

THIS BOOK MAY NOT BE PHOTOCOPIED

PROCEEDINGS

OF THE

SCIENTIFIC MEETINGS

OF THE

ZOOLOGICAL SOCIETY

OF LONDON

FOR THE YEAR

1866.



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ERRATA.

- Page 42, line 4 above Description of Plate III., omit "(Pl. III. fig. 9)."
- „ 42, line 2 above Description of Plate III., for "not be named" read "now be named."
- „ 57, *DANAIS CROCEA* is figured Pl. IV. fig. 5 only, not figs. 5 & 6.
- „ 58, *DANAIS MARIANA* is figured Pl. IV. fig. 6, not fig. 7.
- „ 58, *DANAIS INUNCTA* is figured Pl. IV. fig. 7, not fig. 8.
- „ 59, The following is a corrected Explanation of Plate IV. :—
- | | |
|--|---------------------------------------|
| Fig. 1. <i>Danais fulgurata</i> , p. 48. | Fig. 5. <i>Danais crocea</i> , p. 57. |
| 2. — <i>conspicua</i> , p. 49. | 6. — <i>mariana</i> , p. 58. |
| 3, 4. — <i>gloriola</i> , p. 56. | 7. — <i>inuncta</i> , p. 58. |
- „ 120, line 16, for *Brahmæa petiveri* read *Phalæna maxima*.
- „ 287, line 11 from bottom, for *subtus* read *supra*.
- „ 464, *EUPTYCHIA DIVERGENS* is figured Pl. XL. fig. 3, not fig. 1.
- „ 471, *EUPTYCHIA MARMORATA* is figured Pl. XL. fig. 1, not fig. 2.
- „ 483, *EUPTYCHIA BRIXIOLA* is figured Pl. XL. fig. 9, not fig. 4.





J. Smit, lith.

BOS FRONTALIS

M & N Harhart imp

PROCEEDINGS
OF THE
SCIENTIFIC MEETINGS
OF THE
ZOOLOGICAL SOCIETY OF LONDON.

January 9, 1866.

Alfred Newton, Esq., F.L.S., in the Chair.

Mr. P. L. Sclater called the attention of the Meeting to the young male Gayal (*Bos frontalis*, Lambert), just added to the Society's Menagerie. A pair of this fine species of Bovine animal had been shipped at Calcutta for the Society by their Corresponding Member, the Babu Rajendra Mullick; but the female had unfortunately died upon the passage. A drawing by Mr. Wolf (Plate I.) was exhibited, representing this interesting animal.

Mr. P. L. Sclater remarked that it seemed now to be quite certain that the White-whiskered Lemur, described and figured by Mr. Bartlett (P. Z. S. 1862, p. 347, pl. xli.) under the name *Lemur leucomystax*, was the female of the Black Lemur (*Lemur macaco*, Gm.). The Society's Menagerie now contained a male and two females of this species, including the original type of *Lemur leucomystax*, purchased in 1861. Dr. Brehm, Director of the Zoological Gardens, Hamburg, had first called Mr. Sclater's attention to the fact that the Black Lemurs were always males, and the White-whiskered ones females, such being the case in the Hamburg Gardens (which contained in August last two males and a female of this species) as well as in this Society's Gardens. The matter, however, had been definitely set at rest by two enterprising Dutch travellers, MM. Pollen and Van Dam, who, during their recent excursion into North-western Madagascar,

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had obtained specimens of both of these Lemurs, and determined them as male and female of the same species*.

A letter was read from Sir C. W. Dilke, Bart., F.Z.S., announcing the occurrence of a specimen of the Gyr Falcon (*Falco gyrfalco*) in the Holt forest near Farnham.

Mr. P. L. Selater read an extract from a letter addressed to him by Dr. H. Burmeister, For. Memb., concerning the *Tyrannidæ* found in the vicinity of Buenos Ayres. These were stated to be

- Saurophagus sulphuratus* (common),
- Tyrannus violentus* (common).
- *aurantio-atro-cristatus* (rare).
- Bathmidurus variegatus* (rare).
- Elainea modesta* (rare).
- Muscipeta virgata* (rare).
- Pyrocephalus coronatus* (common).
- Serpophaga nigricans* (rare).
- *subcristata* (common).
- Euscarthmus (Hapalocercus) flaviventris* (rare).

Dr. Burmeister's list was accompanied by drawings and descriptions of two other species of this group, which Mr. Selater had not been able to determine.

The following extracts were read from a letter addressed to the Secretary by Lieut. R. C. Beavan, Corr. Memb., dated Moulmein, October 23rd, 1865:—

“I have just returned from a trip to Zwagaben (a remarkable limestone rock about twenty-five miles to the north of this, elevation about 2000 feet, and about the only limestone rock in the vicinity which can be climbed) with the Rev. C. G. Parish, the chaplain here, who is well known as a botanist. A day and a half up the Salween by boat at this time of the year brings one to the small village of Korlike; and from this point to the foot of the rock is only four or five miles, through a swamp which has to be traversed on elephant-back. At the foot of Zwagaben we were lucky enough to find a small watertight zyat or resting-house, well shingled and boarded, no small boon in this land of rain; and this we made our headquarters. The pull up the mountain was very stiff: in places one has to scramble up on all fours; and here and there we came across good teak ladders placed for the accommodation of pilgrims to the pagoda at the top. Both these and the rest-house at the bottom have been erected by some pious Burman or other, with the hope of reward hereafter.

“About a quarter of the way up there is a small village, three or four huts only, and a poongye (priest) house, where we were glad enough to halt and get a drink of water.

* See Dr. Schlegel, Contributions à la Faune de Madagascar et des îles avoisnantes, &c., Ned. Tijdschr. v. d. Dierk. 1865.

“The foot of the hill, or talus, is covered with a dense jungle of bamboos, grass, and forest trees (some of immense height), with clear streams running through it to the plain below. Above this the rock in places is quite perpendicular; and although vegetation in Burmah manages to cover places apparently so, here and there the rock was bare, where even a moss or lichen could scarcely get a footing. Wherever not quite a wall, the rock was covered with creepers and bushes, and the gullies or small watercourses actually produced trees of large size.

“The heat near the top, which is covered with high grass, was very great, the radiation from the black rocks making it more severe; and at this time of the year, just after the rains, the power of the sun is unusually great. Zwagaben, more popularly known by the name of the ‘Duke of York’s nose,’ from its appearance as seen from Moulmein, is mentioned by Mason in his work ‘On Burmah,’ edit. 1860, as the hill on which the ark is said to have rested (by the Karens) after the deluge. A similar tradition of the Lepchas is quoted at Darjeeling with reference to a hill in that neighbourhood, ‘Tendong,’ but in both instances is doubtless an idea originally conceived from missionary teaching.

“Halfway up, near the poongye house, I procured specimens of a *Pericrocotus*—a male in scarlet plumage, probably *P. brevirostris*; that curious Nuthatch, *Dendrophila frontalis*; a small robin-like bird, apparently a Shortwing, *Brachypteryx*, sp.; *Rubigula flaviventris*, Tick.; a *Phyllornis*, near *P. jerdoni*, but differing slightly (*P. cochinchinensis*?); a dark-olive-brown *Pycnonotus* (?), and a curious little *Erythrosterna*, perhaps *E. acornaus*, Hodgs.

“Near the top I got a specimen of *Petrocossyphus cyaneus* with remarkably rufous under tail-coverts, and I saw another on the iron-work of the pagoda at the top. The only other birds seen there were a small flock of a species of the genus *Prinia*, in the long grass, and some Swallows and Swifts overhead, besides an occasional Vulture (*Gyps indicus*) soaring several feet below us. Adjutants do not appear to frequent Zwagaben or to breed there, as they do on the other limestone hills in the vicinity. The rocks they nest on are no doubt inaccessible to any but an expert native, who uses his toes like fingers, and can swarm up anything, especially one of these hill-Karens. According to all accounts Adjutants’ eggs are very difficult to procure. I have tried in vain since I came to Burmah to get hold of some, and hear that Dr. Squire tried too without success. The top of Zwagaben is the only known locality for that rare little fern, *Adiantum parishii*, which I had the pleasure of gathering myself, guided to the spot, only a few yards square, of course by Mr. Parish himself. About the Karen fortress (Don-gyany), mentioned by Mason, distant only a few miles, is found that rare orchid, *Phalaenopsis lowii*, of which Mr. Parish succeeded in getting a good supply in flower. The only Crow seen at the foot of the hill was *Corvus culminatus*. *C. splendens* appears to avoid the jungles altogether. About the bottom I found the large Rocket-tailed Drongo- (*Edolius paradiscus*) tolerably common. The Shama

too is common in all the dense jungles in the neighbourhood. A fine specimen of *Gecinus viridanus* killed, and also the *Chrysonotus intermedius* of Blyth. A *Pitta*, new to me, inhabits the bamboo jungles at base; it does not agree with any of Jerdon's descriptions. It may be *P. cyanura*, and is much spotted on the breast. I must keep it for comparison with specimens in our museum. Hearing that the rare *Nemorhædus sumatrensis*, or Goat Antelope, was to be found at the base of the mountain, we determined to have a beat for them, and I was lucky enough to secure a fine female, the spoils of which I will send home to you at an early opportunity. They frequent the talus of the mountain described above, and when disturbed make for the inaccessible parts. Their general appearance is somewhat porcine, between a goat and a hog. I made the following memoranda, which may be interesting:—

“Zwagaben, October 19, 1865.—Female full-grown, but had not had young.

	ft.	in.
Tip of nose to tip of tail	4	6
Tail 5 inches; with hair,	0	7
Shoulder, height (afore), including hoof ..	2	10½
Girth, behind forearm	2	10
Ear	0	8¾
Horn along curve, ringed at the base	0	6
Hoof	0	1⅞
Mane	0	6
Extreme stretch of legs apart	6	4

“Lacrymal sinus small, slightly developed. General colour black, with a tinge of hoary; inside of ears white, with black tips and edges; belly and tibiæ rufous; throat rufous, white-tipped. Intradigital pores apparently absent. False hoof of fore and hind legs 1⅞ inch. Irides dark brown. Teats four. Buttocks rufous and white. Said by Karens to have only one young one at a time. Progresses like a goat through the jungle, with a series of jumps when disturbed; utters a kind of half snort, half grunt.

“*Hab.* Grass- and bamboo-covered sides of Zwagaben, and probably other limestone hills in Burmah. Has been seen at Thyet Mayo, in Pegu.

“Native name ‘Thorsek,’ pronounced Thorzike.”

Professor R. Owen, F.R.S., read a memoir “On the Osteology of the Dodo” (*Didus ineptus*, Linn.). The materials upon which Professor Owen's researches were based consisted of about one hundred different bones belonging to various parts of the skeleton, which had been recently discovered by Mr. George Clark, of Mahéberg, Mauritius, in an alluvial deposit in that island. After an exhaustive examination of these remains, which embraced nearly every part of the skeleton, Professor Owen came to the conclusion that previous authorities had been correct in referring the Dodo to the Columbine order, the variations presented, though considerable, being mainly

such as might be referable to the adaptation of the Dodo to a terrestrial life and to different food and habits.

This paper will be published entire in the Society's 'Transactions.'

The following papers were read:—

I. Outlines of a Systematic Review of the Class of Birds. By
Professor W. LILLJEBORG, of Upsala, F.M.Z.S.

Literature.—We may particularly mention Chr. L. Nitzsch*, C. J. Sundevall†, G. R. Gray‡, J. Cabanis§, and C. L. Bonaparte||, among those that of late years have devoted their attention to the classification of birds. John Müller¶ has given an important contribution to this classification by his treatise on the apparatus of singing in the larynx inferior in a great number of Passeres.

The contribution given by Nitzsch certainly contains only a very short and incomplete review of the class of birds; but it has notwithstanding a particular scientific value from its attracting attention to the importance that the carotides communes of the birds have in their classification.

The ornithological system given by Sundevall has the merit of being based upon a careful and particular examination of the exterior characters of the birds, and of, for the first time, calling attention to the importance of the wing-coverts in classification, and exhibits a correct idea of the designating characters in the nature of the birds. The structure of the wings generally has been minutely described in the treatise on these organs, and its importance as regards classification held forth. As the wings must be considered to be of the highest importance to a bird, being among those parts that indeed make him a bird, it is natural that a system in which the structure of the wings has been considered should be preferable to any other where the wings have been neglected, or this subject but slightly touched upon, without any minute examination of their structure. The above-mentioned author has, in his 'Svenska Foglarna,' observed the muscular structure of the feet as important in classification, after having previously, for the first time, called attention to the same at the meeting of naturalists in Stockholm in 1851.

* Observations de Avium arteria carotide communi. Halm, 1829. (Appendix to a programme by Prosector Fridericus Blumius Ictus.)

† Ornithologiskt system (Transactions of the Royal Academy of Science of Sweden, for the year 1835 (printed 1836), p. 43). Over foglarnas wingar (ibid. for the year 1843 (printed 1844), p. 303). Svenska foglarna, 1856.

‡ A List of the Genera of Birds (London, 1841). The Genera of Birds (London, 1844-49).

§ Ornithologische Notizen (Wiegmann's Archiv für Naturgeschichte, 1847, vol. i. pp. 186 and 308). Museum Heineanum (Halberstadt, 1850-63).

¶ Conspectus generum avium (Leyden, 1850-57); Conspectus systematis ornithologiæ (Annales des Science Naturelles, 1857?); Tableaux paralléliques des ordres Linnéens, Anseres, Gralla, et Grallinæ (Paris, 1856) (Extract from Comptes Rendus des Séances de l'Académie des Sciences); besides several other treatises in different magazines.

¶ Abhandlungen der königl. Akad. der Wissenschaften zu Berlin, 1847, p. 321.

The new genera and species that had been added since Latham's 'Index Ornithologicus' was edited had increased to such a number, and their literature had become so scattered, that such a work as G. R. Gray's systematic 'List of the Genera of Birds,' although only a list of names without characters, was very necessary to science, and the obtaining of the same also highly beneficial. The right of priority has generally been observed in this work. The same author has, in his 'Genera of Birds,' given descriptions of the orders, families, and genera, and even figures of the same. A single species of some genera is represented by a coloured figure; and of others only certain parts, such as the head or the foot of some typical species, have been figured. This work is certainly of great value for the study of birds; and the very good figures often give a necessary explanation to the descriptions of the genera, which at times are but little distinguishable, and are not given in a diagnostic manner.

Cabanis has, in his ornithological system, given good characters for the arranged groups, taken partly from J. Müller's descriptions of the larynx inferior, partly from the nature of the horny covering on the tarsi, first studied by Keyersling and Blasius, and partly from the number of quills and tail-feathers. It is principally the order Passeres to which this author has devoted his attention, and which consequently has obtained an improved classification. It has been divided into two groups (Oscines and Clamatores), and the families have been carefully limited and arranged. This work, with that of Sundevall, may rightly be considered most important in the classification of birds.

The numerous contributions to this classification that have been made by Bonaparte are valuable as giving minute registers of families and species, showing an unusual knowledge of the species, and a sharp distinction between the genera, and often arranging these in a manner corresponding with the demands of the natural affinity; but they are generally only registers of names, often giving the characters for the species, but very seldom for the higher groups.

Bonaparte has published, in the 'Transactions of the Linnean Society,' xviii. p. 258, a systematic arrangement of the class of birds, together with the classes of the other vertebrated animals in general. The first class has been divided into two subclasses—Insessores and Grallatores. The first of these corresponds fully with the one arranged by us under the same name, and the latter includes both Grallæ and Natatores. This classification corresponds also with the one given here, in the Longipennes having their place between the Steganopodes and the Pygopodes. Characters of the orders, families, and subfamilies are also given.

After this brief reference to the literature, we will proceed to a synoptic statement of the principles upon which the systematic arrangement here given rests.

Principles.—We have preferred the progressive method, as it seems to us to be the most rational, from its correspondence with the physiological and geological development. We therefore commence the system with the lowest, and finish it with the highest forms.

Irritability seems to us to be the most distinguishing character for birds; and this should consequently be taken into consideration more than others with regard to their classification. The swimmers seem to us the lowest, from their showing a tendency to the lowest form of vertebrated animals—the fish-form. In the *Aptenodytidae*, where the wings resemble fins, and where they, as in all other diving birds, serve as such, we have this form most strongly designated. The heavy, clumsy structure, with small wings and short legs, also makes them generally less active than other birds, and shows a lower development of the type of bird. This, however, is not the case with all the swimmers; and the order Longipennes gives us instances where swimmers possess a high degree of activity.

The Passerine birds (Passeres) seem to us to possess the highest irritability, and to be those in which the nature of birds has reached its highest development. We do not by irritability mean the muscular strength alone, but vivacity and activity generally. Where this is most manifold, most changing and constant, it is the most developed. We find in the Passeres “the power to stay and move with ease as well on the ground as in the trees or in the air, and to make their presence known by characteristic melodious notes” (Sundevall); we find them in a constant and manifold motion, and they let us constantly hear their notes either as song or as affectionate voices. The birds of prey have generally been placed highest, and been considered the most developed, in consequence of their muscular strength and strong flight, and their thereby supposed high degree of irritability; but by keeping them in captivity we find at once that the birds of prey are dull birds, and that they, as regards irritability, are far behind the Passeres. They remain for a long time silent and quiet, and do not generally show any activity, unless they are frightened or driven by appetite for food. The Passerine birds, on the contrary, are in captivity constantly in motion, and let us incessantly hear their lively song and affectionate voices. Besides we cannot in a system place the birds of prey far from the lower groups, of the Columbine and the Gallinaceous sections, without violating natural affinities based upon important characters. They correspond with these lower groups as regards external characters in the nature of their wing-coverts, and, as regards interior anatomical characters, in the nature of their carotides communes. Some of them, for instance those of the Vulturine section, exhibit, with regard to their form, a near analogy with some of those of the two mentioned groups. We may, for instance, compare a Condor with a Turkey. A system that places the dirty Vultures highest, does not seem to us to indicate a correct idea of the nature of the birds.

If we do not regard flight, which is common to almost all birds, but consider birds with regard to the various other ways of motion for which they especially are shaped, and for which their structure is also adapted, we find easily that these in general may be comprehended in three different modes, viz.: 1st, swimming on the water; 2nd, running on the ground; and 3rd, climbing and jumping on

the branches of trees*. The hinder extremities or the legs exhibit, in conformity with this, three different forms. This induces us to divide the class of birds into three primary groups or subclasses:— 1, Natatores; 2, Cursores; 3, Insessores. Those belonging to the third group generally move more with the assistance of their wings than the others, except some forms of the Natatores, and show generally a higher development of the bird-type. This group also furnishes the greatest variety of forms. The Natatores include about 550 species, the Cursores 900, and the Insessores 6900 (Bonaparte).

Nitzsch has, in the treatise referred to, divided the class of birds into three groups: *Aves aëreæ*, *Aves terrestres*, and *Aves aquaticæ*, which in a reverse order correspond with the three groups here arranged; but he differs from us in including the Columbine birds among the *Terrestres*, and the Grallatorial birds among the *Aquaticæ*, and in considering the *Struthionine* birds a distinct group from the other three.

There is, as far as experience yet extends, a very remarkable correspondence between the nature of the upper wing-coverts and of the *carotides communes*, which adds to the importance of both these characters, which have generally been but little observed. All those birds that have the large upper wing-coverts of the first row on the cubitus so short that they do not reach beyond the middle of the cubital quills, have only one *carotis communis*, viz. the *sinistra*. Those birds in which the above-mentioned wing-coverts form several rows and extend beyond the middle of the cubital quills, have, on the contrary, generally two *carotides communes*, viz. one *dextra* and one *sinistra*. The only exceptions to this rule are *Cypselus*, *Trochilus*, *Merops*, one or a few species of *Psittacus*, *Rhea*, *Phænicopterus*, *Podiceps*, and *Pelecanus*, which, although belonging to the latter category in regard to the wing-coverts, yet have only one *carotis communis*. This is the *dextra* in *Phænicopterus*. We do not, therefore, hesitate to consider these two characters to be among the most important in judging of the affinity of the birds; and they show with certainty that the birds of prey have not their place at the beginning or at the end of the system.

