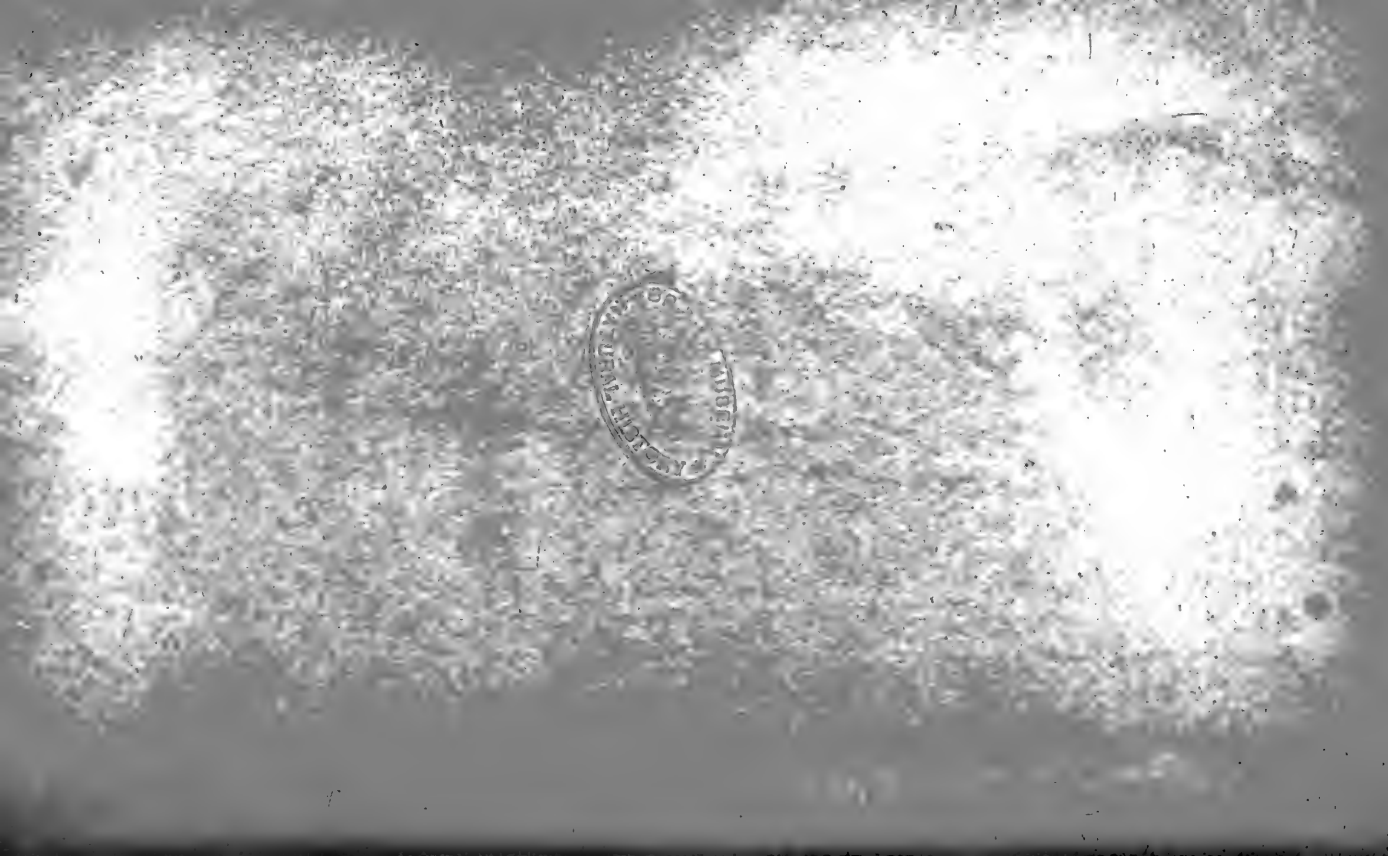

NATURAL HISTORY



G.H.Ford.

HYALONEMA MIRABILIS, Gray.

W. West Imp.



phytes by the mass of animals being supported by a continuous axis. The axis is generally formed of one (or rarely of many elongated) siliceous, calcareous, or horny body, extending from the base to the apex of the coral mass. The axis, whether consisting of horny, stony, or siliceous matter, is always formed of numerous concentric, very thin laminæ, more or less intermixed with mineral matter. Those which have a horny or calcareous axis are generally branched, and are uniformly fixed by an expanded base to some marine body.

The single known kind which has a siliceous axis: the axis is formed of many twisted fibres, and its lower end, instead of being expanded, is gradually tapering and is parasitically imbedded in a fixed sponge, and thus kept in its erect position.

These corals have sometimes been confounded with some of the more branched or tree-like *Alcyoniens*, or fleshy zoophytes. But the coral mass of these animals has no distinct continuous axis, being only strengthened by more or less numerous spicula imbedded in the flesh of the mass, as is the case in the animal part of these zoophytes that covers the axis.

In some genera, as *Briareus*, these spicula are more crowded together in the centre of the mass, forming a harder centre to the stem and branches; but this axis-like body, which is formed of an immense number of spicula, must not be confounded with the continued axis of the true Barked Zoophytes, which may be regarded as fleshy zoophytes, which are in addition furnished with a central axis to support their more branched form.

They may be best divided into three distinct subdivisions, according to the chemical composition of the axis, thus—

1. *Hyalophytes.*
2. *Lithophytes.*
3. *Ceratophytes.*

Suborder I. Hyalophyta.

Axis siliceous.

Family 1. Hyalonemadæ.

Coral subcylindrical, rather attenuated and immersed in a fixed sponge. Axis in the form of numerous elongated, slender, filiform, siliceous fibres, extending from end to end of the coral, and slightly twisted together like a rope. Bark fleshy, granular, strengthened with short cylindrical spicula; polypiferous cells scattered, rather produced, wart-like, with a flat radiated tip.

1. Hyalonema, Gray.

The character of the family.

1. Hyalonema mirabilis. (Pl. IX.) B.M.

Hyalonema mirabilis, Gray, Syn. B.M. 1830, 118.

Hyalonema Sieboldii, Gray, Proc. Zool. Soc. 1835, 63; Dana, Exped. 642.

Japan (*Sir Hans Sloane, Siebold*).

The coral, as it is usually seen, consists of three distinct portions, of very different texture and appearance—the axis, bark, and the sponge.

The axis is formed of a considerable quantity of transparent glass-like fibres, slightly twisted from right to left into a spiral rope-like bundle 18 to 20 inches in length and 3 or $3\frac{1}{2}$ lines in diameter at the lower part, where the fibres are most closely applied to each other, and whence the specimen gradually expands upwards to a diameter of double that extent.

The part above this tapering base is in different specimens covered to a greater or less extent (and evidently in the perfect state is entirely) with a kind of leathery bark, with large truncated nipple-shaped scattered tubercles, having flat crowns with radiating grooves and a central depression.

The base of the transparent rope is (in one specimen) as it were inserted into an irregular mass of a very loose spongy substance, to which it is very firmly attached; and in passing through which it gradually tapers to about half the size of the narrowest portion of the exposed part, and finally terminates in a truncated pencilled base of very fine capillary fibres. In general, the specimens are withdrawn from this spongy base, and the lower part of the axis is cleaned; but I think it is evident that they all are attached to such a sponge in their natural state.

The bark is formed of two distinct layers: the outer having the appearance of an aggregation of grains of sand united together by a small quantity of animal matter; the inner portion having imbedded in its substance numerous very fine capillary fibres of precisely similar texture to those which form the axis of the coral, but of much smaller size; and this portion of the bark evidently extends between and invests each of the fibres of the rope-like axis.

The fibres which form the axis are perfectly transparent, colourless, and moderately flexible, resembling in appearance those of spun glass or very clear bristles. They vary in thickness from half a line to the diameter of a very fine hair. In the middle portion they are nearly cylindrical; within 2 or 3 inches of the tip they gradually taper to half their former diameter; externally they appear to the naked eye smooth and polished, but as if furnished with numerous internal cracks taking different directions. Under the microscope there are seen many close-set superficial annular grooves, which become more evident near the tips, where they assume the form of raised belts most prominent below, and giving a somewhat irregular outline to the surface. Internally they are solid, and formed of very numerous, very thin, concentric coats, as may be seen by breaking them transversely, when, instead of presenting a straight fracture, the coats appear of different lengths, in consequence of their yielding at different intervals. If this fracture is minutely examined under a lens, each of its component laminæ is found to present numerous concentric lines, showing it to be formed of several plates. But this structure is most evidently seen on applying the end of one of the broken fibres to the flame of a spirit lamp, when

it becomes first opake and silvery, then crepitates, enlarges, and assumes a dull white colour; after which the different laminæ, which are very numerous, separate from each other. If a larger portion of the fibre is exposed to the flame, its outer coat is elevated in flakes, and the whole substance splits longitudinally on one side in such a manner as to exhibit a section of the various coats.

Each of the fibres or spicula of the axis is enveloped in a thin membrane connected with the bark, and which doubtless deposits the very numerous concentric coats of which it is formed, as the bark deposits the concentric coats of which the axes of *Gorgonia, Coralium* and *Isis* are formed.

The number of fibres in the axis appears to increase as the coral grows, as some are much thinner than the rest, while they all extend from the base to the apex of the coral. The part of the fibre which is enclosed in the sponge does not appear to increase in thickness so fast as the other part of the fibre, and it is not covered with any bark.