The *Strisores*, one of the twelve orders in which we have arranged the class of birds, includes several birds that we formerly considered should belong to the *Passeres*, from their near correspondence in form with the latter. But as they deviate from them in regard to the upper wing-coverts and the claw of the hind toe, and sometimes even in regard to the *carotides communes*, we are of opinion that they should be regarded as belonging to a different order. They have been separated from the *Passeres* by Sundevall† and by Nitzsch; and the former has arranged them under the order *Coccyges*, which, according to him, also includes the *Zygodactyli* and *Columbæ*. They are, however, distinct from the *Zygodactyli* in the nature of their feet, and cannot be arranged under this order without depriving

* The second mode appears an intermediate link between the first and third.

† Kongl. Vetensk. Acad. Handl. 1843, pp. 375 & 376.

it of its most distinguishing character. They seem also to cause confusion if they are arranged within either of the orders Passeres or Zygodactyli; and we have therefore considered it right to arrange them as a distinct order—Strisores, which name was given to them by Cabanis in 1847. However distinct they seem to be, as well from the Columbine section and the Birds of prey as from the Zygodactyli, it is very difficult to find any character that sharply and distinctly distinguishes them from these three orders; and we have been compelled to use a character in the scheme that does not belong to all, although the majority of them possess it. They appear to be an intermediate group between Accipitres, Zygodactyli, and Passeres.

The order Longipennes has generally had a very changeable place in the system, sometimes the first among the swimmers, sometimes the last. When the swimmers are, as here, arranged in two groups according to the form of the beak, their place is, as will be seen from the scheme, unquestionable, as we of course must begin with the Pygopodes. The Longipennes approach these very nearly in the genera *Puffinus* and *Halodroma*. *Puffinus* has, together with *Colymbus* and *Podiceps*, a long pyramidal erect process at the upper end of the tibia, and the tarsi are compressed like theirs. The genera *Phalacrocorax* and *Mergus* form an intermediate link between the Steganopodes and the Lamellirostres.

First Division or Subclass.

NATATORES, Illiger; Sundevall.

Upper part of the crus (tibia and fibula) not free, but drawn in within the skin that covers the body*. The basis of the hind toe above that of the anterior toes, the hind toe sometimes absent. Legs short; and the anterior toes, sometimes even the hind toes, united by web. The upper large wing-coverts of the first row on the lower arm (antibrachium) extend in all beyond the middle of the cubital quills. All, with the exception of *Podiceps*, have, as far as is known, two carotides communes.

Group 1. SIMPLICIROSTRES.

The bill without laminæ. Doubly monogamous†. “Altrices;” that is, carry food to their young.

Order 1. PYGOPODES, Illiger.

The legs are placed far back; and the hind toe is, when it is present, free. The wings short, hardly extending to the base of the tail. The tail short, or none at all. Heavy, clumsy birds, that dive well, but walk badly.

Note.—This order contains the typical forms of Natatores.

* Some of the Longipennes are said to form an exception to this.

† Both the old ones sit on the eggs, take care of the young, and carry food to them.

Order 2. LONGIPENNES, Duméril.

The legs are not so far back; and the hind toe, when there is one, is free. The wings long, extending more or less beyond the base of the tail. They are generally light birds, and lie, when swimming, shallow in the water, and cannot, with a few exceptions, dive, unless they dart from the air into the water, which power a great many of them possess. They generally fly remarkably well.

Order 3. STEGANOPODES, Illiger.

The hind toe united to the inner anterior toe by a web, and its base but slightly raised above that of the anterior toes. The wings and tail rather large, the former sometimes pointed and sometimes obtuse. Some of these birds are pelagic, fly remarkably well, and are darting divers; some fly badly, but dive and swim well. The position of the hind toe enables some of them at times to sit on the branches of trees and to build their nests there.

Group 2. LAMELLIROSTRES.

The bill with laminae. Generally singly monogamous*. "Præcoces;" that is, do not carry food to their young.

Order 4. LAMELLIROSTRES, Cuvier.

The point of the upper jaw with a so-called nail of the bill; the other part of the bill covered with a soft skin. The hind toe free. The body generally more or less thick and heavy. The power of flight sometimes moderate, sometimes rather inferior. Those that fly best dive badly, or cannot dive at all; the others lie, when swimming, deep in the water, and dive exceedingly well. Some of the former are rather fast walkers, and approach in this respect the next division.

Second Division or Subclass.

CURSORES, Illiger; Sundevall.

The entire crus and the lower part of the femur free. The base of the hind toe above that of the anterior toes†; the hind toe sometimes missing. The anterior toes, when united by a web, are, with very few exceptions, so united only at the base. The large upper wing-coverts of the first row on the lower arm extend beyond the middle of the cubital quills. They have, with the exception of *Rhea* and *Phœnicopterus*, as far as is known, two carotides communes.

Order 5. GRALLÆ, Linné.

The legs high, and the lower part of the crus without feathers‡. The wings well adapted for flying. The pectoral bone with a crista.

* The female alone cares for the young.

† The majority of the *Ardeidæ* make an exception to this; and these live and build very often in trees.

‡ The genus *Scolopax* deviates from this.

They generally walk and run with ease or very fast, and mostly live in damp places, near swamps or on the banks of watercourses. The majority fly fast and with ease; some fly badly. They live generally in the middle ("mittlere," Faber) monogamy*. Præoces. A great number of the *Ardeidæ* are Altrices.

Order 6. BREVIPENNES, Duméril.

The wings more or less rudimentary, and not adapted to flight. Pectoral bone without crista. A small number of large birds that run fast, and may be considered typical of the whole group. Their structure exhibits a strong tendency towards the mammalian. Some are said to live in the middle monogamy, others in single monogamy, and others again in polygamy. Præoces.

Order 7. GALLINÆ, Linné.

The legs of a mediocre height, and the entire crus feathered †. The wings adapted to flying, but generally rather short and obtuse, and more or less bent. They run fast; but are easily fatigued by flying, and then hide among rocks, bushes, grass, &c. Some live in polygamy, but the majority live in middle monogamy. Præoces.

Third Division or Subclass.

INSESSORES, Vigors; Bonaparte.

The entire crus and the lower part of femur free. The coat of feathers generally extends at least to the tarsal joint ‡. The hind toe with its base on a level with that of the anterior toes §, and very seldom missing.

Order 8. PULLASTRÆ, Sundevall.

The bill not covered by a cere at the base, but generally naked there, and with an inflated skin at the nostrils. The point of the upper jaw rounded, but very seldom bent down in the form of a hook. Three toes directed forward, and not united together. The large upper wing-coverts of the first row on the lower arm extend beyond the middle of the cubital quills. Two carotides communes. The majority fly very fast; some do not fly so well, but these run fast. The majority live in double monogamy, a few in middle or single monogamy (*Penelope*), and a few in polygamy (*Crax*). The majority are Altrices, the others Præoces.

Note.—This order is evidently an intermediate group between Cursores and Inessores. The *Talegallinæ*, *Penelopidæ*, and *Didunculidæ* exhibit some tendency towards the Accipitres.

* Both the old ones attend to their young, but do not carry food to them, letting them, under their care, hunt for their own food.

† The genus *Ortyxelos*, Vieill., is an exception to this.

‡ *Didunculus* (*Pleiodus*) deviates from this, and has the lower part of the crus naked.

§ The *Cathartini* form an exception to this.

Order 9. ACCIPITRES, Linné.

The bill covered with a cere at the base, convex towards the point; and the point of the upper jaw bent down in the form of a hook. The legs strong, with three anterior toes, which are not united and are, like the hind toe, armed with strong bent claws. The wings large, with the large upper wing-coverts of the first row on the lower arm extending beyond the middle of the cubital quills. Two carotides communes. They have a strong power of flying, but run badly*, and do not jump. Doubly monogamous. Altrices. Their food consists generally of vertebrated animals.

Order 10. STRISORES, Cabanis.

The bill without a cere, hard at the base, without any swollen skin at the nostrils, and of a variable form. Three anterior toes, which are generally united at the base, sometimes there united by a web, and seldom free. The hind toe is at times turned forwards. The claw of the hind toe is smaller than the claw on the middle anterior toe (Sundevall). The large upper wing-coverts of the first row on the lower arm extend beyond the middle of the cubital quills. Some of them (*Caprimulgus*, *Coracias*, *Alcedo*) have two carotides communes, and some (*Cypselus*, *Trochilus*, *Merops*) have only one. *Buceros* is unknown as regards its carotides. Some fly remarkably well, others not so well. The legs are short in most of them, and not well adapted for walking. Doubly monogamous. Altrices.

Note.—A polymorphic group, that shows a tendency as well towards the Accipitres and Zygodactyli as towards the Passeres.

Order 11. ZYGODACTYLI, Vieillot.

Two anterior and two hind toes, or sometimes two anterior and one hind toe†, or one hind toe and three anterior ones, the exterior one of which is turned backwards. The claws compressed. The large upper wing-coverts of the first row on the lower arm, except in the *Picidæ* and *Bucconidæ*, do not extend beyond the middle of the cubital quills. Some have two carotides communes, and others (*Picus*, *Ramphastos*, *Cacatua*) only one. The power of flying not very good. They generally walk badly on the ground; but a great many of them climb well on the trees, and cling skilfully to the branches. Doubly monogamous. Altrices.

Order 12. PASSERES, Linné; Sundevall.

Three anterior toes and one hind toe, and the exterior anterior toe generally at the base united with the middle one. The claw of the the hind toe as large as that of the middle anterior toe; and its long flexor muscle separated from the muscle that bends the claw phalanx of the anterior toes (Sundevall). The large upper wing-coverts of

* *Gypogeranus* deviates from this.

† The thumb or the proper hind toe, which corresponds with the inner hind toe in the others, is in this case missing, except in the *Trogonidæ*.

the first row on the lower arm do not extend beyond the middle of the cubital quills, and we meet with only one row of greater upper wing-coverts. As far as known, only one *carotis communis*, or *truncus caroticus impar*, which arises from the left *arteria subclavia*. Lively and active birds, with a fast and excellent flight, which move easily as well on the ground as on the branches of the trees. They generally jump on the ground, and seldom run. Some of them have a separate muscular apparatus for singing in the larynx inferior and a more or less exquisite song. Doubly monogamous. Altrices.

Note.—This order embraces the typical forms of the group *Insectores*, and the birds that generally have the highest degree of development.

In the following tables I have tried to use the most important as well as the most positive and evident characters, but have in this, like others, met with much difficulty of finding such for the smaller groups, or families and genera, in the higher orders. A great many of the characters used are taken from Sundevall; and in the *Passeres* several from Cabanis. Their validity has first been fully tested. In consequence of the above-mentioned difficulty we find that the place in the system of a form in question cannot always be ascertained from similar tables, as a more minute description is often necessary. It must not, therefore, be expected that these tables should give an infallible ground for the determination of the forms belonging to the respective families and subfamilies, but only that they should denote some of the most important characters that form the basis for the groups, and give an easy review of these groups. Such a table shows us most plainly what characters are common and what are not.

As a great many of the exotic generic forms are not well known to me, I do not insist that they can be all arranged under the 69 families and 144 subfamilies here characterized, and that the arrangement of other families or subfamilies is unnecessary; but I believe that a great part of the genera have been considered. I may mention that the difficulties arising in limiting the families *Corvidæ*, *Paridæ*, and *Sylvidæ* among the *Passeres* have induced me to make these families more comprehensive than they have been.

It seems that the *Epimachini* and *Paradiseini* should together form a separate family; but I have not been able to find any distinguishing characters, common to both, that make them distinct from the *Corvidæ*. The family *Corvidæ* corresponds with "cohors *Corviformes*," of Sundevall (*Svenska Föglarna*). The *Troglodytini* include forms of both *Troglodytinæ* and *Timalinæ*, Cabanis, excepting some with emarginated bill. The other *Liotrichidæ*, Cabanis, are given to the *Sylvidæ*, partly to *Lanini* and partly to *Sylvini*. It seems that the family *Brachypodidæ* as arranged by Cabanis should at least partly be included in the last-mentioned subfamily (*Sylvini*), which, as it also embraces the *Sylviadæ*, Cabanis, is very rich, and contains about 500 species or more. I even include the *Vireoninæ*, Cabanis, in the *Sylvicolini*.

TAB. I^{ma}. CONSPECTUS ORDINUM.

<p>AVES.</p> <p>Pars superior cruris (tibiæ et fibulæ) ...</p> <p>libera, una cum parte inferiore, fémoris. Basis digiti posterioris, sistens digitum, et hallucis ...</p> <p>non libera, sed intra eam trunci inclusa. Pedes palmarum. NATATORES, Illiger. Rostrum ...</p> <p>(lamellis carens ... SIMPLICIROSTRES. Pedum digitus posticus ...)</p> <p>(liber, vel absens. Alia longa, basin caudæ superantes. Pedes æquilibræ ...)</p> <p>membrana cum digito interiore, junctus, subsistens ...</p>	<p>Ordines.</p> <p>1. PYGOPODES, Illig.</p> <p>2. LONGIPENNES, Dumér.</p> <p>3. STEGANOPODES, Illig.</p> <p>4. LAMELLIROSTRES, Cuv.</p>	<p>SECTIO PRIMA.</p> <p>(lamellis carens ... SIMPLICIROSTRES. Pedum digitus posticus ...)</p> <p>SECTIO SECUNDA.</p> <p>Lamelliostres ...</p> <p>SECTIO SUBCLASSIS.</p> <p>(supra basin digitorum anteriorum elevata ... Pars inferior cruris ...)</p> <p>(nuda. Digitus posticus inter-dum abest. Sternum ...)</p> <p>(plumata. Digitus posticus raro abest ...)</p>	<p>(sine cera et unco, plerumque vero basi nudum vel cute supra nares magna, intumida ...)</p> <p>(basi cera obtectum, et apice maxillæ superioris adnato ...)</p> <p>(sine cera, basi durum. Unguis digiti postici ungue digiti medii anterioris minor. Digni anteriores sæpe ad basin conjuncti ...)</p> <p>(tres anteriores et unus posterior. Rostrum ...)</p> <p>(dimidiam longitudinem remigum cubitalium superantes. Digni postici musculus flexor longum m. flexore communi perforante digitorum anteriorum junctus (SUNDEVALL). Digitorum pedum ...)</p> <p>(bini anteriores et totidem posteriores, vel unus posterior et tres anteriores quorum extremus versatilis ...)</p>	<p>SECTIO SUBCLASSIS.</p> <p>CURSORES, Illiger.</p> <p>(supra basin digitorum anteriorum elevata ... Pars inferior cruris ...)</p> <p>non supra basin digitorum anteriorum elevata, et digitus posticus totus insistent, idemque digitus rarisime abest ...</p> <p>TERTIA SUBCLASSIS.</p> <p>INSENSORES, Ill.</p> <p>Tectrices alarum superiores cubitales primæ scriet ...</p> <p>non dimidiam longitudinem remigum cubitalium superantes. Digni postici musculus flexor longus a. m. flexore communi perforante digitorum anteriorum sejunctus. Unguis digiti postici non ungue digiti medii anterioris minor (SUNDEVALL) ...</p> <p>12. PASSERES, Linné.</p>
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Familie.

- 60. NECTARINIDÆ, G. Gray.
- 61. CORVIDÆ, Bonap.
- 62. FRINGILLIDÆ, Bonap.
- 63. TANAGRIDÆ, Sund.
- 64. MOTACILLIDÆ, Bonap.
- 65. HIRUNINIDÆ, Bonap.
- 66. PARIDÆ, Bonap.
- 67. SYLVIDÆ, Bonap.
- 68. REGULIDÆ*.
- 69. TURPIDÆ, Bonap.

Subfamilie.

- 1. *Aptenodytini*.
- 2. *Alceini*, Bonap.
- 3. *Columbini*, Bonap.
- 4. *Podicipini*, G. Gray.
- 5. *Procellariini*, Bonap.
- 6. *Larini*, Bonap.
- 7. *Sternini*, Bonap.
- 8. *Dysporini*.
- 9. *Pelecanini*, Bonap.
- 10. *Mergini*, Bonap.
- 11. *Fuliginini*, Swains.
- 12. *Anatini*, Swains.
- 13. *Phœnicopterinæ*, Bonap.
- 14. *Fulicinæ*.
- 15. *Rallinæ*, Bonap.
- 16. *Parrinæ*, Bonap.
- 17. *Palamedinæ*, Bonap.
- 18. *Psophinæ*, G. Gray.
- 19. *Dicholophinæ*.
- 20. *Ardeinæ*, Bonap.
- 21. *Scopinæ*, Bonap.
- 22. *Ciconinæ*, Bonap.
- 23. *Platelinæ*, Bonap.
- 24. *Tantalina*, Bonap.
- 25. *Gruinæ*, Bonap.

scutulis tubulosa, longa, et extensilis. Rostrum plerumque longum, tenue, arcuatum et acutum
 plumbus neque tubuloso, et ante nares positus. Rostrum magnum, plerumque plus vel minus conicum
 obtecta. Pedes validi
 Lingua. non longe acuti et inflexi. Rostrum crassum, conicum, raro perspicue incisum pone apicem maxillæ superioris
 Margines porrectus. cum maxillæ superioris
 mandibulæ non acuti (9. Rostrum mediocres, complicate, non producti
 vel inflexi. pone apicem maxillæ superioris
 Numerus remigum cent incl. Remiges cubito-producti et interdum apicem alarum attingentes
 primorum sum. Alæ longissimæ, complicate, circiter 10es tarsi, qui brevis est, longiores. Rostrum tenue et depressum
 10. Rostrum pone apicem maxillæ superioris } integrum
 } incisum
 maxima ex parte lamina una et integra oblecta. Remiges primores 10. Nares } plumbis plus vel minus oblecte
 } nudæ
 * *Regulidæ* affines *Paridis* esse videntur, sed pedum et rostri structura plane diversa gaudent.

TAB. III^a. CONSPECTUS SUBFAMILIARUM.

APTENODYTIDÆ.....	adunca	
ALCIDÆ.....	non adunca	
COLEMBIDÆ.....		
PODICIPIDÆ.....		
PROCELLARIIDÆ.....		
LARIDÆ. Maxilla superior		
DYSPORIDÆ.....		
PELECANIDÆ.....		
MERGIDÆ.....		
ANATIDÆ. Illux		
	lobatus	
	non lobatus	
PHŒNICOPTERIDÆ.....		
RALLIDÆ. Digni anteriores		
	basi cute conjuncti, et præterea lobati	
	mediocres, arcuati	
	disjuncti. Ungues	
	longissimi, recti vel parum arcuati	
PALAMEDIDÆ.....		
PSOPHIDÆ. Illux		
	mediocris, ex parte insistentes	
	brevisimus, minime insistentes	
ARDEIDÆ. Rostrum		
	cultriforme	
	non cultriforme, apice maxillæ plus vel minus adunco	
	cultriforme	
CICONIDÆ. Rostrum		
	depressum, apice expanso et rotundato	
	non cultriforme	
	tertiuseculum, saltem apicem versus arcuatum	
GRUIDÆ.....		

TOTANID.E.	{ longi. Tarsus plerumque * quarta parte alae complicata longior. Digni { longissimi. Tarsus tertia parte alae complicata longior. Hallux minus, vel absens ... } antiores plus vel minus cute conjuncti. Pedes ... } { longi. Tarsus non vel vix tertia parte alae complicata longior. Hallux insistens ... } { lobati, et basi cute conjuncti } non lobati
SCOLOPACID.E.	{ mediores. Tarsus quarta parte alae complicata brevior. Digni anteriores ... } { lati, late limbati, basi conjuncti. Rostrum tarso longius } { mediores, non vel parum limbati. } parvum, et anguli oris non pone basin rostri positi } Rostrum non tarso longius. Os { majus, et fissura oris pone basin rostri extensa. Hallux } adest } adest
CHARADRID.E.	{ mediores, non vel parum limbati. } parvum, et anguli oris non pone basin rostri positi } Rostrum non tarso longius. Os { majus, et fissura oris pone basin rostri extensa. Hallux } adest } adest
OTIDID.E.	{ mediores, non vel parum limbati. } parvum, et anguli oris non pone basin rostri positi } Rostrum non tarso longius. Os { majus, et fissura oris pone basin rostri extensa. Hallux } adest } adest
STRUTHIONID.E.	{ mediores, non vel parum limbati. } parvum, et anguli oris non pone basin rostri positi } Rostrum non tarso longius. Os { majus, et fissura oris pone basin rostri extensa. Hallux } adest } adest
APTERYGID.E.	{ mediores, non vel parum limbati. } parvum, et anguli oris non pone basin rostri positi } Rostrum non tarso longius. Os { majus, et fissura oris pone basin rostri extensa. Hallux } adest } adest
CRYPTURID.E.	{ basin versus paulo depressum, et apicem versus vix compressum. Cauda brevissima et oblecta, vel nulla. } Hallux plerumque adest } compressum, praesertim apicem versus. Cauda plus vel minus distincta. Hallux abest
TETRAONID.E.	{ nudi. Cutis supra nares nuda. } plus vel minus plumosi. Cutis supra nares plumosa. } depress. } brevis, et magna ex parte tectricibus oblecta. } plus vel minus longa, et maxima ex parte visibilis. Caput et collum } ex parte nuda } plus vel minus compressa et erecta. } plumata
PHASIANID.E.	{ nudi. Nares } oblectae } plus vel minus compressa et erecta. } plumata
PTEROCID.E.	{ nudi. Nares } oblectae } plus vel minus compressa et erecta. } plumata
MEGALOPID.E.	{ altum, breve, usque a basi convexum. } oblongum, tantummodo apicem propius convexum. } digito medio aequalis, vel longior. } digito medio brevior. Rostrum } gracile } breve et crassum. }
PENELOPID.E.	{ altum, breve, usque a basi convexum. } oblongum, tantummodo apicem propius convexum. } digito medio aequalis, vel longior. } digito medio brevior. Rostrum } gracile } breve et crassum. }
COLUMBID.E.	{ altum, breve, usque a basi convexum. } oblongum, tantummodo apicem propius convexum. } digito medio aequalis, vel longior. } digito medio brevior. Rostrum } gracile } breve et crassum. }
DIDUCULID.E.	{ altum, breve, usque a basi convexum. } oblongum, tantummodo apicem propius convexum. } digito medio aequalis, vel longior. } digito medio brevior. Rostrum } gracile } breve et crassum. }
VULTURID.E.	{ altum, breve, usque a basi convexum. } oblongum, tantummodo apicem propius convexum. } digito medio aequalis, vel longior. } digito medio brevior. Rostrum } gracile } breve et crassum. }
FALCONID.E.	{ altum, breve, usque a basi convexum. } oblongum, tantummodo apicem propius convexum. } digito medio aequalis, vel longior. } digito medio brevior. Rostrum } gracile } breve et crassum. }
Mentum ...	{ nullum } collare. } Rostrum } non barbatum. Pone } aures ... } { medium caudae } superantes. } Lora oblecta } Cauda } { truncata vel rotunda. Pars } anterior tarsi .. } { plus vel minus reticulata. Digitus } extimus } versatilis } plumata, vel plus vel minus scutis } transversis oblecta } { bifurca vel emarginata } plumis densis } { non mediam caudam superantes. Duae mediae rectrices } productae } pone apicem maxillae superioris dentatum } non productae } collare plus vel minus distinctum, plumis apicem versus latioribus et incurvis formatum }

* Genera *Tringoides* et *Terekia*, et species *Limosa rufa* ab hoc characterere discedunt.

Subfamilie.

26. *Recurvirostrinae*, Bonap.
27. *Totantinae*, G. Gray.
28. *Phalaropodinae*, Bonap.
29. *Tringinae*, Bonap.
30. *Scolopacinae*, Bonap.
31. *Hematopodinae*, Bonap.
32. *Charadriinae*, Gray.
33. *Cursorinae*, G. Gray.
34. *Glaucolininae*, Bonap.
35. *Otidinae*, Bonap.
36. *Struthionini*, Bonap.
37. *Apterygini*, G. Gray.
38. *Tinaminae*, G. Gray.
39. *Turnicinae*, G. Gray.
40. *Pedicularinae*, Bonap.
41. *Tetraoninae*, Bonap.
42. *Namitidinae*, Bonap.
43. *Melospirinae*, G. Gray.
44. *Pavoninae*, Bonap.
45. *Phasianinae*, Bonap.
46. *Pterocirinae*, Bonap.
47. *Thimocirinae*, Bonap.
48. *Chionidinae*, Bonap.
49. *Megapodinae*, Swains.
50. *Tatagalatinae*, Bonap.
51. *Cracinae*, G. Gray.
52. *Penelopinae*, Bonap.
53. *Gourinae*, G. Gray.
54. *Columbinae*, Illig.
55. *Trogoninae*, G. Gray.
56. *Didunculinae*, Bonap.
57. *Cathartini*, De Lafr.
58. *Falturnini*, Illig.
59. *Gypaetini*, Bonap.
60. *Polyborini*, Bonap.
61. *Pandionini*, Bonap.
62. *Aquilini*, Swains.
63. *Milvini*, Bonap.
64. *Perniini*.
65. *Gypogeraniini*, Bonap.
66. *Asturini*, G. Gray.
67. *Falconini*, Bonap.
68. *Circini*, Bonap.

Subfamilie.

ERIODORID.L.	Latus exteriorius plantæ { scutulis obtectum. Rostrum { altum et validum, rostro Lanii simile	112. <i>Thamnophilini</i> , Swains.
	{ lamina integra obtectum	113. <i>Myiotherini</i> , Swains.
UPUPID.E.	Unguis hallucis { valde incurvus. Caput sine cristâ.	114. <i>Hypocnemidini</i> , Cabanis.
ALAUDID.E.	{ fere rectus. Caput cristatum.	115. <i>Urupini</i> , Bonap.
BOMBYICILLID.E.		116. <i>Alaudini</i> , Bonap.
		117. <i>Audini</i> , Swains.
		118. <i>Bombycillini</i> , Swains.
NECTARINID.E.	Numerus remigum primorum { 10. Lingua { penicillata.	119. <i>Meliphagini</i> , Bonap.
	{ 9	120. <i>Nectarini</i> , G. Gray.
CORYD.E.	{ longum, tenue et incurvum	121. <i>Dacnidini</i> , Cabanis.
Rostrum ..	{ crassum, brevisculum matas, præbet	122. <i>Epmachini</i> , Cabanis.
	{ mediocre. Fides { recta. Maxilla { minime, vel indistincte incisa	123. <i>Paradisæini</i> , Bonap.
	{ sura oris { pene apicem { distincte incisa	124. <i>Cerini</i> , Bonap.
	{ descensens. Numerus remigum primorum { 10.	125. <i>Garrulini</i> , Swains.
FRINGILLID.E.	Numerus remigum primorum { 9. Culmen rostri ad basin inter plumas frontales intrans	126. <i>Oriolini</i> , Swains.
	{ 10. Palatum { sine tuberculo vel carina	127. <i>Sturnini</i> , Swains.
TANAGRID.E.	Rostrum { crassum, plus vel minus conicum, interitum basi dilatatum	128. <i>Icterini</i> , Swains.
MOTACILLID.E.	{ tenue et subulatum.	129. <i>Ploceini</i> , Bonap.
HIRUNDINID.E.		130. <i>Fringillini</i> , Bonap.
	{ digito intimo multo longior. Hallux et ejus unguis magni { breve, conicum	131. <i>Emberizini</i> , Bonap.
PARID.E.	Digitus extimus { digito intimo non vel parum longior. Rostrum { tenue, et plus vel minus subulatum. Alæ breves et rotundæ, remige primo dimidio secundi longiore	132. <i>Tanagrini</i> , Bonap.
	{ latum et basi depressum. Pedes minuti	133. <i>Sylviolini</i> , Bonap.
SYLVID.E.	Rostrum { compressum. Pedes medio-cres vel magni. Rostrum { magnum et validum, pone apicem aduncum maxillæ profunde incisum	134. <i>Motacillini</i> , Bonap.
REGULID.E.		135. <i>Hirundinini</i> , Bonap.
TURDID.E.	Alæ { breves, arcuate et cavatæ	136. <i>Certhini</i> , Bonap.
	{ mediocres, non cavatæ	137. <i>Parini</i> , Bonap.
		138. <i>Troglodytini</i> , Swains.
		139. <i>Muscopini</i> , Bonap.
		140. <i>Lanini</i> , Bonap.
		141. <i>Sylvini</i> , Bonap.
		142. <i>Regulini</i> , Bonap.
		143. <i>Cuculini</i> , Bonap.
		144. <i>Turdini</i> , Bonap.

2. Report on Birds collected at Windvogelberg, South Africa, by Captain G. E. Bulger, C.M.Z S. By P. L. SCLATER, M.A., Ph.D., F.R.S., &c., Secretary to the Society.

Our Corresponding Member, Capt. G. E. Bulger, forwarded to me some time back a small collection of bird-skins made at Windvogelberg, in British Kaffraria. Not being myself specially acquainted with African birds, I have submitted Capt. Bulger's series to the examination of my friend Dr. Hartlaub of Bremen, our leading authority on this subject, who has kindly determined the species. Two of them proved to be new to science, one of which (*Saxicola spectabilis*) has been already described in these 'Proceedings;' the other (*Hemipteryx immaculata*) is characterized below.

Capt. Bulger sends me the following account of the locality where his specimens were collected:—

"Windvogelberg is a lofty and almost isolated mountain of British Kaffraria, 5344 feet above the level of the sea, and situated in 32° 17' 50" S. lat. and 27° 7' 3" E. long. It lies about twenty miles north of the great Amatola range, and rather more than three leagues to the southward of the Kei River, which separates Kaffraria from Kaffirland and the province of New Victoria. The country in its neighbourhood is almost entirely destitute of trees, being, for many miles to the south and east, a vast extent of grass-covered land, misnamed "flats," inasmuch as they are throughout characterized by strongly marked undulations almost amounting to the dignity of hills and valleys. To the northward and westward these deep rolling swells assume the magnitude of mountains, with high krantztes*, and strange-looking naked peaks, here and there relieving the generally monotonous features of the country.

"The lonely little post at the foot of the Windvogelberg is at present (Jan. 1864) the most advanced station occupied by the Queen's troops, though the white settlements extend much further; and its garrison consists of eighty men of the 2nd Battalion, 10th Regiment, and seven of the Cape Mounted Rifles.

"The Doorn or Thorn River runs within a few miles of the barracks, the nearest elbow being about 3000 yards distant; and a small brook comes down through a deep kloof† in the mountain, and supplies the post with water. The banks of both these streams are, in some parts, rocky, and those of the latter are decked with small trees and bushes for a short distance. There are some enormous krantztes on the mountain, and here and there dense patches of shrubby vegetation. Amongst the former, Rock Rabbits (*Hyrax capensis*) make their secure and inaccessible homes; and small birds of various kinds occupy the latter in considerable numbers. Rock-Thrushes (*Petrocincla*) and Red-breasted Woodpeckers (*Geocolaptes arator*) are abundant on the highest pinnacles; and on the scattered stones below, *Saxicolæ* of several kinds are always to be found."

* Krantz, a precipice.

† Kloof, a ravine.

The species collected by Capt. Bulger, as determined by Dr. Hartlaub, are the following:—

ACCIPITRES.

1. *TINNUNCULUS RUPICOLA* (ad.), Daud. ; Bp. Consp. p. 27.

PICARIÆ.

2. *PIONUS ROBUSTUS* (Gm.).
 3. *OXYLOPHUS GLANDARIUS* (L.).
 4. *GEOCOLAPTES ARATOR*, Cuv.
 5. *ALCEDO SEMITORQUATA*, Sws. ; Bp. Consp. p. 159.
 6. *CORYTHORNIS CRISTATA*, L. ; Bp. Consp. p. 159.

PASSERES.

7. *HIRUNDO CAPENSIS* (ad.), Gmel. ; Bp. Consp. p. 339.
 8. *COTYLE PALUSTRIS* (ad.), Steph. ; Bp. Consp. p. 342.
 9. *NECTARINIA FORMOSA* (♂ ♀), Linn. ; Bp. Consp. p. 404.
 10. *NECTARINIA AFRA*, Linn. ; Bp. Consp. p. 407.
 11. *DRYMÆCA SUBRUFICAPILLA*, Smith.

Rather larger apparently. One specimen has the upper tail-coverts rufous.

12. *HEMIPTERYX IMMACULATA*, Hartlaub, sp. nov.

Supra rufescenti-olivacea, fusco variegata ; sincipite, tergo et uropygio magis rufescentibus ; subtus immaculata, fulvescens, gula et abdomine medio albidioribus ; rectricibus fusco-nigris, macula alba terminatis ; remigibus in margine interno pallidis ; subalaribus isabellinis ; pedibus et mandibula pallidis.

Long. 3'' 10''' , rostr. a fr. 3¼'' , al. 1'' 9''' , caud. 9''' .

Obs. A typical *Hemipteryx*, differing in its unspotted under surface from *H. tæxtrix*, the only known species.

13. *MYRMECOCICHLA ÆTHIOPS*, Licht. ; Bp. Consp. p. 302.
 14. *CAMPICOLA PILEATA*, Gmel. ; Bp. Consp. p. 304.
 15. *SAXICOLA SPECTABILIS*, Hartlaub, P. Z. S. 1865, p. 428, pl. XXIII.

See Mr. Layard's notes on the habits of this new species (P. Z. S. 1865, p. 619)*.

16. *PRATINCOLA SIBYLLA*, Gmel. ; Bp. Consp. p. 304.

* Dr. Hartlaub has since informed me that this species is certainly the same as Temminck's *S. bifasciata*, Pl. Col. 472.—P. L. S.

17. *CHÆTOPS FRENATUS*, Temm. ; Bp. Consp. p. 278.
18. *LUSCINIA SINUATA*, Sundev.
19. *BESSONORNIS PHÆNICURUS*, Gmel. ; Bp. Consp. p. 301.
20. *PETROCINCLA EXPLORATOR*, Vieill. ; Bp. Consp. p. 297.
21. *MACRONYX CAPENSIS*, Linn. ; Bp. Consp. p. 247.
22. *ALAUDA PYRRHONOTA*, Vieill. ; Bp. Consp. p. 245.
23. *ALAUDA CINEREA*, Lath. ; Bp. Consp. p. 244.
24. *CERTHILAUDA SUBCORONATA*, Smith ; Bp. Consp. p. 246.
25. *HYPHANTORNIS SPILONOTUS*, Vig. ; Bp. Consp. p. 441.
26. *HYPHANTORNIS OLIVACEUS*, Hahn.
27. *CHERA PROGNE*, Bodd. ; Bp. Consp. p. 448.
28. *EUPLECTES CAPENSIS*, L. ; Bp. Consp. p. 447.
29. *STEGANURA PARADISEA*, Linn. ; Bp. Consp. p. 449.
30. *CRITHAGRA SULPHURATA*, Ill. ; Bp. Consp. p. 522.
31. *CRITHAGRA CANICOLLIS*, Sws. ; Bp. Consp. p. 523.
32. *POLIOSPIZA GULARIS*, Smith ; Bp. Consp. p. 519.
33. *PASSER ARCUATUS*, Gmel. ; Bp. Consp. p. 510.
34. *FRINGILLARIA CAPENSIS*, Linn. ; Bp. Consp. p. 467.
35. *CORVUS CAFER*, Licht.

COLUMBÆ.

36. *TURTUR SEMITORQUATUS*, Sw.

GALLINÆ.

37. *COTURNIX COMMUNIS*, Bonn.
38. *FRANCOLINUS AFER*, Lath.
39. *HEMIPODIUS ANDALUSICUS* (Gm.).

GRALLÆ.

40. *CHARADRIUS MELANOPTERUS*, Rüpp.
41. *ÆGIALITES TRICOLLARIS* (Vieill.).
42. *MACHETES PUGNAX* (L.).
43. *FULICA CRISTATA*, Gm.
44. *SCOPUS UMBRETTA*, Gm.

3. Description of a New Species of Toucan belonging to the Genus *Aulacorampus*. By JOHN GOULD, F.R.S., &c.

AULACORAMPUS CYANOLEMUS.

Male. Bill black, with a small mark of yellow at the tip of the upper mandible, and a band of white at the base of both mandibles except on the culmen; this white band is much narrower on the upper than on the lower mandible, and moreover has the posterior half of its breadth pale yellow; naked skin around the eyes dull red; throat greyish blue, approaching to violet, and becoming of a deeper tint where it joins the green of the neck; a tinge of blue also appears at the base of the ear-coverts, towards the bill, and over the eye, where, however, it becomes of a greener hue; plumage of the head and body deep grass-green, with a wash of yellow on the flanks; primaries black, edged with brown; under surface of the wing pale yellow; tail-feathers deep green, conspicuously tipped with chestnut; under tail-coverts chestnut-brown; legs green.

Total length of male 12 inches, bill $2\frac{7}{8}$, wing $5\frac{1}{4}$, tail $5\frac{1}{2}$, tarsi $1\frac{1}{4}$.

Female. Precisely similar in colour, but, as is the case with all the other species of the genus, much smaller than the male.

Hab. Loxa in Ecuador.

Remark.—This well-marked species is allied to the *Aulacorampus cæruleigularis* of Panama and the *A. atrigularis* of Peru, but differs from the former in the smaller extent of the blue on the throat, from the latter in having no trace of black on that part, and from both in the markings of the bill.

4. Description of Two New Forms of Gorgonioid Corals.

By Dr. JOHN EDWARD GRAY, F.R.S., V.P.Z.S., &c.

The other day a few Corals from Japan were sent to me for examination; and among a series of well-known species of Stony Corals (*Melitæa*), and several kinds of the coral-like *Algæ* belonging to the genus *Corallina* and its allies, I discovered a small fragment of a *Gorgonia*-like Coral that was studded with little horny cups, which I was at first inclined to believe were some parasitic animals that had fixed themselves on the coral, for they were entirely unlike any cells that I have ever observed on a Gorgonioid Coral.

Careful examination has satisfied me that the little cups are an essential part of the coral, and that the latter is a form entirely new to science, its nearest ally being of the genus *Primnoa*, the species *P. antarctica*, found in the Antarctic Seas.

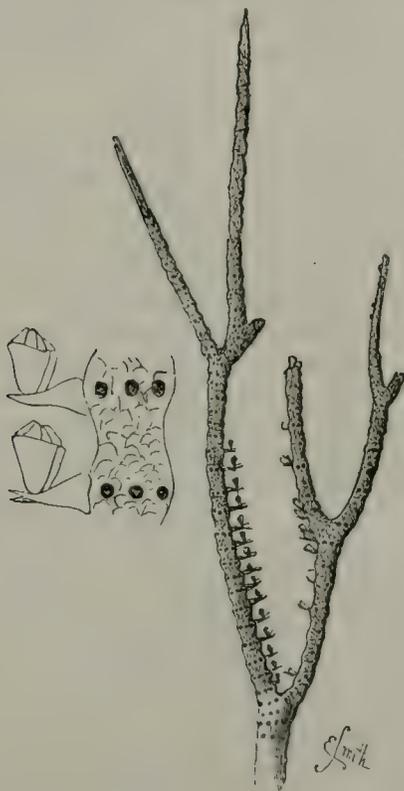
It differs entirely from all the other genera of the group in the tubes of the polype being formed of two obconic cells placed one on the other.

In *Primnoa* the cells are produced and covered with calcareous scales, which are imbricated like slates on a house.

CALYPTROPHORA.