The late Dr. Prout and Mr. Pearsall have furnished me with the following account of the chemicals constituent of these fibres:—

"When this coralloid substance is exposed to heat it decrepitates strongly; and if the experiment be made in a tube and the heat suddenly applied, it bursts to pieces with a sort of explosion, and gives off a perceptible quantity of water, and yields a strong peculiar fishy odour. Under the blowpipe it melts into a porous slag, so light as to swim in water, and reminding one of the substance called Tabasheer, the addition of a little alkali converts it into pellucid glass. These experiments show that this substance consists principally of hydrated silica.

"W. Prout."

"*To J. E. Gray, Esq.*

"The Royal Institution,
Friday Evening, April 18th, 1832.

"Dear Sir,—I have examined the peculiar organic formation which you showed the structure of by the microscope when I had the pleasure of seeing you last: indeed I had more than one specimen of marine produce, but the present had something of this appearance.

"When heated in very small glass tubes, portions of these *spines* decrepitated violently, and gave off much water, but no appearance of ammonia, so that very little, or perhaps no trace of organic matter can be expected to remain.

"The acids (sulphuric, muriatic, and nitric) did not seem to affect them even when pulverized and boiled together.

"They certainly are *not carbonate of lime.*

"I obtained very minute traces of *sulphuric acid and lime*; but so very inappreciable, except by the slightly turbid appearance when viewed between the source of light, that, if the indications proceed from the spines or not, they must be considered as accidental.

"The spines are *not sulphate of lime*, but I consider them to be silica; for after much boiling in silver vessels, although they scarcely seemed affected by caustic alkali, yet, when heated to redness, they fused and lost all traces of regular form, and the whole of the fused mass, small as it was, became entirely soluble in water. When muriatic acid was added, the silica was precipitated with the usual gelatinous and flocculent appearances; the only chance is that alumina may possibly be present. I tried one of the blowpipe tests for alumina, and there seemed to be the appearance of this substance; but I think the test is subject to fallacy. So I conclude that the substance is silica only; the water—does it proceed from cells, or is it held accidentally?

"I shall be curious to know the history, which I believe you promised after my reporting upon their composition, and of course wish to know how far you consider this examination corresponds to the impression on your own mind; for I think you told me that more than one chemist had given an opinion, which possibly may differ from mine.

"Believe me to be,
"Respectfully and sincerely,
"THOMAS JOHN PEARSALL."

The sponge to which it is attached has no real connection with the coral, except as affording it the means of support, and is of the common structure.

Some fibres of the axis of this coral were in the collection of Sir Hans Sloane, and it was doubtful to which kingdom these isolated siliceous threads could belong, until the arrival in this country of the specimen, which was sent from Canton by Mr. Reeves, under the name of *Glass plant*, described by me in the paper above referred to.

There can be no doubt, after the examination of the two specimens in the British Museum, one in my own collection, one in Paris, and several in the Leyden Museum, that the bark evidently belongs to the axis, and that this coral is a true zoophyte, and not a sponge covered with a parasitic zoophyte, as it is regarded by M. Valenciennes. See Milne-Edwards, British Fossil Corals, 81.

Suborder II. LITHOPHYTA.

Axis calcareous, continued or jointed, effervescing with muriatic acid.

In the genus *Subergorgia* the axis is cork-like; in the other genera it is ligneous, more stony and hard at the base; in others it is entirely stony and hard, and usually of a white colour; but in *Corallium* it is generally deep bright red, but sometimes pink or white. In general it is solid, and formed of concentric laminæ. In *Melitæa* and *Solanderia*(?) it is cavernous, pierced with cylindrical tortuous canals.

Fam. 2. Isidæ.

Coral branched, tree-like or fan-shaped, with anastomosing branches. Axis hard, articulated, composed of alternating portions of hard calcareous and flexible horny black matter. Bark granular; smooth, with irregular-shaped calcareous spicula; polypiferous cells simple, more or less exserted.

1. Isis.

Cynosaire, Lamk.
Hippurium, Oken.

Coral branched, furcate. Axis striated, branches proceeding from the calcareous articulations. Bark thick, with a few interspersed, very irregular and unequal spicula. Polypiferous cells scattered over the whole surface, sunken. Base of coral expanded, tuberose.

The bark is permanent and hard, but is brittle, easily removed, especially if the specimens are not kept in a dry place. Lamarck, who had only seen the coral without the bark, describes it as "*caduce en totalité,*" &c., p. 300.

The articulations between the joints generally become obliterated near the base of the coral of the older specimens, either by the contraction and solidification of the horny part, or by the horny portions becoming covered with a calcareous deposit. Lamarck regarded the coral in this state as a different genus, which he named *Cynosaire,* Mem. Mus. i. 467. See Seba, iii. t. 105. n. 3.