The coral cylindrical, furcately branched; the branches elongate, subsimple; the axis horny; the bark thin, smooth, calcareous, with regular equidistant whorls of cells; cells with a circular mouth having a raised edge, placed close together and forming a raised ring round the coral. Each cell is furnished with two obconic pellucid cells placed one on the other; the lower cell is pellucid, apparently articulated to the axis of the coral, very narrow near the mouth

Fig. 1.

*Calyptrophora japonica.*

of the cell and wide at the other end; the lower surface of the outer aperture is furnished with two elongated horn-like processes. To the centre of this basal cone is articulated or affixed a similar pellucid horn-coloured cone or rather conical vase, which is furnished with a slightly keeled edge at its widest part, and then contracts as if it had a shorter conical lid, with an aperture in the middle of this lid-like contracted part for the emission of the polype. The two cones are as it were articulated to the stem; and the lower one stands at right angles with regard to it, and the upper at right angles with regard to the lower one, so that the aperture of the upper one is vertical.

These two cones are only preserved on the inner side of the branches, where they have been protected from erosion, during the carriage of the coral from Japan, by the branches opposite to them. It might be said that they are not naturally found in any other part; but there are some remains of them, enough to show their existence, in various other parts of the specimen.

If they had not fortunately been preserved in some part of the coral, one might have been led to describe the coral as furnished with close rings of cells with open circular mouth: but this form of the mouth ought to have attracted one's attention; the mouth of the cells of the Barked Corals is always closed by the contracted part of the polype. But one might have believed that in this specimen the contracted portion had been worn away by erosion. The species may be called *Calyptrophora japonica*. (Fig. 1.)

Japan has produced some curious marine productions, as, for example, the "Glass Plant," better called the "Glass Rope" (*Hyalonema*). This Coral was for several years considered a great rarity; but it must be common on the Japanese coast, for hardly a vessel comes from that country without bringing specimens of it. And lately we have been rather surprised at hearing that the same genus is found nearer home, on the coast of Portugal.

It has been lately shown that *Hyalonema* belongs to the Actinoid Polypes, near to *Zoanthus* and, especially, *Corticaria*. I have verified this by an examination of the animal after soaking it in water; and it is surprising that the number of folds round the mouth of the cell had not led one to believe it before. This is a group of animals in which anything like a central axis has not been observed before; but I believe that the siliceous glass-like fibres really belong to the animal that covers them. The two are always found in connexion, both in Japan and in Portugal; so that I can only regard the theory of Mr. Bowerbank and some of the German naturalists, that the siliceous fibres belong to the sponge in which the Coral is sometimes imbedded, and that the animal is only parasitic upon them, as not consistent with our knowledge.

The second Coral I discovered among a number of Zoophytes from the Cape of Good Hope, which Mrs. Alfred Gatty brought to the British Museum for my inspection; they had been sent to her by Dr. Rubidge.

This collection contained several very interesting kinds of Sponges and smaller Zoophytes along with two specimens of the Coral under consideration, and a specimen which seems to be allied to it, from which the bark had been washed.

This Cape Coral is nearly allied to the *Paragorgia* of M. Milne-Edwards; but the axis is much more solid and regular, having none of the friability or porous sponginess of the axis of that Coral. This is much more slender, which is consistent with the greater hardness and uniformity of texture of the axis.

I have no doubt there are several species of these Corals to be described.

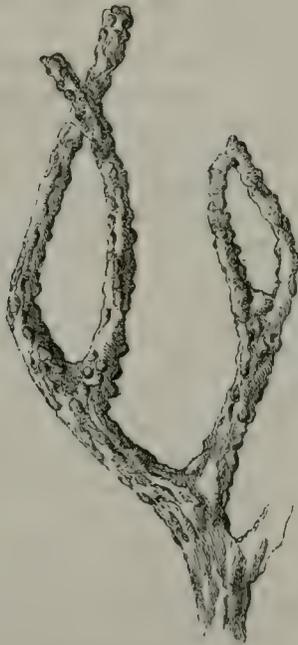
The one under consideration may be named

HOMOPHYTON.

Coral arborescent, rather flabellate, furcately branched; branches subcylindrical, elongate; axis wood-like, soft, formed of numerous spicula, intermixed with a cellular substance; bark thin, with a smooth external surface; the cells of the polypes forming five longitudinal series of compressed tubercles, those of the neighbouring series alternating on the ends of the younger branches, becoming further apart, more irregularly distributed, and scarcely elevated in the older part of the branches.

This genus differs from *Paragorgia* of Milne-Edwards (Coralliers, i. p. 191) in the axis being of a uniform cork-like texture, without any tubes or spongy cavities.

Fig. 2.

*Homophyton gattyæ.*

HOMOPHYTON GATTYÆ.

The coral erect, subflabellate, irregularly furcately branched; the branches long, subcylindrical, with sinuous grooves on the surface running between the polype-cells, which are scarcely raised above the general surface of the bark; the terminal branches rather slender, elongate, pentangular, with deep grooves between the oblong, rather compressed polype-cells; the bark dark red, when dry; the axis yellow.

Hab. The sea, near the Cape of Good Hope (*Dr. Rubidge*).

I have named this species after Mrs. Alfred Gatty, so well known for her fondness for natural history, and her interesting 'Parable of Nature,' and other works.

5. On the Movement of the Symphysis of the Lower Jaw in the Kangaroos. By JAMES MURIE, Prosector to the Society, and A. D. BARTLETT, Superintendent of the Society's Gardens.

A short time ago, a lady, a frequent visitor at the Gardens, on conversing with the keeper of the Kangaroos, asked him if he was aware of the manner in which these animals used the teeth of the lower jaws to snip their food as a person would do in snipping grass with a pair of scissors. She mentioned that she had resided many years in Australia, and seemed quite positive as to the truth of the fact that Kangaroos used their lower incisors in the manner already spoken of. The keeper, interested in what had been told him, called the attention of Mr. Bartlett to it.

Mr. Bartlett immediately examined the teeth and jaws of several skulls of Kangaroos in his possession, and, satisfied of the probable truth of the remark, took the first opportunity of observing the same in the living animals in the Society's Collection.

Since then we have corroborated and added to these observations together. The following were the different species of the living animals examined for this purpose,—viz. the Red Kangaroo (*Macropus rufus*), the Black-faced Kangaroo (*M. melanops*), the Great Kangaroo (*M. giganteus*), the Yellow-footed Rock Kangaroo (*Petrogale xanthopus*), Bennett's Wallaby (*Halmaturus bennettii*), and the Derbian Wallaby (*H. derbianus*).

In these several species we noticed the following movements:—As the animal opened its mouth and seized the grass offered it, there was a slight though distinct separation of the lower incisors, differing in each individual according to its size,—in the large Kangaroo almost as much as a quarter of an inch.

The small mouthful of grass being seized, the green blades were cropped or nipped off, a portion being evidently cut through by the anterior free sharp edge of the two lower incisors as they pressed against the opposing concavity of the palate and the cutting-edge of the upper and anterior incisors; while another portion of the food passed between the two lower incisors, and seemed also to be snipped through either by the closure or approach of the trenchant internal lateral edges of these, or it might be by the jerking movement of the head, which caused the morsel to be half torn and half cut through by these incisors. At other times, when the grass was in small loose bundles of a few of the stronger fibres with their roots attached, instead of chewing the latter, the animal rather rejected them; but in order to do so grasped the roots or dry portion of the stem, which it wished to disengage, with its fore paws, using the claws in the manner a human being would the fingers and hands to clutch and drag an object. While doing this, what stalks were between the lower incisors were severed by their internal acute borders. After the grass had thus been cut through, it was passed between

the molars, partly by the aid of the tongue and partly by the movement of the jaws, and then, with the ordinary side to side and semi-rotatory movement, the process of mastication was completed by the molars.

In watching the animals, it was at first difficult to notice the action of the jaws and lower incisors which we have spoken of; and this was to be accounted for by the great rapidity of the movement, which was also sometimes hidden by the retraction of the lips. The opening movement of the lower incisors seemed chiefly to occur when the animal raised its head to seize the food; for while in the act of chewing with the molars, the incisors were either closed or hidden by the lips.

With reference to the movement of the head in animals which graze or browse, as for instance in the sheep, the direction of motion while in the act of cropping the grass is nearly always upward and forward, though every now and again the reverse is the case. In the Kangaroos, however, we did not observe this latter motion, the jerking movement being invariably in a forward direction. This would seem to agree with and favour the act of the grass slipping between the open incisors; and as these are closed the short quick movement of the head would likewise tend to cut asunder the stalk or blade of the leaf. Besides the direct forward jerk, the head at the same time moved slightly laterally, though this was not so very perceptible.

From these observations, then, we are inclined to believe that the lower incisor teeth in the Kangaroos act in the manner either of a pair of cutting-forceps or short-bladed scissors (see fig. 2), with also occasionally a knife-like action; that is to say, the lower incisors themselves, if to a certain extent fixed, would on their closure prevent the blade of grass from slipping (from, in many cases, their points being perfectly close and their bases more open), and the jerk combined with the dragging movement would cut it through.

Upon consulting the various authorities as to what has been said respecting the movement of the teeth and lower jaws of the family of Kangaroos, we find Mr. Waterhouse states, in his admirable work the 'Natural History of the Mammalia,' vol. i. p. 51, of the *Macropodidæ*, that "the lower incisors are horizontal, long, compressed, and lanceolate, and have cutting external and internal margins; their outer surface is convex, and the inner surface is strongly convex in the transverse direction, in the middle, but concave near the margins; when the mouth is closed, the outer cutting-edge of the lower incisors is brought in contact with the cutting-edges of the posterior incisors of the upper jaw on either side, and their points shut within the apex of the foremost pair of the upper jaw. In *Macropus major* (and perhaps in some nearly allied species) the rami of the lower jaw are loosely attached at the chin, and at the apex they are free, and the animal has the power of slightly separating the lower incisors, so that their outer cutting-edges are brought more closely in contact with the upper incisors than they otherwise would be."

Although Mr. Waterhouse therefore has pointed out both the

cutting-edges of the outer and inner sides of the lower incisors, and justly attributed to the closing of the lower upon the upper jaw with the separation of the lower incisors the effect of producing closer contact between the cutting-edges of both jaws upon one another, yet he has failed to notice the use, and mode of application of the *inner* cutting-edges of the lower incisors.

Professor Owen, in his valuable memoir "on the Osteology of the Marsupialia," in the 'Transactions of the Zoological Society,' 1841, vol. ii. p. 394, does not mention anything from which it would be inferred that the lower incisors are used in the manner we have described; he says, however, among other things, that, excepting the Koala, "in all the other marsupial *crania* which I have examined, the *rami* of the lower jaw are not anchylosed at the symphysis."

Having satisfied ourselves of the occurrence of the mobility of the teeth and symphysis of the lower jaws in the living animals, it became an object of interest to ascertain in the dead ones how this was produced; and for this purpose we commenced by studying the bones in a few macerated skulls.

In one of these, an adult specimen of *Macropus major* (*M. giganteus*), the two halves of the inferior maxilla of which have been completely separated, when the symphyses are applied closely together the two lower incisors are approximated at their anterior half or points upon the inner edges; while the posterior halves of the incisors have an interval of nearly one-eighth of an inch, of a somewhat spear-shape. The two margins of the incisors in apposition are worn and flattened, evidently by the continued attrition of the one upon the other. The symphysis of the bones at the part where they are most closely applied is at the posterior half; and there they unite, though loosely, by an articulation in the manner of a diaphysis.

In a *Macropus ocydromus* the symphysis and teeth of the mandible exhibit very nearly the same appearances.

The same parts in *Osphranter antilopinus* differ in the anterior and inner cutting-edges of the incisors not coming together so sharply, by reason of the points being more rounded and set outwards than in the two former species. When the teeth are separated there is an open space of fully one-eighth of an inch; there is also a diminutive ovate space at their base, which may in part be a natural deficiency; but likewise the dental tissue seems partially abraded as if worn by the action spoken of, possibly by the tearing of grasses or other, harder stems.

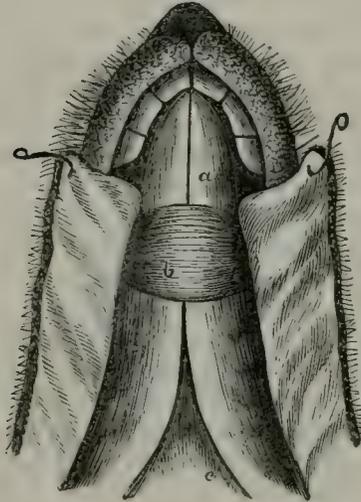
The shape and position of the incisors of *Halmaturus agilis* approach those of *Macropus major*; the interval at the base of the teeth, however, is relatively wider and correspondingly shorter than in that larger species.

Halmaturus irma presents no remarkable difference from *Macropus major*, excepting in the mandible being less in dimensions, and consequently having a smaller separation of the teeth.

Besides an examination of the dried bones, we have been fortunate in having the opportunity of studying the appearances in two animals which have recently died in the Gardens. In one of these, Bennett's

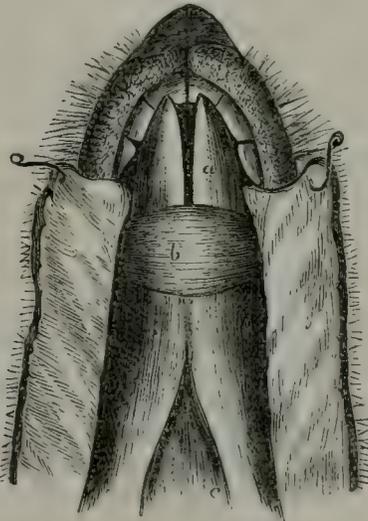
Kangaroo (*Halmaturus bennettii*), a young female, the teeth of the lower jaw when close together, as Mr. Waterhouse remarks, fit

Fig. 1.



Partial dissection of the lower jaw of *Halmaturus bennettii*, showing (a) the incisors in close apposition, (b) fibres of the orbicularis oris muscle, (c) anterior portion of the genio-hyoid muscle of left side, the median line of separation from its fellow of the right side being hardly distinguishable.

Fig. 2.



The same dissection of the mandible of *Halmaturus bennettii* as in fig. 1, but showing (at a) the manner of separation of the lower incisors, and how they also override the anterior upper incisors.

within the apex of the foremost pair of incisors of the upper jaw, the two sharp inner edges of the lower incisors coming so close together that the line of separation (fig. 1, *a*) is hardly distinguishable; but when the angles of the inferior maxilla are slightly approximated, as, for instance, by a gentle pressure of the thumb and fore finger, then the two teeth open like the blades of a pair of scissors at their points, as much as one-eighth of an inch, and, according to what Mr. Waterhouse says, their outer cutting-edges are brought more closely in contact with the inner edge of the anterior upper incisors; but at the same time it must be remarked they can also overlap them (fig. 2, *a*). But whether this overlapping takes place ordinarily, when the creature crops its food, we are not prepared to say, as it is not readily distinguishable, from the rapidity of the act.

In the second specimen of Kangaroo (*Petrogale brachyotis*), an adult female, the tips of the lower incisors could be separated almost one-fourth of an inch, and the structure was in nearly all respects similar to that of Bennett's Kangaroo—with this difference, that in *Petrogale brachyotis* there was an interspace at the base of the lower incisors, even when the points of the teeth were brought in contact; while in *Halmaturus bennettii* the whole of the inner edges were applied closely to each other (fig. 1, *a*). It is possible that this slight hollow may have been caused by a wearing away of the substance; that it existed in the adult animal gives feasibility to this belief.

The next point of interest connected with this remarkable movement is the consideration of what muscular apparatus or set of muscles produces it.

The great breadth and increased size of the inner hollow of the ramus and angle of the mandible in the Marsupials at once suggests that the pterygoid muscles, from their increased purchase and position, would entirely effect this, as it does, to a great extent, in the bovine race the process of rumination. No doubt these muscles are concerned in the motive act of the one half of the mandible upon the other in the Kangaroos; but certain other muscular fibres seem also to be called strongly into play.

The thin layer of the platysma myoides on either side appears to have a slight influence in the production of the opening of the incisors, by gently aiding the approximation of the angles of the lower jaw.

The digastric muscles, moderately strong in the specimens dissected, have their usual origin and median tendon slightly in advance of the angles. Their anterior fleshy bellies are inserted half an inch or so behind the posterior junction of the symphysis, so that on contraction of their fibres they serve to pull together the posterior rami, and also produce the aforesaid separation of the lower incisors.

The two mylo-hyoidei are not extraordinarily large, although broad; but their position and nearly transverse direction give them even a more direct and important action in the opening movement than the last.

The genio-hyoidei are, on the contrary, strong and well developed. Their point of traction from the hyoid bone, and apparent tenseness

while the incisors are asunder, leads to the inference that they likewise modify and aid the opening movement, although mere position and the parallelism of their fibres to the median line of divergence (at least as they appear on dissection) makes one hesitate to attribute too much power to them; but they certainly act along with, and greatly strengthen the force of, the mylo-hyoidei.

By the conjoined simultaneous action of the whole of the muscles mentioned, the movement of the symphysis and separation of the incisors seem to be effected; while the return to the state of closure follows relaxation of these, with possibly contraction of one of the pterygoid muscles. The chief agent, however, in the approximation of the anterior portions of the symphysis and the internal edges of the incisors is no doubt the transverse fibres of the orbicularis oris (here situated at the anterior portion of the bony symphysis and the root of the lower incisors), which, although delicate medially, is nevertheless well developed laterally (see figs. 1 and 2, *b*).

In proof that the portion of the symphysis in close juxtaposition are the pivot or point of leverage in the movement spoken of, and that the muscles stated are those concerned in the action, a partially dissected specimen need only be experimented on, when very gentle inward pushing at the angle will be seen to produce the separation of the incisors; and a like force applied in advance of the pivot (*e. g.* where the orbicular muscle is placed) immediately and easily causes closure.

Hence, as to the point at issue, we have tried to show from our observations the analogy of the movements and use of the mandible and incisors of the Kangaroo to those of a pair of cutting-forceps or scissors, the posterior part of the symphysis being the pivot, the angles the handles, and the incisors the blades, the inner edge of which is the cutting-edge.

The manner of use, at least in confinement, we have attempted to describe; but whether the teeth are put to the same use when the animal is in a state of nature is a fact unknown to us. Mr. Gould, whose opportunities of observation of their native habits was at one time great, informs us that the food of the *Petrogale brachyotis* is often dry and tough vegetables obtained among rocky places. It is possible therefore that the cutting-edges in that case might well serve to sever dry or fibrous material.

P.S. Since this paper was read, our attention has been called by Dr. J. E. Gray to a paragraph in 'The Book of Nature,' by John Mason Good (vol. i. p. 254), where the author says, "The *Mus maritimus*, or African Rat, the largest species of this genus which has hitherto been discovered, and seldom less than a full-sized rabbit, has the singular property of separating at pleasure to a considerable distance the two front teeth of the lower jaw, which are not less than an inch and a quarter long. That elegant and extraordinary creature the Kangaroo, which we may soon hope to see naturalized in our own country, is possessed of a similar faculty."

But this statement does not seem to forestall the facts which we have observed regarding the use or manner of action of the lower

incisors in these Marsupials; nor does it even express either so definitely or clearly some of the peculiarities of the movement as observations which we have quoted at length.

January 23, 1866.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

Mr. P. L. Sclater exhibited an egg of the One-carunculated Casowary (*Casuarium uniappendiculatus*, Blyth), laid by the female bird in the Zoological Gardens, Amsterdam. The egg was of the usual form and colour of the eggs of the genus *Casuarium*, being of a pale green, thickly covered with raised spots of dark green, and measuring 5·4 by 3·6 inches.

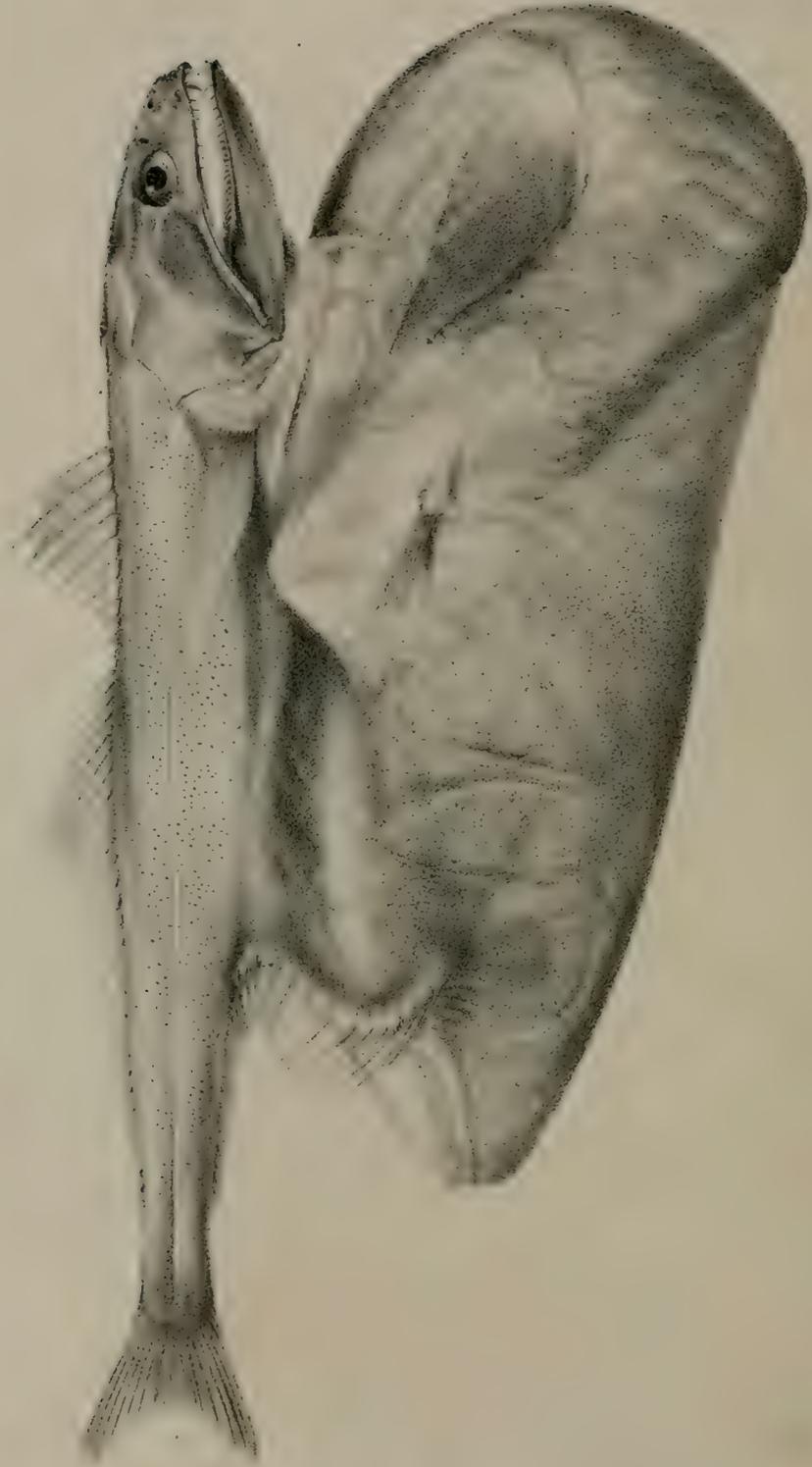
Mr. Sclater called the attention of the Society to the great scarcity in European collections of specimens of the American *Lepidosiren* (*Lepidosiren paradoxa*). But two examples of this creature had been obtained by Natterer, its original discoverer,—one from a water-ditch near Borba on the Madeira, where it appeared to be known to the inhabitants by the name “*Caramuru* ;” the other in a marsh on the right bank of the Amazons, above Villa Nova. These specimens were now in the Imperial Zoological Cabinet at Vienna.

The only other travellers who appeared to have met with this singular form were MM. Castelnau and Deville, who obtained a single specimen of a *Lepidosiren* from a lake on the Ucayali, which M. de Castelnau, in the volume devoted to the fishes collected by his expedition, has referred to a second species of the genus, under the name *L. dissimilis*.

Neither Mr. Wallace nor Mr. Bates had obtained specimens of this animal during their Amazonian wanderings. Mr. Wallace had only heard of it. Mr. Bates had replied as follows in answer to Mr. Sclater’s inquiries on the subject:—

“What I have to tell you about the *Lepidosiren* of the Amazons is very little. Judging from my experience (having made constant inquiries about it during the three years I was living in the proper localities, without obtaining a specimen), it is not easy to get; but another traveller, having means of obtaining a good boat’s crew during the dry months (which I had not), might be more successful. I exhibited drawings to many native fishermen, and they recognized the *Lepidosiren* as a fish they occasionally find in the mud at the bottom of the great lakes when they spend the dry seasons in harpooning and salting Pirarecú (*Sudis gigas*). They call it in the Tupi language ‘*Tambaki-mboya*,’ i. e. *Tambaki* (a very common eatable fish, of the family *Characini*), *mboya*, false, it being scaled similarly to the





C. H. Ford.

Chiasmodon niger.

W. Westrup

Tambaki, and yet not having the necessary character of a fish, in fins being absent.

“In the Upper Amazons, where I had a boat of my own and spent weeks on the lakes and still waters in the dry season, I could not get any information about the ‘*Tambaki-mboya*.’ It seems therefore to be confined to the great lakes about the Tapajos and the Madeira rivers. If hands are so scarce in that part as they were in my time, I do not know how a foreigner is to obtain a boat’s crew to go in search of it.”

Dr. J. Murie read some notes on the Markhore (*Capra megaceros*), chiefly based upon a specimen of this animal which had recently died in the Society’s Gardens. Dr. Murie also gave some account of the morbid appearances he had observed in a Chimpanzee which had lately died in the Menagerie.

The following papers were read :—

1. Notes on the Genus *Chiasmodon*. By ALEXANDER CARTE, M.D., M.A. Univ. Dub., M.R.I.A., F.L.S., &c.

(Plate II.)

In the month of August 1865 I received from Commodore Sir Leopold McClintock, R.N., a specimen of a fish which had been taken near the Island of Dominica, about which he writes :—

“Dr. Imray, of Castries, Dominica, has given me a specimen of which the two sketches enclosed may afford you some idea. A small fish with teeth inclined backwards swallowed a much larger one, and whilst helplessly floating was picked up and given to Dr. Imray. The swallowed fish was dead, the swallower still alive; the abdominal integument of the latter has been stretched enormously, and is as thin and transparent as goldbeaters’ leaf, but quite perfect. Both fishes are known out here; but the smaller one is much the more rare.”

On examination there could be no doubt that the smaller specimen was referable to the genus *Chiasmodon* of Mr. Johnson*, which has since been placed by Dr. Günther among the *Gadidæ*.

The specimens in the British Museum would indicate a species of rather diminutive size, one of them measuring only $2\frac{3}{4}$ and the other $3\frac{1}{2}$ inches in length; whereas the specimen obtained by Dr. Imray measures nearly twice the length of the longer of these. There is also a difference in the colour of the skin: Mr. Johnson states his to be black, while Dr. Imray’s is dark brown; otherwise it might be referred to the same species.

The following is a detailed description of the specimen, with the measurements :—

The body is of a dark-brown colour along its dorsal aspect, produced by numerous minute circular brown dots (pigment-cells) stip-

* *Vide* Proc. Zool. Soc. 1863, p. 408.

pled over the surface, those in the situation of the pectoral fins being the largest; this colour gradually changes to a yellowish tinge on the sides in the region of the lateral line. The body is elongated, slender, and compressed on the sides; head unarmed, laterally compressed, with a shallow but rather wide groove extending between the orbits, bounded by two somewhat bluntish ridges, which meet in front at a point immediately above and between the anterior nostrils; cheeks flattish; operculum somewhat triangular or arrow-shaped in outline, with an excavation in its upper and a deep notch in its inferior border, the latter being situated between the sub- and inter-opercula.

The orbits lateral, longitudinally oval in shape, and distant about a diameter and a half from the truncated muzzle, with their posterior borders corresponding to the central point of the superior maxilla.

The anterior pair of nostrils are round and appear the larger, they are situated about midway between the muzzle and the anterior edge of the orbit; the posterior pair are somewhat triangular, and are placed close to the anterior superior border of the orbit. The head is studded with numerous mucous pores. The muzzle is truncated in front and submarginate, the inferior maxilla extending slightly beyond it. The cleft of the mouth is slightly arched, and long, extending backwards far behind the orbits, the slender and emarginate premaxillaries forming the entire of its upper border.

In each maxilla there are two rows of irregularly placed subulate teeth, the inner row being the larger, but containing fewer teeth. They are arranged as follows:—In the superior maxilla, commencing at the muzzle, there are two long immoveable hooked teeth, with their points directed inwards towards each other, so as almost to meet; at the base and external side of each of these, a minute sharp denticle is situated; immediately behind these, but in the inner row, there are two other large *moveable* hooked teeth, the points of which incline towards each other, but do not touch; these are the longest teeth in the upper jaw. The sixth tooth, counting backwards on either side from the two long immoveable front teeth, is also a long but moveable tooth, and is inserted on the inner aspect of the superior maxilla at a point a little posterior to the anterior margin of the orbit. The remainder of the teeth in this jaw are small, and gradually diminish in size as they approach the articulation; they are implanted irregularly in a double series.

The teeth in the inferior maxilla are thus arranged:—In front there are a pair of very minute denticles, immediately external to and at the bases of which are two long immoveable teeth with their points curved outwards; following these are two pairs of still longer *moveable* teeth, the posterior pair of which are the longest of the whole series. The remainder of the teeth in this jaw, like those in the upper, are small and are implanted irregularly in a double series as far back as the articulation. The palate is furnished with a series of small denticles, and there is a somewhat similar series placed along the central line of the tongue; this latter organ is long and narrow,

its tip is free and of a greyish-yellow colour. There appear to be no vomerine teeth, no barbel, nor pseudobranchiæ.

The pectoral fins, which contain twelve(?) very slender rays, are inserted immediately below the excavation in the posterior inferior margin of the operculum, its pointed extremity extending backwards for about $1\frac{1}{8}$ inch.

The ventrals are so misplaced, in consequence of the great distension of the abdominal parietes of the fish, that it is impossible to give an accurate description of their normal position. In length they measure about nine-sixteenths of an inch, and contain about six delicate subequal rays.

The anal fin, from the same cause, is greatly displaced: instead of holding its normal position along the ventral surface of the fish, it is completely separated from it and carried down on the distended and greatly thinned abdominal integument; and the points of its rays are so mutilated that they cannot be measured with accuracy. The course of the intestine is distinctly visible through the semitransparent integument, running downwards and backwards to the anal orifice; both it and the anal orifice, as may be seen by reference to the accompanying figure (Plate II.), are also much displaced.

As, for obvious reasons, it was not considered advisable to dissect this curious and interesting specimen, I cannot add any further particulars, in reference to the rest of the alimentary system, to those which have already been recorded by Mr. Johnson.

The caudal fin is furcate, and contains about eleven principal rays, of which the longest measures about 1 inch. The lateral line runs for the greater part of its course straight along the centre of the body, but as it approaches the head it curves upwards behind the posterior superior margin of the operculum.

	inches.
Total length of specimen from snout to extremity of tail . . .	$6\frac{1}{2}$
Total length of head from snout to point of operculum . . .	$1\frac{1}{2}$
Height of head	$\frac{5}{8}$
Eye, diameter of its major axis	$\frac{1}{8}$
Length of longest tooth (fourth) in lower jaw	$\frac{1}{2}$
Distance of first dorsal fin from muzzle, about	$1\frac{1}{4}$
Length of pectorals	$1\frac{1}{8}$
Width of the base of pectorals	$\frac{1}{4}$
Distance of pectorals from muzzle	$1\frac{1}{2}$
Length of ventrals, about	$\frac{7}{8}$
— of caudal fin	1
The length of the enclosed fish (<i>Scopelus macrolepidotus</i> ?) .	$10\frac{1}{2}$
Depth at pectorals	$1\frac{5}{8}$

In a subsequent letter received from Sir Leopold McClintock, dated from Port Royal, Jamaica, the 6th of November, 1865, he says, "They are not deep-water fish; both are well known at Dominica, more particularly the larger one (*S. macrolepidotus*?), which is common. The smaller one (*C. niger*?) is not common; but the

natives have names for both of them, so that neither of them can be considered rare."

It may be expected, before concluding these notes, that some theory or explanation should be offered on the interesting problem of how the larger fish (*S. macrolepidotus*?) became enclosed in the interior of the smaller (*C. niger*?); but I am disposed to think it more judicious, until further information on the habits and anatomy of the latter is obtained, to leave this an open question.

I believe that prior to this there have been but two other, and much smaller, specimens obtained, by Mr. Johnson and the Rev. R. T. Lowe at Madeira; and they are described as taken at a depth of from 200 to 300 fathoms, whereas it will be seen by Sir L. M^cClintock's letter that he does not consider the present specimen a deep-water fish, nor does he consider it to be so rare, at least near the island of Dominica, as Mr. Johnson found his specimens to be at Madeira. I trust that further specimens, which I expect to receive through the aid of Sir Leopold M^cClintock, will satisfactorily determine both these problems.

Dr. Günther added the following remarks to this paper:—

1. The fish described is undoubtedly identical with *Chiasmodon niger*, Johnson, as I had supposed at once when the figure was shown to me.

2. The fish swallowed is most probably *Scopelus macrolepidotus*, Johnson; but as it is still enveloped in the membranes of the stomach of the swallower and doubled up, some doubt as regards its identification may be entertained.

3. The specimen examined by Mr. Johnson was obtained under similar circumstances as that received from Dominica; it had in its stomach another, pelagic fish, nearly twice its own length.

4. The specimen obtained by the Rev. R. T. Lowe was taken at a depth of 312 fathoms, which is sufficient proof that the species is a deep-sea fish.

5. All deep-sea fishes may accidentally be carried upwards to the surface of the water; the efforts of one of their struggling victims to escape from their jaws may cause them to ascend with it beyond the horizontal zone which they usually inhabit; and when once beyond it, and under a greatly diminished pressure, they become as helpless as a man who ascends to a great height in a balloon, and therefore are easily picked up. This explains the fact that all the specimens known of *Saccopharynx* and *Melanocetus*—deep-sea fishes with the same extensible stomach as *Chiasmodon*—were found with large fishes in their stomachs. The specimens swallowed were found in each case to be in a very early state of digestion; and one was so well preserved that it was recognized and described as the type of a new genus.

6. The circumstance that the fishermen of Dominica have names for the two fishes does not prove their common occurrence. All our rarest British fish, like the "King of the Herrings," &c., have names. However, from what Sir L. M^cClintock says, both these extraordi-





nary species must be more common in the West Indies than in the sea off Madeira.

7. The process of deglutition in all these fishes is evidently very simple. The fish, after having seized its victim with its sufficiently capacious and very moveable jaws, partly presses it down, as a snake would do, partly draws itself over it. The prey is received into an œsophagus and stomach the membranes of which are, like the external integument, extensible as an India-rubber pouch, and which, therefore, may contain a body twice or thrice the size of the destroyer. Organs externally attached to the integument, like the ventral fins, are naturally displaced. I have seen the empty stomach of *Chiasmodus*, in the specimen obtained by Mr. Lowe; it was contracted, folded up, and but little projecting downwards from the belly.

2. Descriptions of some New Exotic Butterflies in the National Collection. By ARTHUR G. BUTLER, F.Z.S., Assistant, Zoological Department, British Museum.

(Plate III.)

1. CHLORIPPE (APATURA) LAVINIA (♂), sp. n. (Pl. III. fig. 1.)

Upperside—front wings rich reddish brown, with a central band of white spots, the upper ones almost obscured by a large orange wedge-shaped patch, and surrounded, below this patch, by a band of bright metallic green; the centre of the wings also glossed with brilliant purplish blue; cell paler brown, crossed by two dark central bands; outer margin with two pale submarginal bands; cilia white. Hind wings rich reddish brown, with a central white band surrounded by a band of bright metallic green; the entire wing, except the margins, glossed with brilliant purplish blue; inner margin pale brown; two pale submarginal bands at the outer margin; a fine white lunule at the anal angle, and a greenish lunule a little above it; cilia white. Body rich brown; anal half of abdomen pale brown; palpi reddish.

Underside nearly the same as in *C. lucasii*, Westw., Doubl. & Hewits. (Amazons, &c.), but the front wing is more suffused with orange.

Expanse of wings $2\frac{3}{8}$ inches.

Hab. Amazons (Nauta).

1^a. CHLORIPPE LAVINIA (♀?).

Upperside—basal half reddish brown; apical half orange-ochreous, in the front wings rather dusky; a central white band, iridescent in the hind wings; three submarginal dark brown bands; three triangularly placed subapical white spots in the front wings; inner margin of hind wings ochreous. Body brown; palpi ochreous; antennæ reddish.

Underside as in the male, except that the hind wings are copper-coloured and the central band is broader and more regular in outline. Body creamy white; proboscis and prolegs yellow; tibiæ of other legs and antennæ orange.

Expanse of wings $2\frac{5}{8}$ inches.

Hab. Venezuela.

Allied to *C. laurentia*, Godart; but the male is very easily distinguished by the large orange patch in the front wings. The female may possibly not belong to this species; but it seems to me to be more nearly allied to it than to the other metallic insects in this genus.

2. *CORADES CYBELE*, sp. n. (Pl. III. fig. 2.)

Upperside rich brown; antennæ reddish.

Underside—front wings rich brown; a dirty-white spot on the front margin beyond the cell; apex pale brown, mottled with reddish brown; a large orange blotch between the second and third median branches, and continued in the form of a lunule below to the first branch; a small red spot near the anal angle. Hind wings, basal half grey, apical half ochreous clouded with grey-brown; mottled with numerous small irregular red-brown spots and streaks, more plentifully towards the centre of the wing and the outer margin; anal tail brown. Body grey; palpi, legs, and antennæ dull orange.

Hab. Bogota.

Allied to *Corades sareba*, Hewits. (from Bolivia), but very different.

3. *DÆDALMA EMILIA*, sp. n. (Pl. III. fig. 3.)

Upperside—front wings rich brown; front margin, median vein, cilia, and a submarginal elbowed row of nine spots yellow. Hind wings rich brown; cilia and two submarginal rows of spots yellow. Body brown; thorax with dark-greenish hairs; antennæ brown, reddish at the tips.

Underside—front wings rich reddish brown; apex varied with greenish and silvery brown; three subapical black spots pupillated with white, and two black subapical lunules; median nervure, four submarginal spots between the median nervules, a triangular spot on the front margin beyond the cell, and two marginal spots at the anal angle pale green. Hind wings, basal half olive-green, varied with silver patches partially edged with black; base reddish brown; apical half olive-green, varied with pale green and brown; a central band of eight ocelli, the two upper ones pale green with darker centres, the others pale brown with reddish-brown centres, and divided downwards from the centre by a black line; all the ocelli pupillated with white; a very irregular wavy black submarginal line margined outwardly with pale green; outer margin black; cilia silver. Body grey brown; palpi and legs grey; antennæ grey, darker at the tips.

Expanse of wings $2\frac{15}{16}$ inches.

Bogota.

Allied to *Dædalma doræte*, Hewits., but very distinct, the hind wing being totally unlike in outline, the front wing above having only one row of spots; below, the lower ocelli of the front wings are absent, and replaced by large greenish oblong spots; the markings of the hind wings are also very dissimilar.

4. *DEBIS ISABELLA* (♂), sp. n. (Pl. III. fig. 4.)

Upperside rich brown; outer margin of hind wings ferruginous, anal portion submarginated with two black lunules; a submarginal row of six black spots, indistinct at the apex and anal angle. Body brown; palpi ochreous; antennæ ferruginous, with orange tips.