1. Isis hippuris. B.M.

Isis hippuris, Linn.; Ellis, Zooph. t. 3. f. 1, 5 (with bark); Seba, iii. t. 205. no. 3 (old stems); t. 110. nos. 1 & 2 (upper branches with bark); Esper, t. 1, 2 (upper branches), t. 3 (old stems), t. 3 *a.* f. 1, 2 (bark).

2. Isidella.

Coral branched, furcate. Axis smooth, cylindrical, stony, joint elongate; branches furcate, proceeding from the corneous joint. Bark rather thick, with irregular opake spicula; polypiferous cells produced, subcylindrical. Base of axis expanded, lobed and branched.

1. Isidella elongata. B.M.

Isis elongata, Esper, t. 6; Seba, iii. t. 6. f. 4.
I. gracilis, Lamk. Pol. Flex. t. 18. f. 1.
Mopsea mediterranea, Risso, E. Merid. 322. f. 1.
M. elongata, Philippi, Wiegm. Arch. 1842, 38.
M. gracilis, Dana.
? *M. erythracea,* Ehrenb.

The branches of *I. elongata* are said to be often anastomosed, and for this reason it appears to be separated from *I. gracilis*; but I have never seen them in that state (Lamx. Pol. Flex. 477).

Mediterranean; Red Sea (*Ehrenb.*); ? West Indies (*Lamx.*).

2. Isidella ? coralloides.

Isis coralloides, Lamx.
South Sea.

3. Mopsea.

Mopsea, Lamx.

Coral branched, fan-shaped, branches pinnate. Axis jointed, stony joint short, branches from the horny articulation. Bark hard, with imbedded spicula; polypiferous cells produced, wart-like, subverticillate, ascending, rather incurved.

1. Mopsea encrinula.

Isis encrinula, Lamk.
Mopsea verticillata, Lamx. Pol. Flex. t. 18. f. 2.
M. encrinula, Ehrenb.
Australia.

Fam. 3. Melitæadæ.

Coral branched, branches furcate, often anastomosing. Axis spongy, permeated with flexuous cylindrical canals, continued or interrupted with harder swollen calcareous joints. Bark granular, almost entirely composed of transparent calcareous spicula. Polypiferous cells in series on the edge of the stem and branches.

1. Solanderia.

Solanderia, Duchassaing.

"Axis continued, resembling the non-calcified joints of *Melitea*." Bark thin, rather cottony.

1. Solanderia gracilis.

Solanderia gracilis, Duchass. Rev. Zool. 1846, 218.
Guadaloupe.

2. Mopsella.

Axis articulated, segments elongated, stony, with short swollen hard and porous joints. Base of the axis expanded, not lobed. Bark permanent, granular with scattered spicula, cells prominent, swollen.

1. M. dichotoma. B.M.

Isis dichotoma, Pallas; Esper, t. 5, t. 11. with bark (Petiver, Gazoph. t. 3. f. 10); Hermann, Naturf. xv. 135. t. 5. f. 1.
Mopsea dichotoma, Lamx. 466 (not Seba, t. 106. f. 4).

3. Melitæa.

Coral branched, furcate, often anastomosing. Axis composed of narrow, solid, striated, calcareous segments and swollen spongy grooved joints; base of the axis expanded, not lobed. Polypes in

four or five longitudinal series at end of branches (Esper, t. 4 *a*. f. 4, 5, see t. 11. f. 2, bark). Cells sunken.

* *Tree-like, branched.*

1. MELITÆA OCHRACEA. B.M.

Melitæa ochracea, Lamk.; Meyen, Nov. Acta Leop. xvi. t. 29.
Isis ochracea, Linn.; Esper, t. 4, t. 4 *a*, t. 11, f. 1, 2, 3, with bark.
Corallium rubrum, Ellis, Phil. Trans. iv. 188. t. 3.

** *Flabelliform, reticulated.*

2. MELITÆA AURANTIA. B.M.

Isis aurantia, Esper, t. 9.
Melitæa retifera, Lamk.
India.

3. MELITÆA COCCINEA, Lamk. B.M.

M. Rissoi, Lamk.
Isis coccinea, Solander, Z. t. 12. f. 3 (cop. Esper, t. 3 *a*. f. 5); Esper, t. 16.

4. MELITÆA TEXTIFORMIS. B.M.

Melitæa textiformis, Lamk. Pol. Flex. t. 19. f. 1.
Australia.

5. MELITÆA TENELLA.

M. tenella, Dana, Exped. 683.
Sandwich Islands.

Fam. 4. PRIMNOADÆ.

Coral branched, branches forked or pinnate. Axis calcareous, smooth, or slightly longitudinally striated. Bark formed of flat scales. Polypiferous cells produced, covered with regularly disposed imbricate scales.