Underside—front wings grey, glossed with violaceous; base, a transverse central band, and a triangular dash tapering from the costa near the apex deeper grey; outer margin clouded with ochreous; a transverse brown line near the base; a very irregular more indistinct brown line beyond the end of the cell; outer margin with two marginal grey lines, wavy towards the apex; a submarginal row of six pale grey ocelli, the uppermost one very indistinct. Hind wings grey, clouded with brown and ochreous; a broad irregular central band pale ochreous above, below grey inwardly, brown outwardly, margined by a rich-brown line on each side; a small brown dash at the end of the cell; outer margin with three marginal brown lines; a submarginal row of six large ocellate spots bright ochreous, with large black centres irrorated with silver. Body greyish ochreous.

Expanse of wing $2\frac{5}{8}$ inches.

Hab. Philippine Islands.

Closely allied to *Debis chandica* (♂), Moore (E. Indies); it differs from it as follows:—Front wings much more elongate; outer margin more distinctly emarginate, forming an angle at the fold between the second and third median branches. Hind wings more elongate; the central caudate projection more produced, the outer margin more deeply sinuated. On the upperside, hind wings, outer margin richly suffused with reddish ferruginous, upon which the submarginal spots are distinctly visible; fringe of the wings dark; antennæ ferruginous. On the underside, front wings, central line much more irregular and more indistinct; both the marginal lines of the outer margin waved near the apex. Hind wings, central band much more regular in outline, not so much produced at the centre of its lower edge, not so broad near the costa, but broader below the median nerve than in *D. chandica*; submarginal ocelli smaller and further apart.

5. *HETÆRA PELLUCIDA*, sp. n. (Pl. III. fig. 5.)

H. phelis, Boisd. MS.

Upperside transparent, iridescent. Front wings with the margins, nervures, and an oblique streak at the anal angle brown. Hind wings with the marginal edges, nervures, outer margin, and a submarginal irregular band adjoining it brown; a large ocellus at the apex black, glossed with ultramarine blue, pupillated with white and encircled with orange; two small circular white spots near the hind margin

between the nervures. Body, thorax, and antennæ pale reddish brown; abdomen dark brown.

Underside—wings as above. Body—thorax white; legs and abdomen ochreous; antennæ pale brown.

Expanse of wings $2\frac{1}{2}$ inches.

Hab. Cayenne.

6. *HETÆRA HARPALYCE*, sp. n.* (Pl. III. fig. 6.)

Upperside—front wings as in the preceding species. Hind wings, lower half richly glossed with purple; a large ocellus as in *H. pellucida*; a similar smaller ocellus near the outer margin between the second and first median branches; two small circular white spots between the two ocelli; other markings as in *H. pellucida*.

Underside—front wings as above. Hind wings as above, but without the purple gloss. Body wanting, probably the same as in the preceding species.

Expanse of wings $2\frac{1}{2}$ inches.

Hab. Upper Amazons?

This species is allied to *H. esmeralda*, Doubleday, but differs from it in the greater extent of the purple gloss in the hind wings, the unbroken submarginal band, an additional ocellus, and its greater size. It is also allied to *H. philis*, Cramer, wrongly placed as a synonym of *H. aurora*, Feld., under its old name of *H. andromeda*†.

The species figured by Cramer (iv. pl. 387, f. E) as *H. philis* is quite distinct from *H. pireta*, Cramer, pl. 315. f. A; it has a violet, not a carmine, suffusion on the hind wings; and the colouring in *H. philis* is confined to the centre of the disk, instead of covering nearly the whole of the lower portion of the wing.

If these differences existed merely in Cramer's figures, pls. 315 & 387, they might be attributed to colour-blindness or carelessness; but as the same differences are found in the descriptions (*pireta*—"la tache rouge") (*philis*—"une tache luisante couleur de violet"), there can be no more doubt that the two insects are distinct.

Note.—It appears to me that the insect heretofore in our collections under the name of *H. andromeda* (Pl. III. fig. 9), although not the species intended by Fabricius (Drury, iii. pl. 38. f. 3), should not be named in collections *H. aurora*, Felder (Pl. III. figs. 7, 8), although it may be identical with *H. pireta*, Cramer.

DESCRIPTION OF PLATE III.

Fig. 1. *Apatura lavinia*, p. 39.

2. *Corades cybele*, p. 40.

3. *Dædalma emilia*, p. 40.

4. *Debis isabella*, p. 41.

Fig. 5. *Hetæra pellucida*, p. 41.

6. — *harpalyce*, p. 42.

7, 8. — *aurora*, p. 42.

9. — *andromeda*, p. 42.

* Possibly the other sex of *H. pellucida*.

† *Vide* Bates on New Sp. Butterf. from Guatemala and Panama, Ent. Month. Mag. i. p. 180, 1865.





3. A Monograph of the Diurnal Lepidoptera belonging to the Genus *Danais*, being a Revision of the Insects of that Genus, with Descriptions of New Species in the National Collection. By ARTHUR G. BUTLER, F.Z.S., Assistant, Zoological Department, British Museum.

(Plate IV.)

Genus DANAIS, Latreille.

Danaida, *Danaus*, or *Danais*, Latreille (1805).

Danais, Godart, Enc. Méth. ix. (1819); Boisduval, E. Doubleday, List Lep. Brit. Mus. (1844); Westwood, Doubleday & Hewitson, Gen. Diurn. Lepid. (1847); F. Moore, Cat. Lep. Mus. East India Comp. (1857); Trimen, Rhop. Afric. Austral. (1862).

Amauris, *Hestia* (part.), *Euplœa*, *Limnas*, *Anosia*, Hübner, Verz. bek. Schmett. (1816).

Ideopsis (part.), Horsfield, Moore, Lep. Mus. E. I. C. (1857).

Section 1.

1. DANAIS PHÆDON.

Papilio phædon, Fabricius, Ent. Syst. Suppl. v. p. 423. nos. 184, 185 (1793).

Danais phædon, Godart, Enc. M. ix. p. 183. n. 26 (1819); Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 91. n. 1 (1843).

Euplœa phædon, Boisd. Faune Ent. de Madag. t. 3. f. 3 (1833).

Hab. Mauritius.

B.M.

2. DANAIS ECHERIA.

Papilio echeria, Stoll, t. 29. f. 1, 1a (1790).

Amauris echeria, Hübner, Verz. bek. Schmett. p. 14 (1816).

Euplœa echeria, E. Doubl. List Lep. Brit. Mus. p. 49 (1844).

Danais echeria, Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 91. n. 2 (1847); Trimen, Rhop. Afric. Austral. p. 86. n. 55 (1862).

D. vaillantiana, Godart, Enc. M. ix. p. 183. n. 25 (1819).

Hab. South Africa.

B.M.

3. DANAIS EGIALEA.

Papilio egialea, Cramer, t. 192. f. D (1777).

Amauris egialea, Hübner, Verz. bek. Schmett. p. 14 (1816).

Danais egialea, Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 91. n. 3 (1847).

Hab. Ashanti.

B.M.

Note.—I have carefully compared all the figures of insects hitherto placed as synonyma of this species with the specimens in the National Collection, and I find that *D. egialea* and *D. damocles* are quite distinct. *D. niavius* (Gen. Diurn. Lep. pl. 11. f. 3) is also a separate species, only resembling Cramer's insect in coloration.

4. DANAIS DAMOCLES.

Papilio damocles, Fabricius, Ent. Syst. iii. pt. 1. p. 41. n. 121 (1793); Pal. de Beauv. Ins. Afr. et Am. Lép. p. 238, t. 6. f. 3a, 3b (1805).

Danais damocles, Godart, Enc. M. ix. p. 182. n. 23 (1819).

Euplœa damocles, Doubl. List Lep. Brit. Mus. p. 49 (1844).

Hab. Sierra Leone; Ashanti; Angola. B.M.

Var. Front wings longer; hind wings entirely brown.

Hab. Gaboon. B.M.

5. DANAIS HECATE, sp. n.

Euplœa niavius, Westw., Doubl. & Hewits. Gen. Diurn. Lep. pl. 11. f. 3 (1847).

Differs from *D. damocles* in having the front wings longer and narrower, no white spot at the anal angle, the subapical row of spots further from the central band, and only the double central subapical spot large; the apical and costal spots are also much smaller; the hind wings shorter, more angular, more deeply sinuated along the outer margin, and more completely suffused with brown; the body longer in proportion to the hind wings.

Expanse of wings $3\frac{1}{2}$ inches.

Hab. Ashanti. B.M.

6. DANAIS OCHLEA.

Danais ochlea, Boisd. App. Voy. de Deless. p. 589; Trimen, Rhop. Afric. Austral. p. 85. n. 54.

Hab. Port Natal. B.M.

7. DANAIS NIAVIUS.

Papilio niavius, Linn. Syst. Nat. ii. p. 766. n. 109 (1767); Cramer, t. 2. f. E, G (1775); Fabricius, Ent. Syst. iii. pt. 1. n. 120 (1793).

Amauris niavius, Hübner, Verz. bek. Schmett. p. 14 (1816).

Danais niavius, Godart, Enc. M. ix. p. 182. n. 22 (1819); Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 91. n. 4 (1847).

Var. *Papilio niavius*, Palisot de Beauvois, Ins. Afr. et Am. Lép. p. 288, t. 6. f. 1a, 1b (1805).

Hab. West Africa. B.M.

Section 2.

8. DANAIS BERENICE.

Papilio berenice, Cramer, pl. 205. f. E, F (1780).

Danais berenice, Boisd. et Leconte, Icon. Lép. et Chen. Am. Sept. t. 39 (1827); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 91. n. 6 (1847); Wiedemeyer, Cat. North Amer. Butterf. p. 13 (1864).

Papilio erippus, Fabricius, Ent. Syst. iii. pt. 1. p. 49. n. 152 (1793).

Danais erippus, Godart, Enc. M. ix. p. 186. n. 33 (1819).

Anosia erippe, Hübner, Verz. bek. Schmett. p. 16 (1816).

Papilio gilippus, Smith, Abb. Lep. Ins. of Georgia, i. t. 7 (1797).

Hab. Georgia; Florida. B.M.

Var. *a. Danais thersippus*, H. W. Bates, Proc. Zool. Soc. (1863).
Hab. Panama.

Var. *b. Danais strigosa*, H. W. Bates, Ent. Month. Mag. i. p. 33.
 n. 14 (1864-65).

Hab. Jamaica.

Note.—*Danais jamaicensis* (*berenice*, var. ?), Bates, must be a variety of *D. gilippus*; it is described as differing from *D. berenice* in having the nervures of the hind wing margined with grey.

9. DANAIIS CLEOTHERA (BERENICE, var. ?).

Danais cleothera, Godart, Enc. M. ix. p. 185. n. 31 (1819);
 Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 91. n. 7, t. 12. f. 2
 (1847); Wiedemeyer, Cat. North Amer. Butterf. p. 13 (1864).

Hab. Haiti; Honduras; Venezuela. B.M.

10. DANAIIS ERESIMUS.

Papilio eresimus, Cramer, pl. 175. f. G, H (1777); Fabricius,
 Ent. Syst. iii. pt. 1. p. 51. n. 157 (1793).

Danais eresimus, Godart, Enc. M. ix. p. 185. n. 30 (1819); Westw.,
 Doubl. & Hewits. Gen. Diurn. Lep. p. 91. n. 8 (1847).

Anosia eresima, Hübner, Verz. bek. Schmett. p. 16 (1816).

Hab. Brazil. B.M.

11. DANAIIS GILIPPUS.

Papilio gilippus, Cramer, pl. 26. f. E, F (1775); Fabricius, Ent.
 Syst. iii. pt. 1. p. 52. n. 159 (1793).

Danais gilippus, Godart, Enc. M. ix. p. 186. n. 34 (1819); Boisd.
 Sp. Gén. i. t. 24. f. 2 (1837); Westw., Doubl. & Hewits. Gen.
 Diurn. Lep. p. 91. n. 5 (1847).

Limnas ferruginea vincetoxici, Hübner, Samml. exot. Schmett.
 (1806-27).

Anosia vincetoxici, Hübn. Verz. bek. Schmett. p. 16 (1816).

Hab. Brazil. B.M.

Var. *Danais jamaicensis* (*berenice*, var. ?), H. W. Bates, Ent.
 Month. Mag. i. p. 33 (footnote) (1864-65).

Hab. Guatemala. B.M.

12. DANAIIS ERIPPUS.

Papilio erippus, Cramer, t. 3. f. A, B (1775).

Danais erippus, Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 91.
 n. 10.

Papilio plexippus, Cramer, t. 206. f. E, F (1780).

P. archippus, Fabricius, Ent. Syst. iii. pt. 1. p. 49. n. 150 (1793);
 Smith, Abb. Lep. Ins. of Georgia, i. t. 7 (1797).

Anosia archippus, Hübner, Verz. bek. Schmett. p. 16 (1816).

Danais archippus, Godart, Enc. M. ix. p. 184. n. 28 (1819);

Wiedemeyer, Cat. North Amer. Butterf. p. 13 (1864); Herrich-Schäffer, Schmett. Insel. Cuba, p. 4 (1864-65).

Anosia megalippe, Hübn. Samml. exot. Schmett. (1806-27).

Hab. Brazil; Mexico; United States. B.M.

13. DANAIS CLEOPHILE.

Danais cleophile, Godart, Enc. M. ix. p. 185. n. 32 (1819); Westw. Doubl. & Hewits. Gen. Diurn. Lep. p. 91. n. 9, t. 12. f. 3 (1847); Weidemeyer, Cat. North Amer. Butterf. p. 13 (1864).

Hab. Haiti; Jamaica.

B.M.

14. DANAIS CHRYSIPPUS.

Papilio chrysippus, Linn. Syst. Nat. ii. p. 767 (1767); Cramer, ii. pl. 118. f. B, C; Fabricius, Ent. Syst. iii. pt. 1. p. 50.

Danais chrysippus, Godart, Enc. M. ix. p. 187; Lép. de France, p. 106, pl. 27. f. 1, 2; Latreille, Dict. d'Hist. Nat. 2nd ed. t. 9. p. 118; Boisd. Ind. Meth. p. 14; Doubl. List Lep. Brit. Mus. pt. 1. p. 51; Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 92. n. 14; F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 126. n. 249, pl. 4. f. 7, 7a (metamorph.); Trimen, Rhop. Afric. Austral. p. 88. n. 56.

Euplœa chrysippus, Hübner, Verz. bek. Schmett. p. 15, t. 133. f. 678, 679; Herbst, t. 155. f. 1, 2; Ochsenh. t. 4, p. 120.

Papilio ægyptius, Schreb. Ins. p. 9, f. 11, 12.

Hab. Europe; Asia; Africa; Oceania.

B.M.

Var. With the spots near the costa beyond the cell of front wings very large.

Hab. Hong Kong.

B.M.

Note.—All the specimens that I have seen of this species from Greece, Java, and Ceram are of a dull brownish colour.

15. DANAIS ALCIPPUS (CHRYSIPPUS, var.?).

Papilio alcippus, Cramer, pl. 127. f. E, F (1777); Fabricius, Ent. Syst. iii. pt. 1. p. 50. n. 155 (1793); Herbst, Pap. t. 155. f. 5, 6.

Euplœa alcippus, Hübner, Verz. bek. Schmett. p. 15 (1816); Ochsenh. t. 4, p. 120.

Danais alcippus, Godart, Enc. M. ix. p. 188. n. 9 (1819); Lép. de France, p. 110, pl. 17. f. 3; Boisd. Ind. Meth. p. 14; Doubleday, List Lep. Brit. Mus. p. 51; Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 92. n. 15.

Euplœa dorippus, Klug, Symb. Phys. pl. 48. f. 1-5 (1829).

Hab. Sierra Leone; Ashanti; Italy (*Godart*).

B.M.

16. DANAIS PETILIA.

Papilio petilia, Stoll, t. 28. f. 3 (1790).

Danais petilia, Godart, Enc. M. ix. p. 189. n. 41 (1819); Doubl. List Lep. Brit. Mus. p. 51 (1844); Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 92. n. 13 (1847).

Hab. Australia.

B.M.

17. DANAIS PLEXAURE.

Danais plexaure, Godart, Enc. M. ix. p. 184. n. 29 (1819); Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 92. n. 12 (1847).

Hab. Brazil.

18. DANAIS PLEXIPPUS.

Papilio plexippus, Linnæus, Syst. Nat. ii. p. 767 (1767); Fabricius, Ent. Syst. iii. pt. 1. p. 49.

Danais plexippus, Godart, Enc. M. ix. p. 186; Doubl. List Lep. Brit. Mus. pt. 1. p. 51; Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 92. n. 17; F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 124. n. 246, pl. 4. f. 6, 6*a* (metamorph.).

Euplœa plexippus, Hübner, Verz. bek. Schmett. p. 15.

Papilio genutia, Cramer, iii. pl. 206. f. C, D (1780).

Hab. North India; China.

B.M.

19. DANAIS PHILENE.

Papilio philene, Cramer, iv. pl. 375. f. A, B (1782).

Danais philene, Godart, Enc. M. ix. p. 187; Doubl. List Lep. Brit. Mus. pt. 1. p. 50; Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 92. n. 17; F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 124. n. 245, pl. 4. f. 5, 5*a* (metamorph.).

Euplœa philene, Hübner, Voy. bek. Schmett. p. 15.

Hab. Java; Amboyna.

B.M.

D. philene, var., intermediate between this species and the next.

Hab. Gilolo.

B.M.

20. DANAIS ARTENICE (PHILENE, var.?).

Papilio artenice, Cramer, pl. 375. f. C, D (1782).

Danais artenice, Godart, Enc. M. ix. p. 187. n. 36 (1816); Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 92. n. 18 (1847).

Euplœa artenice, Hübner, Verz. bek. Schmett. p. 15 (1816).

Hab. Java.

B.M.

Note.—I have compared our specimens of *D. philene* and *D. artenice* with Cramer's figures, and I find that neither the subapical markings of the front wings nor the white streaks in the hind wings are reliable as distinguishing characters; the insects also appear to vary considerably in size and outline.

21. DANAIS PULLATA, sp. n.

Upperside copper-brown, darker towards the base. Front wings with an elbowed subapical series of five white spots, as in the allied species; a minute spot beyond the middle of the costa; a short double series of submarginal spots at the centre of the hind margin; an apical white spot. Hind wings with a double or single series of minute submarginal white dots. Body—thorax black brown, spotted with white; antennæ black; abdomen brown, orange below.

Underside dull ferruginous; nervures brown. Front wings with-

out an apical spot, with several additional submarginal dots near the apex; otherwise as above. Hind wings clouded with brown towards the base; a complete double series of white submarginal spots along the hind margin, and a white spot beyond the middle of the costa.

Expanse of wings $3\frac{5}{16}$ inches.

Hab. Dory.

B.M.

Fig. 1.



Danais pullata.

22. DANAIS AFFINIS.

Papilio affinis, Fabricius, Ent. Syst. iii. pt. 1. p. 58. n. 181.

Danais affinis, Godart, Enc. M. ix. p. 182. n. 21 (1819); Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 92. n. 20 (1847); Blanch. Voy. au Pôle Sud, p. 389 (Insectes), pl. 2. f. 7.

Danais cecilia, Bougainville, Voy. de la Corvette Thétis, t. 44. f. 3, 3 bis (1837).

Hab. Amboyna; Borneo.

B.M.

23. DANAIS FULGURATA, sp. n. (Pl. IV. fig. 1).

Upperside dark brown; an elongate streak near the inner margin of front wings and five streaks between the nervures in the centre of hind wings ferruginous. Front wings with white markings of apical half as in *D. philene*; a large elongate white spot in the centre of the ferruginous streak. Hind wings with a white irregular band across the cell, running nearly parallel to the costa, and divided into five portions by the nervures; towards the abdominal margin dusky; inner margin pale brown, with a marginal row of small white spots; cilia white. Body—thorax brown; head and prothorax speckled with white; abdomen pale brown.