1. PRIMNOA.

Primnoa, Lamx. 1812.

Coral branched, tree-like, branches cylindrical, forked. Bark formed of scales. Polypiferous cells ovate, clavate, dependent, covered with two series of large convex imbricate scales, placed in whorls of three round the branches. Aperture closed, with three small pointed scales.

* *Coral tree-like and branched, branches forked. Cells ovate, bell-shaped, in threes.* Primnoa.

1. PRIMNOA LEPADIFERA, Lamx. B.M.

Gorgonia lepadifera, Linn.; Baxter, Opusc. ii. t. 13. f. 10, Soland. Zooph. t. 13. f. 1, 2; Johnst. B. Zooph. f. 37.
G. reseda, Pallas.
North Sea; Archangel; Norway.

** *Coral simple, with simple branches spreading on all sides.*

2. PRIMNOA ANTARCTICA.

P. antarctica, Valenc. Voy. Venus, t. 12. f. 2.
South Polar Sea and Falkland Islands.

2. CALLOGORGIA.

Coral forked, fan-shaped; branchlet pinnate. Axis continued, stony, compressed. Bark thin, white, formed of flat angular imbedded granules. Cells in whorls of three, cylindrical, incurved, covered with small imbricate scales.

1. C. VERTICILLATA. B.M.

Gorgonia verticillata, Pallas; Esper, t. 42.
G. verticillaris, Solander.
Prim. verticillata et P. flabellum, Ehrenb.
Muricea verticillaris, Dana.
Keratophyte (Sea Feather), Ellis, Corall. t. 26. f. S. T. V.
Mediterranean; Madeira.

3. PRIMNOELLA.

Coral simple, elongate, cylindrical. Axis continued, stony. Bark granular, smooth. Polypiferous cells numerous, close pressed, subcylindrical, regular, small, placed in close regular circles, each containing many cells round the stem; each cell covered with two series of small imbricate scales.

1. P. PRIMNOA AUSTRALASIÆ. B.M.

Primnoa australasiæ, Gray, P. Z. S. 1849, 146; Radiata, pl. 2. f. 8, 9.
Australian Seas, on oyster-shells and stones.

Fam. 5. CORALLIDÆ.

Axis inarticulate, solid, calcareous, more or less hard and stony. Bark smooth, granular, with irregular-shaped calcareous spicula. Polypiferous cells simple, more or less exserted.

The chemical character of the axis may be easily discovered by a small quantity of muriatic acid.

1. CORALLIUM.

Corallium, Lamk. 1813.
Isis, Oken, 1815.

Coral tree-like, branched, forked. Axis hard, continuous, stony, striated externally. Bark granular, when dry formed almost entirely of irregular spicula (see Ellis, Zooph. t. 13. f. 3, 4). Polypiferous cell homogeneous, scarcely exserted, scattered over the surface of the branches.

* *Shrub-like, spreading.* Corallium.

1. C. NOBILE, Ehrenb. B.M.

Isis nobilis, Linn.
Gorgonia pretiosa, Solander, Zooph. t. 13.
Corallium rubrum, Carolini, t. 2.
Mediterranean.

** *Fan-shaped, branches on a plane.*

2. CORALLIUM SECUNDUM.

Corallium secundum, Dana, Exped. t. 60. f. 1.
Sandwich Islands.

2. ANNELLA.

Coral rather fan-like, sinuous, branched; branches subcylindrical, rather compressed, inosculating. Axis continuous, soft, woody, white, calcareous, effervescing in muriatic acid, flexible. Bark moderately thick, granular, with imbedded spicula, without any impressed lateral grooves, with numerous equally diffused small circular imbedded polypiferous cells, aperture closed with eight keeled conical valves, forming a rather convex cone (which are absent in the worn specimens).

1. A. RETICULATA. B.M.

3. ELLISELLA.

Coral simple or furcately branched; branches subcylindrical, with a more or less distinct lateral groove, especially at the base. Axis continuous, opake, solid, calcareous, hard at the base, white and softer above. Bark when dry granular, thin, with numerous series of sunken or slightly prominent polypiferous cells on each edge of the stems and branches.

* *Coral simple, subcompressed beneath.* Junceella, *Valenc.*

1. E. JUNCEA. B.M.

Gorgonia Juncea, Pallas; Esper, t. 52?; Seba, Thesaur. t. 105. f. 1 *a,* left figure.
Junceella Juncea, Valenc.

** *Coral furcately branched, branches subcylindrical.*

2. E. ELONGATA. B.M.

Gorgonia elongata, Pallas; Esper, t. 55.

3. E. COCCINEA. B.M.

Branches very long, virgate, bright scarlet.