Underside—front wings, basal half pale ferruginous, inclining to brown towards the costa; apical half brown, an irregular white blotch below the base of the first median nervule; several additional submarginal spots; otherwise as above. Hind wings ferruginous; nervures black; three small white spots at the base, close to the body; a white spot below the base, and another below the apex of the costal nervure; outer margin dusky ferruginous, a complete double series

of submarginal white spots; central band more irregular than above, extended down the abdominal margin to the anal angle. Body—abdomen rather paler; otherwise as above.

Expanse of wings $2\frac{6}{8}$ inches.

Hab. Celebes.

B.M.

24. DANAIS CONSPICUA, sp. n. (Pl. IV. fig. 2.)

D. silena, Bdv. MS.

Upperside—front wings as in *D. philene*. Hind wings ferruginous, not so dark as the front wings; nervures and outer margin dark brown; cell, a submarginal series of dots, double at the anal angle, and two subapical spots between the nervures white. Body—head and prothorax black, spotted with white; meso- and metathorax dark grey; abdomen pale ferruginous.

Underside—front wings, apex copper-brown; several additional submarginal dots; otherwise as above. Hind wings dull orange; cell white, irrorated with orange scales; a complete double submarginal series of white spots; five white spots near the apical hind margin between the nervures; otherwise as above.

Expanse of wings $3\frac{2}{8}$ inches.

Hab. Celebes.

B.M.

25. DANAIS MELANIPPUS.

Papilio melanippus, Cramer, ii. t. 127. f. A, B (1777).

Danais melanippus, Godart, Enc. M. ix. p. 189; Doubleday, List Lep. Brit. Mus. pt. 1. p. 50; F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 125. n. 247.

Euploea hegesippus, Hübner, Verz. bek. Schmett. p. 15.

Danais hegesippus, Godart, Enc. M. ix. p. 189; G. R. Gray, Lep. Ins. of Nepal, p. 10, t. 9. f. 1; Doubleday, List Lep. Brit. Mus. pt. 1. p. 50; Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 92. n. 19; F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 125. n. 247 (*melanippus*, var.).

Hab. India; Sumatra; Java.

B.M.

Var. *Papilio hegesippus*, Cramer, ii. t. 180. f. A (1779); Fabricius, Ent. Syst. iii. pt. 1. p. 52.

Hab. Java (*B.M. and Horsf. Coll.*).

26. DANAIS LOTIS.

Papilio lotis, Cramer, iii. pl. 230. f. D, E (1780).

Danais lotis, Godart, Enc. M. ix. p. 189; Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 92. n. 21; Doubl. List Lep. Brit. Mus. App. (1848) p. 13; F. Moore, Cat. Lep. Mus. East India Comp. p. 125. n. 248.

Hestia thoë, Hübner, Verz. bek. Schmett. p. 15 (1816).

Danais edmondi, Bougainville, Voy. de la Corvette Thétis, t. 44. f. 3, 3 bis (1837).

Hab. Amboyna; Borneo.

B.M.

27. DANAIIS ISMAREOLA, sp. n.

Upperside—front wings brown; a white discoidal streak; three elongate obliquely placed white spots at the end of the cell; a series of six white spots across the disk, the three upper ones placed obliquely, the others following the direction of the outer margin; a double submarginal series of white spots; a large white apical spot; a large white spot below the end of the cell, between first and second median branches; an elongate white streak filling the interspace between the first median branch and the submedian nervure to beyond the middle of the wing; a narrow white streak along the interior margin. Hind wings, basal area white, divided into thirteen unequal parts by the nervures, which are brown; outer margin brown, with a double series of submarginal white spots. Body brown; prothorax spotted with white.

Underside nearly as above. Body—abdomen pale brown.

Expanse of wings $3\frac{9}{16}$ inches.

Hab. Ternate.

B.M.

28. DANAIIS ISMARE.

Papilio ismare, Cramer, pl. 279. f. E, F (1780).

Hestia ismare, Hübner, Verz. bek. Schmett. p. 15 (1816).

Danais ismare, Godart, Enc. M. ix. p. 190. n. 45 (1819); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 93. n. 31 (1847).

Hab. Amboyna; North Ceram.

B.M.

Section 3.

29. DANAIIS SOBRINA.

Danais sobrina, Boisd. Faune de l'Océanie, ix. p. 103, pl. 4. f. 3 (1832); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 92. n. 24 (1847).

Hab. New Guinea.

B.M.

Note.—In the 'Voyage de l'Astrolabe,' the island of Vanikoro is given as the locality for this species; but this may possibly be an error. I have lately seen specimens from the Aru Islands.

30. DANAIIS SIMILIS.

Papilio similis, Linnæus, Syst. Nat. i. p. 479 (1758); ii. p. 782; Clerck, Icones, t. 16. f. 3.

Danais similis, Doubleday, List Lep. Brit. Mus. pt. 1. p. 49 (1844); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 92. n. 30 (1847); F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 122. n. 237 (1857).

Papilio aventina, Cramer, i. pl. 59. f. F (1775).

Danais aventina, Godart, Enc. M. ix. p. 191.

Hab. China; Java; North India.

B.M.

Var. *Danais melissa*, Doubleday, List Lep. Brit. Mus. pt. 1. p. 49; Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 92. n. 28.

Hab. North India; Singapore.

B.M.

Note.—This variety was formerly in the National Collection under the name of *D. melissa*.

31. DANAIIS MEGANIRA.

Danais meganira, Godart, Enc. M. ix. p. 192. n. 51 (1819); Boisd. Faune de l'Océanie, ix. p. 104. n. 3 (1832); Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 92. n. 29 (1847); Blanch. Voy. au Pôle Sud, p. 387, pl. 2. f. 4.

Hab. Java; Ceram; Philippine Islands. B.M.

Var. Rich reddish brown on a greenish ochreous ground; the nervures much more broadly bordered, and the spots consequently smaller.

Hab. Ceram. B.M.

32. DANAIIS MELISSA.

Papilio melissa, Cramer, iv. pl. 377. f. C, D (1782); Herbst, Pap. t. 125. f. 3, 4.

Danais melissa, Godart, Enc. M. ix. p. 192; F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 121. n. 236.

Hab. Java; North India. (*Horsf. Coll.*).

33. DANAIIS XANTHIPPIUS.

Danais xanthippus, Felder, Wien. Ent. Monatsschr. iv. p. 100.

Hab. Brazil.

34. DANAIIS LIMNIACÆ.

Papilio limniacæ, Cramer, i. pl. 59. f. C, D (1775).

Danais limniacæ, Godart, Enc. M. ix. p. 191; Doubleday, List Lep. Brit. Mus. pt. 1. p. 49; Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 93. n. 31; F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 121. n. 235, pl. 4. f. 3, 3 a (metamorph.).

Papilio similis, Fabricius, Ent. Syst. iii. pt. 1. p. 58.

Euplœa hamata, M'Leay, King's Survey of Australia, ii. App. p. 46 (1827).

Hab. Java; North India; Penang. B.M.

Var. With all the markings much narrower; abdomen with very large yellow anal tuft.

Hab. Borneo. B.M.

35. DANAIIS LEONORA, sp. n. (LIMNIACÆ, var.?).

Upperside—front wings black brown, with pale-greenish semitransparent spots, which differ from those of *D. limniacæ* in being broader and shorter; no streak below the base of the submedian nervure. Hind wings much smaller and rounder than those of *D. limniacæ*; the cells much shorter; rich olive-brown, with pale-greenish semitransparent spots, which differ from those of *D. limniacæ* in being broader and shorter.

Underside as above, excepting that the apical portion of the front wing is of an olive-brown colour, and the interior margin reddish; the hind wing is also paler.

Expanse of wings $3\frac{9}{16}$ inches.

Hab. Angola. B.M.

Note.—We have three specimens of this insect in the National Collection, and all of them agree in colouring.

36. *DANAIS LEOPARDUS*, sp. n. (LIMNIACÆ, var.?).

Upperside differs from the preceding in having all the wings olive-brown. Front wing with larger and more yellowish spots and streaks, also a large patch on each side of the submedian nervure near the base, as in *D. megarira*. Hind wings with pale-ochreous spots and streaks; the cell a little longer than in *D. leonora*, but not so long as in *D. limniacæ*.

Underside as above, excepting that the apical portion of the front wings is of a golden brown colour, and the interior margin reddish; the hind wings are also golden brown.

Expanse of wings $3\frac{1}{8}$ inches.

Hab. India (three specimens).

B.M.

37. *DANAIS AUSTRALIS* (LIMNIACÆ, var.?).

Danais australis, Boisduval; Blanchard, Voy. au Pôle Sud (Insectes), p. 388, pl. 2. f. 5, 6.

Hab. New Holland (Raffles Bay).

38. *DANAIS CHOASPES*, sp. n.

Upperside with a faint greenish gloss. Front wings dark olivaceous brown; a narrow short discoidal white line extending to near the middle of the cell; a very irregular oblique white band, divided by the dark nervures into four unequal semitransparent white spots, extending from the costal nervure and end of cell to the submedian nervure; five obliquely placed irregular elongate white spots beyond the end of the cell; a double submarginal series of white spots, the inner series, except the first, fifth, and seventh, large and elongate. Hind wings, basal area white, semitransparent, divided by the nervures, which are brown, into twelve unequal parts; outer margin broadly olivaceous brown, with a double submarginal series of white spots, the inner series elongate, alternately small and large. Body, head, and thorax olivaceous brown, spotted with yellow; abdomen creamy white.

Underside—front wings, apical portion olive-green; centre of disk inclining to bluish; base and inner margin reddish brown; spots iridescent; otherwise as above. Hind wings olive-green, instead of olivaceous brown; spots faintly iridescent; otherwise as above.

Expanse of wings $3\frac{3}{16}$ inches.

Hab. Celebes.

B.M.

39. *DANAIS PURPURATA*, sp. n.

Male. Front wings elongate. Upperside—front wings, basal area semitransparent, divided by dark-brown nervures into three unequal parts; the cell interrupted by a central brown band; front and hind margins brown, a minute greenish spot on the subcostal nervure beyond the middle of the cell; four spots beyond the cell, the lowest

one, below the base of the first median branch, the largest; three elongate subcostal, three irregularly placed subapical, and five small circular white apical submarginal spots. Hind wings, basal area pale greenish, divided by the brown nervures into ten to eleven differently formed portions; outer margin broadly brown, with a submarginal series of five to eight small white spots. Body brown; head and prothorax spotted with white; abdomen pale brown.

Underside—front wings, apex glossed with purplish; inner margin pale brown, several additional submarginal white dots; otherwise as above. Hind wings, outer margin glossed with purplish; a double series of submarginal spots; inner margin ochreous; otherwise as above.

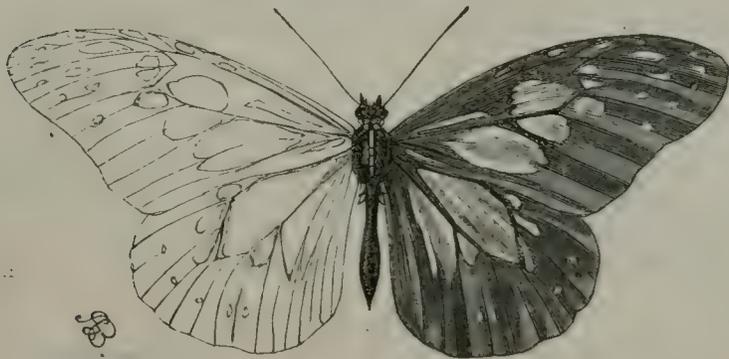
Female. Wings rounded, shorter and broader than in male. Colours the same.

Expanse of wings $3\frac{3}{16}$ inches.

Hab. New Guinea.

B.M.

Fig. 2.



Danais purpurata.

40. DANAIS FUMATA, sp. n.

Upperside—front wings rich brown, with a long discoidal streak; a large patch below the median nervure, extending from the base to the middle of the third median branch; two spots between the first and second median branches, one in the middle, and one at the base of the nervures; three submarginal spots, one below each of the median branches; an oblique band from beyond the middle of the costa to the middle of the third median branch, divided into five spots by the nervures; two minute spots near the end of the cell, below the third median branch, and two small obliquely placed subapical spots, pale-greenish white, semitransparent. Hind wings rich brown, interior margin paler; cell, a short streak above its termination, a minute streak near the costa beyond the middle, a minute spot beyond the end of the cell, a subapical row of three small spots, and a submarginal row of four minute dots pale-greenish white, semitransparent. Body brown.

Underside—wings golden brown; a patch of darker colour below

the end of hind-wing cell; markings nearly as above; only one sub-apical spot in front wings; the cell almost entirely white to near its termination. Hind-wing cell with a central brown streak; submarginal dots larger, seven in number. Body—thorax black, spotted with yellow; abdomen pale ochreous.

Expanse of wings $3\frac{1}{16}$ inches.

Hab. Ceylon.

B.M.

41. DANAIS EREBUS, sp. n.

Upperside smoky brown, all the markings hyaline. Front wings, basal area divided into three unequal transparent parts; a brown streak above the inner margin; six nearly equidistant spots in the form of a triangle, from the third median branch to the anal angle; a short oblique band divided into five unequal elongate spots by the nervures, from the costa to beyond the middle of the third median branch; a submarginal series of spots, becoming gradually larger towards the costa. Hind wings, basal area divided into twelve unequal parts by the nervures; three small subapical spots between the nervures. Body—thorax black, spotted with white; abdomen brown.

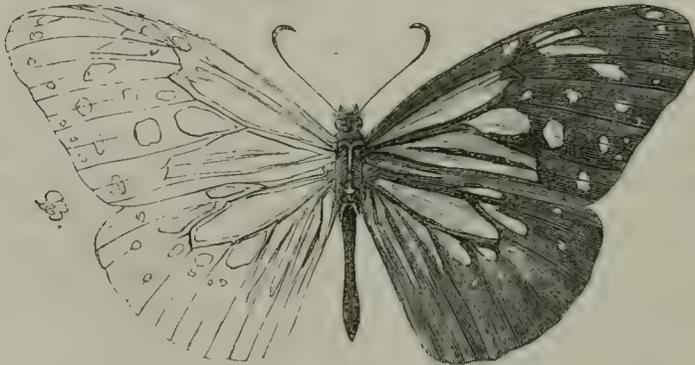
Underside—front wings as above, but paler at the apex, and with several additional submarginal spots along the outer margin. Hind wings as above, but paler at the apex, and with a complete double series of small submarginal spots. Body—thorax black, covered with large white spots; abdomen white.

Expanse of wings $2\frac{1}{6}$ inches.

Hab. Philippine Islands.

B.M.

Fig. 3.



Danais erebus.

42. DANAIS AGLEA.

Papilio aglea, Cramer, iv. pl. 377. f. E (1782).

Danais aglea, Doubleday, List Lep. Brit. Mus. pt. 1. p. 50 (1844); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 92. n. 22 (1847); F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 122. n. 239 (1857).

Hab. Java.

B.M.

43. DANAIS AGLEOIDES.

Danais agleoides, Felder, Wien. Ent. Monatsschr. iv. p. 398.

Hab. Malayan peninsula. B.M.

44. DANAIS GRAMMICA (D. AGLEA, var.?).

Danais grammica, Boisduval, Spéc. Gén. Lépid. i. t. 11. f. 10 (1836); Doubl. List Lep. Brit. Mus. pt. 1. p. 50 (1844); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 92. n. 23 (1847); F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 122. n. 238 (1857).

Hab. Java. B.M.

45. DANAIS PHYLE.

Danais phyle, Felder, Wien. Entom. Monatsschr. p. 105. n. 65 (1863).

Hab. Philippine Islands.

46. DANAIS LUZONENSIS.

Danais luzonensis, Felder, Wien. Entom. Monatsschr. p. 106. n. 66 (1863).

Hab. Philippine Islands.

47. DANAIS MELANEUS.

Papilio melaneus, Cramer, i. t. 30. f. B (1775).

Danais melaneus, Godart, Enc. M. ix. p. 192; Doubleday, List Lep. Brit. Mus. pt. 1. p. 50; Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 93. n. 36; F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 123. n. 242.

Hab. Java; China; Penang. B.M.

48. DANAIS TYTIA.

Euplœa tytia, G. R. Gray, Lep. Ins. of Nepal, p. 9, t. 9. f. 2 (1846).

Danais tytia, Doubleday, List Lep. Brit. Mus. pt. 1. p. 50 (1844); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 93. n. 35, t. 12. f. 4 (1847); F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 123. n. 243 (1857).

Danais tita, Kollar in Hügel's Reise n. Kaschmir, App. p. 424, t. 6.

Hab. North India. B.M.

49. DANAIS ALBATA.

Euplœa albata, Zinken-Sommer, in Nova Acta Acad. Curios. xv. t. 16. f. 16 (1831).

Danais albata, Doubl. List Lep. Brit. Mus. pt. 1. p. 50 (1844); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 93. n. 37 (1847).

D. ablata (misprint?), F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 124. n. 244 (1857).

Hab. Java. B.M.

50. DANAIS ŒNONE (*D. VITRINA*, Felder?).

Male. Upperside—wings hyaline, the same form as in *D. cleona*, ♂; nervures, end of front-wing cell, and margins black; hind margins broadly black. Front wings, basal area divided by the nervures into four parts; subapical patch in three parts; three costal and seven submarginal spots. Hind wings with a large basal area, divided by the nervures into twelve unequal parts; a double series of submarginal brown spots, two or three of which are pupillated with white at the apex and anal angle. Body—thorax black, with creamy spots; abdomen white, with a dorsal black line.

Underside—front wings with a submarginal row of fourteen minute white spots in couples along the hind margin; otherwise as above. Hind wings with a double submarginal row of white, not brown, spots; otherwise as above. Body—thorax black, with numerous creamy spots; abdomen white.

Expanse of wings $2\frac{1}{6}$ inches.

♀. *D. œnone*, A. G. Butler, P. Z. S. 1865, p. 433, pl. xxv. f. 6.

Hab. Philippine Islands.

B.M.

Note.—It has been suggested to me that I was wrong in describing this species, on the score of its being “nothing more than *D. albata*,” but when the two insects are placed side by side, I think that few entomologists would deny that they are very distinct. The hind-wing cell in *D. albata* is much broader, the fore wing more convex in front, the wings not so transparent, the marginal and subapical spots much larger and more numerous, the hind-wing disk almost entirely suffused with brown, the submarginal spots all white: considering these points of distinction, as well as the difference of locality, I think I should be scarcely justified in sinking my species into a synonym of *D. albata*. It may, however, be identical with *D. vitrina* of Felder; but it is almost impossible to recognize such closely allied species without figures.

51. DANAIS VITRINA.

Danais vitrina, ♂, Felder, Wien. Entom. Monatschr. p. 300. n. 10 (1861).

Hab. Philippine Islands.

B.M.

52. DANAIS GLORIOLA, sp. n. (Pl. IV. figs. 3; 4.)

Male. Upperside—wings the same form as in *D. cleona*, ♂, bright transparent yellow, increasing in intensity towards the base; nervures black. Front wings, anterior margin, base, upper half of cell, apex, hind margin, inner margin from the anal angle to the middle of the third median branch, and an irregular oblique band from the end of the cell to near the middle of the hind margin black brown; a very indistinct series of minute submarginal white dots. Hind wings, base brown; basal area divided into ten unequal parts; outer margin broadly brown. Body, head, and prothorax black, spotted with white; the rest of the body brown.

Underside—front wings, submarginal series of spots more distinct;

otherwise as above. Hind wings with a very irregular double series of white submarginal spots; inner margin and costa beyond the middle pale; otherwise as above. Body—thorax black, with white spots at the base of the wings; palpi white; abdomen pale brown.

Female. Wings the same shape as in *D. anone*, ♀. Differs from the male in colouring as follows:—Upperside paler yellow. Front wings brown; subapical cross band with an irregular central oblique downward branch terminating just below the second median nervule; outer margin with a distinct series of white spots. Hind wings, an indistinct submarginal series of minute white dots.