*** *Coral branched, fan-like; branches with a series of virgate branches on the upper side only.* Ctenocella.

4. E. PECTINATA. B.M.

Gorgonia pectinata, Pallas; Seba, Thes. t. 105. f. 1 *a,* central figure.
Pterogorgia pectinata, Dana, n. 17.

4. Subergorgia.

Subergorgia, Gray, P. Z. S. 1857, p. 159.

Coral branched, forked, rather fan-shaped. Axis compressed, continuous, opake, calcareous, cork-like, formed of rather loose laminæ. Bark when dry granular, with a distinct impressed groove on each side of the stem and branches. Polypiferous cells rather prominent, simple, in two or three series on each edge of the stems and branches.

* *The stem subquadrate; lateral groove deep, broad; cell rather tubercular.*

1. Subergorgia suberosa. B.M.

Gorgonia suberosa, Pallas (not Solander); Esper, t. 49; Ellis, Coral. t. 26. f. P. Q.
Gorgonia sulcifera, Lamk.
Pterogorgia sulcifera, Dana, no. 16.
Subergorgia suberosa, Gray, P. Z. S. 1857, p. 159.

Branches gradually attenuated, virgate, straight, rarely anastomosing.

** *The stem compressed, broad lateral grooves, narrow; cells scarcely prominent.*

2. Subergorgia compressa. B.M.

The branches slender, diverging, arched.

5. Scirpearia.

Scirpearia, Cuvier, 1817.
Funiculina, sp., Lamk. 1816.

Coral slender (simple or subsimple), rod-like. Axis slender, cylindrical, hair-like, solid, white, calcareous, attached by a broad base. Bark (when dry) thin, smooth, granular, with a series of subcylindrical polypiferous cells placed alternately on each side of the stem.

1. Scirpearia mirabilis. B.M.

Scirpearia mirabilis, Cuvier, Schweiger, Beob. t. 2. f. 13.
Pennatula mirabilis, Pallas.
Polypus mirabilis, Linn. Mus. Adolph. t. 19. f. 4.
Funiculina cylindrica, Lamk. (not synonyms).
Pavonaria scirpea, Blainv.
St. Vincent's, West Indies.

See *Funiculina mediterranea*, Risso, Eur. Merid. v. 365.

Linnæus figures the coral as free, and furnished with polypiferous cells the whole of its length and with attenuated ends. Schweiger figures the coral as free, with a thicker naked turned-up base, like *Pennatula*, with which he arranges it; but I am informed that in the Berlin Museum the specimen is attached to a rock by an ex-

panded base. The Museum specimen is only a fragment, like a Coral or Gorgonia; but the form of the cell, the bark, and the axis much more resembles that of a Coral or Gorgonia than any genus of *Pennatuladæ*.

M. Valenciennes forms a genus *Gorgonella*, thus characterized :— "Sclerobase (axis) calcareous, much divided, forming fine branches," to which he refers *G. violacea* and *G. sarmentosa*, Lamk. I have not been able to find any specimens agreeing with these characters. The specimen in the Museum agreeing with Esper's figure of the latter species has a horny axis.

6. Umbracella.

Coral flabellate, branched, branches subfurcate, flexuose often anastomosing. Axis smooth, polished, base white, coral-like; upper part rod-like, solid; branchlet white, flexible. Bark when dry granular, minutely punctate, thin, with a narrow continuous lateral groove. Polype cells in a rather irregular series on each side of the branchlets, rather prominent, roundish, white, with eight or ten radiating grooves from the apex, in two or three irregular interrupted series on each side of the main stem.

1. Um. umbraculum.

Gorgonia umbraculum, Solander, Z. t. 10.

2. Um. granulata. B.M.

Gorgonia granulata, Esper, t. 4.

Suborder III. Ceratophyta.

Axis single, continued, horny (not effervescing in muriatic acid), having an expanded base, by which it is attached to some fixed marine body.

Fam. 1. Antipathidæ.

Antipathidæ, Gray, Syn. B.M. 1842, 135.
Antipathacea, Dana, Zooph. 574.
Zoantharia cauliculata, Edw. & Haime, Arch. Mus. H. N. v. 175.

Bark fleshy, easily deciduous, soft, simple, only strengthened with large and small scattered (siliceous?) plates.

1. Leiopathes.

Leiopathes, Gray, Syn. B.M. 1842, 135.

Axis smooth, polished, branched, forked. Bark soft, deciduous, deliquescent, sometimes forming (when dry) smooth, transparent masses at the fork of the branchlets.

1. Leiopathes glaberrima. B.M.

Leiopathes glaberrima, Gray, Proc. Comm. Sci. Zool. Soc. ii. 41.
Antipathes glaberrima, Esper, ii. t. 9.
? *Antipathes dichotoma*, Pallas, 216.
Marsillii, Lith. no. 9. t. 101. f. 21 ?
The Black coral of commerce.
Mediterranean; Malta.
Marsilli observed the coral covered with minute blotches on one side when he first obtained it.

2. Leiopathes Boscii.

"Stem flexible, branched; branches diverging, extremities setaceous."

Antipathes Boscii, Lamx. Pol. Flex. 375. t. 14. f. 5; Corallina, 191. t. 14. f. 5.
Carolina.
Lamaroux's figures represent the bark forming small masses between the branchlets, as I have observed it on the Madeira specimen.

Some of the smooth species referred to the genus *Antipathes* by Esper, as *A. fœniculacea*, t. 7; *A. clathrata*, Pallas, Esper, t. 2; *A. lingulata*, Esper, t. 5, are evidently the axes of some species of *Gorgoniadæ* that have lost their bark.

2. Antipathes.

Antipathes, Gray, Syn. B.M. 1842.

Bark fleshy, with imbedded, large and small brown (siliceous) plates, easily deciduous. Axis simple or branched, horny, covered with numerous close small subcylindrical spines.

Mr. Dana observes,—"The examination of the animal of two species (*A. anguina* and *A. arborea*, t. 56. f. 1, 2), has led to an arrangement of them with *Actinoida*, as the tentacles have the naked character peculiar to this suborder, and the polypes closely resemble those of the *Madreporæ* in appearance and habit."—*Dana*, p. 575.

From the examination of the animal of *A. glaberrima* and *A. anguina*, I am led to the opposite conclusion that they are true zoophytes. I am aware that the tentacles do not appear pinnated when they are examined after they have been dried, but this is the case with the animals of all the *Gorgoniadæ* I have examined under similar conditions. The pinnæ appear to be permanently withdrawn under such circumstances.

* *Coral simple, flexuous or spiral, unbranched.* Cirripathes.

1. Antipathes spiralis, Pallas, P.Z.S. 1857, p. 113; Radiata, pl. 6. B.M.

Gorgonia spiralis, Linn. S. N. 1290.
Antipathes spiralis, Ellis, Zooph. 99. t. 19. f. 1–6.
Mollucca (*Ellis*).

2. ANTIPATHES ANGUINA. B.M.

Antipathes anguina, Dana, *l. c.* 576. t. 56. f. 1.
Cirripathes Sieboldii, Blainv.
Feejee Islands.

3. ANTIPATHES GRACILIS. B.M.

Slender, tapering, slightly spinose.
Madeira (*Mason*).

** *Coral branched.*

4. ANTIPATHES FURCATA. B.M.

Antipathes furcata, Seba, iii. t. 107. f. 4.

Coral shrub-like, branched, repeatedly forked; branches slender, elongate, filiform; stem slender, short, smooth.
Madeira (*Mr. Mason*, 1857).

5. ANTIPATHES FRUTICOSA. B.M.

Coral shrub-like, very branchy; branchlets linear, elongate, with a few distant elongate branches, sometimes in a single row coming from the same side of the branchlet; spinules rather far apart.
Stephens Island (*J. B. Jukes*).

6. ANTIPATHES PLUMA. B.M.

Coral fan-like, branched, forked; branchlets pinnate, simple, in two opposite diverging series; spinules very close, crowded.
Hab. —— ?

7. ANTIPATHES PEDATA. B.M.

Coral fan-like, on one plane, branched; branchlets linear, elongate, in one series on the upper side of the arched branches, and branched on the inner side.
West Indies (*Scrivener*).

8. ANTIPATHES RETICULATA. B.M.

Antipathes reticulata, Esper, i. 183. t. 11.

Coral fan-shaped in one plane, branches slender; branchlets very slender, subpinnate, irregularly disposed, often anastomosing, forming a suborbicular frond.
West Indies (*Scrivener*).

9. ANTIPATHES ATLANTICA. B.M.

Coral shrub-like, branched, branches fan-like, irregularly pinnate; branchlets elongate, with distant subulate pinnæ, the larger one sometimes pinnated, the branches and branchlets often anastomosing.
West Indies (*Scrivener*).

10. ANTIPATHES ULEX. B.M.

Antipathes ulex, Soland. Zooph. 100. t. 19. f. 7, 8; Lamx. Exp. t. 19. f. 7, 8.

Antipathes mimosella, Lamk. no. 8.

Coral shrub-like, branches rather fan-like; branchlets slender, rather distant, in two rows, diverging from the side of the upper surface of the branches.

Batavia (*Ellis*); Philippines (*Cuming*).

11. ANTIPATHES MYRIOPHYLLUM. B.M.

Antipathes myriophyllum, Soland. Zooph. 102. t. 19. f. 11, 12; Lamx. Exp. t. 19. f. 11, 12; Esper, t. 10; Blainv. Man. t. 87. f. 2.

A. pinnatifida, Lamx. Pol. Flex. 277. t. 14. f. 4?. Coral. t. 14. f. 4?.

Coral shrub-like, branched, branches rather fan-like in one plane; branchlets short, crowded, subpinnate, in two rows, diverging from the sides of the upper surface of the branches, which are smooth and subangular beneath.

Batavia (*Ellis*); Philippines (*Cuming*).

Antipathes compressa, Esper, t. xiii., greatly resembles the base of the stems of this species.

12. ANTIPATHES LARIX. B.M.

Antipathes larix, Esper, ii. 147. t. 4.

Coral cylindrical, simple, erect; stem subtriangular below, cylindrical above; branches numerous, crowded on all sides of the stem, simple, hair-like, elongate.

Mediterranean (*Lamk.*).

In collections the branches are often broken off by pressure, and it then appears as if there were only two rows, one on each side of the stem, as figured by Esper: but the base of the branches is generally to be observed.

13. ANTIPATHES ABIES. B.M.

Gorgonia abies, Linn. S. N. 1290.

Antipathes cupressus, Soland. Z. 103.

Antipathes cupressina, Pallas, Z. 213; Esper, t. 3, bad.

Cypressus marinus, Rumph. Amb. vi. t. 80. f. 2; Seba, iii. t. 106. f. 1.

Coral cylindrical, oblong or subfusiform; stem simple, rarely with one or two branches; branchlets spreading on all sides, repeatedly divided and arched downwards.

Philippines (*Cuming*).

14. ANTIPATHES SPINESCENS. B.M.

Coral branched, branches divaricating, subcylindrical; branchlets on all sides of the stem crowded, short, of nearly equal length,

straight, spine-like, with spine-like branches and branchlets on their sides; the lower branchlet sometimes tending toward one surface.
Cape Palmas (*Hooker*).

15. ANTIPATHES HIRTA. B.M.

Coral branched, branches divaricated; branchlets from all sides of the stem, crowded and generally bent up toward one surface, elongate, nearly of a uniform length, simple, with a few filiform, generally short branches on their base.
West Indies (*Scrivener*).

16. ANTIPATHES SUBPINNATA. B.M.

Antipathes subpinnata, Soland. Z. 101. t. 19. f. 9, 10.

Coral erect, irregularly branched, branches diverging; branchlets close together in three (rarely two or four) longitudinal series on the different sides of the stem, elongate, slender, ascending, simple, and of nearly equal length.
Madeira (*Wollaston*).
Solander's figure but imperfectly represents this species, if it is intended for it. I had originally described it as distinct under the name of *A. Wollastonii*.

The following species have been described, which I have not seen:—

1. ANTIPATHES PECTINATA.

Antipathes pectinata, Lamk. ii. 480. no. 6.

2. ANTIPATHES PINNACEA.

Antipathes pinnacea, Pallas, iii. 269.

3. ANTIPATHES SCOPARIA.

Antipathes scoparia, Esper, t. 14; Lamk. 480. no. 7.

4. ANTIPATHES FŒNICULACEA.

Antipathes fœniculacea, Pallas, Z. 207; Rumph. Amb. vi. 208. t. 80. f. 3, not Esper.
Antipathes fœniculum, Lamk. 482. no. 12.

5. ANTIPATHES CORTICULA.

Antipathes corticula, Lamk. ii. 480. no. 3.

"The bark" appears to be a parasitic animal.

6. ANTIPATHES LACERATA.

Antipathes lacerata, Lamk. ii. 480. no. 4.
A. lacera, Lamx. Pol. Flex. 277.

7. ANTIPATHES PYRAMIDATA.

Antipathes pyramidata, Lamk. ii. 480. no. 5.

8. Antipathes alopecuroides.

Antipathes alopecuroides, Soland. Zooph. 102.
S. Carolina.

9. Antipathes paniculata.

Antipathes paniculata, Esper, t. 12.

10. Antipathes arborea.

Antipathes arborea, Dana, Zooph. 585. t. 56. f. 2.
Feejee Islands.

11. Antipathes flabellum.

Antipathes flabellum, Pallas (not Esper), t. 1.

12. Antipathes ericoides.

Antipathes ericoides, Pallas, Z. 208 ; Esper, t. 6.

13. Antipathes triquetra.

Antipathes triquetra, Brug. E. M. 82.

3. Sarcogorgia.

Sarcogorgia, Gray, P. Z. S. 1857, p. 158.

Bark fleshy, then when dry like a thin smooth skin without spicula, with rather raised cells strengthened with sand-like granular spicula. Coral furcately branched on a single plane. Axis black, hard, smooth.

1. Sarcogorgia phidippus.

Sarcogorgia phidippus, Gray, P. Z. S. 1857, p. 158. pl. 8.

(To be continued.)

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.

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