Underside—front wings with large submarginal spots, and a partially defined outer series of smaller spots. Hind wings, double series of submarginal spots much more regular and complete.

Male and female. Expanse of wings $2\frac{5}{8}$ inches.

Hab. Aru Islands.

B.M.

Female. Var. Transparent white, yellow towards the base. Front wings, subapical cross band wider, with more broadly extended downward branch. Hind wings, series of submarginal spots more distinct.

Hab. Ké Island.

B.M.

53. DANAIIS CROCEA, sp. n. (DORIPPA, Boisd. MS.). (Pl. IV. figs. 5, 6.)

Allied to *D. cleona*, Cramer, from which it differs in having the cell of front and the costa of hind wings unclouded; the subapical and submarginal spots more numerous, and white, not yellow; an additional yellow spot below the base of the third median nervule; the nervures not so broadly margined with brown, and the wings more transparent. Underside the same as above.

Expanse of wings, ♂, $2\frac{1}{2}$ – $3\frac{1}{8}$ inches; ♀, $2\frac{5}{8}$ – $3\frac{3}{16}$ inches.

Hab. Java; India; Borneo.

B.M.

Note.—In some specimens the whole transparent portion of the front wing is clear white, with a slight tinge of yellow at the base.

54. DANAIIS CLEONA.

Papilio cleona, Cramer, Pap. Exot. iv. t. 377. f. F (1782).

Danaïis cleona, Godart, Enc. M. ix. p. 190; Doubleday, List Lep. Brit. Mus. pt. 1. p. 50; Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 92. n. 27; Blanch. Voy. au Pôle Sud, p. 386, pl. 2. f. 3; F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 123. n. 241.

Var. *Euplœa philomela*, Zinken-Sommer in Nova Acta Acad. Curios. xv. t. 16. f. 17 (1831).

Hab. Java; North India; Borneo; Moluccas.

B.M.

Female. Var. Wings larger and broader; the cell of hind wings rather longer; cell of front wing nearly clear yellow, scarcely showing the central brown blotch.

Expanse of wings $2\frac{1}{16}$ inches.

Hab. Ternate.

B.M.

55. DANAIIS MARIANA. (Pl. IV. fig. 7.)

Danais mariana, Butler, Ann. & Mag. Nat. Hist. (1865), xvi. 397.
Hab. New Caledonia. B.M.

Section 3 a.

56. DANAIIS INUNCTA. (Pl. IV. fig. 8.)

Danais inuncta, Butler, P. Z. S. 1865, p. 481.
Hab. Waigiou. B.M.

57. DANAIIS VITREA.

Danais vitrea, Blanchard, Voy. au Pôle Sud, p. 385, pl. 2. f. 2.
D. œnopia, Felder, Wien. Entom. Monatschr. t. 4. f. 2 (1859).
Hab. New Guinea; Celebes. B.M.

58. DANAIIS CHLORIS.

Danais chloris, Felder, Wien. Entom. Monatschr. iv. p. 231.
Hab. Celebes?

59. DANAIIS ANAPIS.

Danais anapis, Felder, Wien. Entom. Monatschr. p. 300. n. 11 (1861).

Hab. Philippine Islands.

Note.—Felder says of this species that it belongs to the section in which *D. vitrea* is, but is marked like *D. gaura*.

Section 4.

60. DANAIIS GAURA.

Idea? gaura, Horsfield, Col. Lep. Mus. East Ind. Comp. t. 6. f. 1 (1829); Boisduval, Sp. Gén. Lép. pl. 11. f. 11.

Hestia gaura, Doubleday, List Lep. Brit. Mus. pt. 1. p. 52.

Danais gaura, Westw., Doubl. & Hewits. Gen. Diurn. Lep. p. 93. n. 38.

Ideopsis gaura, F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 134. n. 266.

Hab. Java. B.M.

61. DANAIIS DAOS.

Idea daos, Boisduval, Sp. Gén. Lép. i. pl. 24. f. 3 (1836).

Hestia daos, Doubleday, List Lep. Brit. Mus. pt. 1. p. 52 (1844).

Danais daos, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 92. n. 39 (1847).

Ideopsis daos, F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 134. n. 267 (1857).

Hestia eudora, G. R. Gray, in Cat. Lep. Ins. of Nepal. p. 10, t. 9. f. 3 (1846).

Hab. Singapore; Penang. B.M.

Var. *Idea diardi*, Van der Hoeven, Tijdschr. voor Ent. (1860) pt. 3, p. 44, pl. 2. f. 4.

Hab. Hong Kong. B.M.





J. Smith del.

NEOMORPHUS SALVINI.

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Note.—Dr. Herrich-Schäffer, in his ‘Lepidopterorum Index Systematicus,’ gives names to four species in this genus (*D. schenckii*, *arema*, *hermippe*, and *nerippe*). Dr. Boisduval has also named several species, some of which (*D. nerippe*, *azema*, *lixa*, and *daulis*) have been immortalized in Mr. Doubleday’s ‘Genera.’ I am not, however, able to make use of these names, as I have not seen the insects for which they are intended.

EXPLANATION OF PLATE IV.

- | | | |
|--|--|---|
| Fig. 1. <i>Danais fulgurata</i> , p. 48. | | Figs. 5, 6. <i>Danais crocea</i> , p. 57. |
| 2. — <i>conspicua</i> , p. 49. | | 7. — <i>mariana</i> , p. 58. |
| 3, 4. — <i>gloriola</i> , p. 56. | | 8. — <i>inuncta</i> , p. 58. |
| | | |

4. On a New American Cuckoo of the Genus *Neomorphus*.
By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to
the Society.

(Plate V.)

In a note upon the Cuckoos of the genus *Neomorphus*, published in the Society’s ‘Proceedings’ for 1864, I pointed out the characters which separated the two species of this peculiar genus then known to me, and gave some information as to their geographical distribution. In the series of birds lately received by Mr. Osbert Salvin from Veragua, a specimen of what appears to me to be a third species of the genus occurs. Knowing the interest I take in this group, Mr. Salvin has kindly handed the bird over to me for comparison; and I propose to call it, after my friend who has devoted so much time and toil to the Natural History of Central America, *Neomorphus salvini*.

Curiously enough this new northern species of *Neomorphus* is much more nearly allied to the Brazilian *N. geoffroyi* than to *N. rufipennis* of Guiana and Amazonia. It is, however, in my opinion, quite sufficiently distinct to merit specific separation, and will, I think, be readily recognized by the characters given in the following synopsis of the species of the genus which have come under my observation:—

GENUS NEOMORPHUS.

Neomorphus, Gloger, Froriep’s Notizen, 1827, p. 278.
Cultrides, Pucheran, Rev. Zool. 1851, p. 211.

- a. Sp. torque collari angusto: rostro virescente, basi plumbeo: alis extus æneo-purpurascensibus.

1. NEOMORPHUS GEOFFROYI.

Coccyzus geoffroyi, Temm. Pl. Col. 7; Max. Beitr. iv. 324.
Cultrides geoffroyi, Puch. R. Z. 1851, p. 211; Burm. Syst. Ueb.
ii. p. 258.

Neomorphus geoffroyii, Cab. et Hein. Mus. Hein. iv. p. 91; Sclater, P. Z. S. 1864, p. 249.

Rostro elongatiore: capitis antici plumis fusco-rufis, purpurascente terminatis: supra æneo-viridis, purpurascente tinctus.

Hab. Brasil. or.

Mus. Brit. Vindob. et P. L. S.

Natterer collected several examples of this species (his no. 1077) in the vicinity of Pará.

2. NEOMORPHUS SALVINI, sp. nov. (Pl. V.)

Rostro minus elongato, magis alto: capitis antici plumis omnino rufis: supra, præsertim in secundariis externis et caudæ tectricibus superioribus, magis purpurascens.

Long. tota 19, alæ 6·5, caudæ 10·5, tarsi 2·7, poll. Angl.

Hab. Veragua.

Mus. Brit. et O. Salvin.

Besides Mr. Salvin's specimens, there is an example of this species in the British Museum, stated to be from New Granada, which agrees with it in all its essential characters. The most noticeable of these are the shorter and much more elevated beak and the uniform rufous colour of the front part of the head.

b. Sp. torque collari lato: rostro distincte bicolore, nigro, apice corneo: alis extus rufis.

3. NEOMORPHUS RUFIPENNIS.

Cultrides rufipennis, G. R. Gray, P. Z. S. 1849, p. 63, pl. 10.

Neomorphus rufipennis, Cab. et Hein. Mus. Hein. iv. p. 92; Sclater, P. Z. S. 1864, p. 249.

Supra læte virescens, occipite cristato et dorso summo purpurascens: alis extus læte rufis: tectricibus minoribus dorso concoloribus: subtus ochraceo-cinereis: torque collari lato, bipollicari, purpurascens-nigro: gulæ plumis cinereis, nigro partim marginatis: rostro nigro, apice utriusque mandibulæ distincte pallide corneo: pedibus corneis.

Long. tota 19·5, alæ 6·5, caudæ 10·8, tarsi 3·8.

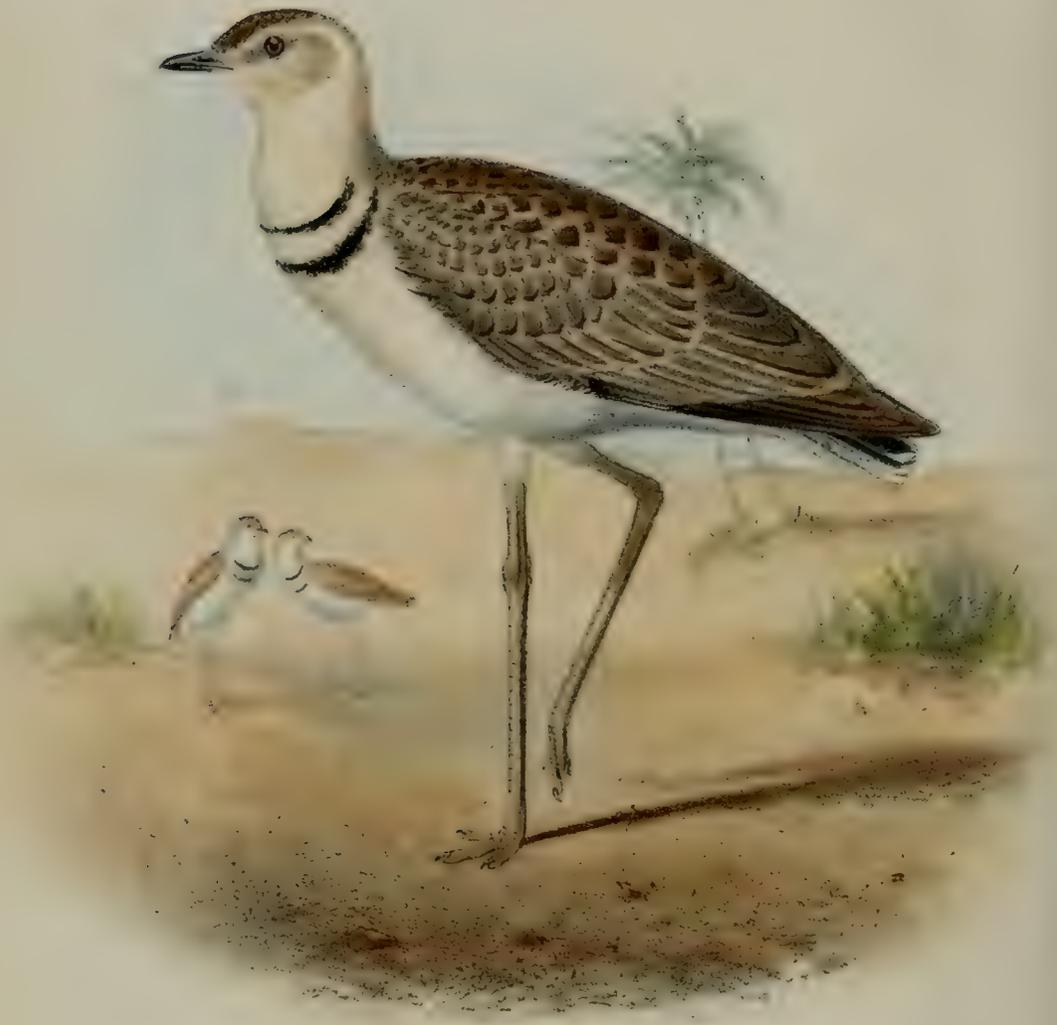
Hab. Guiana Brit.

Mus. Brit. et Vindob.

Since I wrote the article above referred to on this species, I have seen a specimen in the Vienna Museum obtained by Natterer in Northern Brazil, on the Rio Branco, at the foot of the small mountain Arimani; it bears his no. 1029.

I am still uncertain as to whether the *Cultrides pucherani* of Deville, figured in Castelnau's Voyage, belongs to this species or not. If different, it will form a second species of the same section.





J. Smit, del. et lith.

M. & N. Hanhart, imp.

CURSORIUS BISIGNATUS.

5. Synopsis of the Genus *Cursorius*.

By Dr. G. HARTLAUB, F.M.Z.S.

(Plate VI.)

a. Rostro longiore, culmine rotundato; digitis pro mole longioribus; fascia occipitali duplici, superiore nigra, inferiore alba, fascia caudæ anteapicali nigra.

1. CURSORIUS GALLICUS (Gm.).

C. europæus, Lath.*C. isabellinus*, Meyer; Salvin, Ibis, 1859, pp. 79, 354.*Hab.* in Europa merid. et Africa sept.

2. CURSORIUS RUFUS, Gould.

C. rufus, Gould, P. Z. S. 1836, p. 81; Icon. Av. pl. 10.*Tachydromus burchelli*, Sw. Anim. Menag. p. 340; Gurney, Ibis, 1860, p. 217; Schleg. Mus. Pays-Bas, livr. 7. p. 13.*Hab.* in Africa merid. (*Mus. Brem.*).

3. CURSORIUS SENEGALENSIS, Licht. Doubl. p. 72.

Tachydromus temminckii, Swains. Zool. Illustr. pl. 106; West. Afr. ii. p. 230, pl. 24; Reichb. f. 2119-20; Hartl. West Afr. p. 210; Wagl. Syst. Av. sp. 3; Schleg. Mus. P. B. livr. 7. Curs. p. 13.*Hab.* in Africa occident.

4. CURSORIUS COROMANDELICUS, Gm.

C. asiaticus, Lath.*C. frenatus*, Illig.*Tachydromus orientalis*, Sw. An. Menag. p. 339; Sykes, Catal. p. 206; Jerdon, Birds of Ind. iii. p. 626.*C. coromandelicus*, Adams, Proc. Zool. Soc. 1858, p. 504; Irby, Ibis, 1861, p. 237; Schleg. *l. c.* p. 13.*Hab.* in India contin.

b. Pedibus et rostro brevibus, debilibus; plumis notæi pallide limbatis; fasciis duabus pectoralibus nigris.

5. CURSORIUS BICINCTUS, Temm. Man. d'Ornith. ii. p. 514; Gurn. Proc. Zool. Soc. 1864, p. 8; Schleg. *l. c.*

C. africanus, Temm. Cat. Syst. 1807, p. 175; Jard. & Selb. Illust. pl. 48.*T. collaris*, Vieill.*Charadrius grallator*, Leadb. Linn. Trans.*Rhinoptilus bicinctus*, Strickl.*Hab.* in Africa merid. (*Damara, Anderss.*).

6. CURSORIUS BISIGNATUS, Hartl. P. Z. S. 1865, p. 87. (Pl VI.)

Hab. Benguela (*Monteiro*).*Obs.* Rostrum minimum, gracillimum.

c. Rostro altiore, crassiore; pedibus valde elongatis; fascia pectorali nigra. (*Rhinoptilus*.)

7. *CURSORIUS CHALCOPTERUS*, Temm. Pl. Col. p. 298; Strickl. P. Z. S. 1850, p. 220; Hartl. West Afr. p. 212; Heugl. Syst. Uebers. p. 54; Gurney, Ibis, 1861, p. 134.

Tachydromus chalconpterus, Sw. West. Afr. ii. p. 220; Wagl. Syst. Av. sp. 4.

Rhinoptilus chalconpterus, Sw.

Chalconpterus temminckii, Reichb. Handb. iii. p. 30. f. 2134-35.

Cursorius superciliaris, Heugl. Cab. Journ. 1865, p. 98.

Hab. in Africa merid., occid. et orient.

Note.—Having compared the original specimen of *C. superciliaris*, Heugl., with an authentic example of *C. chalconpterus* from Damaraland, I must declare both to be of the same species.

8. *CURSORIUS BITORQUATUS*, Jerdon, Birds of Ind. iii. p. 628; Blyth, Journ. As. Soc. of Beng. xvii. p. 254.

Hab. "Eastern Ghats of Nellore, and Cuddapah."

9. *CURSORIUS CINCTUS*.

Hemerodromus cinctus, Heuglin, Ibis, 1864, p. 31, pl. 2.

Hab. Nil. alb. super.

The young of an undescribed (?) species—"certainly of the same form as *Rhinoptilus bitorquatus*." "It appears to be the young of one of the other African species."—*Blyth, App. to Jerdon, B. of Ind.* iii. p. 629.

The two last species have not been examined by me.

6. A Revision of the Genera of Pteropine Bats (*Pteropidae*), and the Descriptions of some apparently Undescribed Species. By Dr. JOHN EDWARD GRAY, F.R.S., V.P.Z.S., F.L.S., &c.

Some years ago I studied the Bats with care, and described some new genera and species, and commenced a monograph of them, of which my papers were to be only the forerunners. My friend Mr. Robert Tomes took up the study, and seemed inclined to devote considerable time to it; so I retired from the position which he so well occupied, and placed the collection of Bats in the Museum entirely at his disposal, hoping some day that he would prepare a catalogue of them; and he has produced some excellent papers on isolated genera and geographic groups. He is now so occupied with other business that he has not lately been able to give any attention to the subject.

I have been working at other groups of Mammalia, and at length, in the course of my duties, the Bats must be catalogued, and therefore I have, as I may say, been forced to restudy the subject, revise

my catalogue prepared more than twelve years ago, adding the descriptions of the new species which have been received during that period. I am aware that the best that can be done can only be an essay, leaving much to be corrected and modified.

Since I formerly worked on this group, a number of new species have been described; and M. Gervais, M. de Saussure, and Dr. Peters have published excellent essays, describing the external form, the skulls, dentition, and sometimes the skeletons of different species.

I have great advantages for this undertaking. I have a very large collection under my care, perhaps the largest yet formed in Europe, containing many of the specimens on which species have been founded by different English and foreign authors, those species having been described from the specimens then in the British Museum, or since received from the different European museums.

I can lay the whole series of the specimens of each genus or group out before me and examine and compare them in detail, and repeat the operation as often as I desire. I believe that no such examination of a large collection has been made since M. Geoffroy undertook his series of monographs of different families of Mammalia in the Paris Museum, shortly after Napoleon's accession; and I have the advantage of having a collection much more numerous; indeed, judging by the estimate of the Primates given in his 'Catalogue of Primates,' it must be twice or nearly three times as numerous in specimens as the Museum in Paris.

I have made great progress in this catalogue, some specimens of which have already been laid before the Society; and the part containing the Primates is now in the press, and I hope it will appear in the course of this spring. I am aware that some zoologists will complain that the characters are too short; but short as they are, they are the result of much study and analysis. They are the characters that appear to me best suited to distinguish each species from its allies, after a careful examination of a long suite of specimens of each species placed side by side, and with its allies.

It is a labour of love, and I hope to complete the examination and description of the species of the class; but at my age I have many hindrances. I am fortunately greatly assisted in my study by my excellent helper, Mr. Edward Gerrard, who has a very extensive knowledge of the living and preserved specimens and their osteology; and his modesty is only equalled by his knowledge.

The examination of the species of the *Pteropidae* has led me to propose the following distribution of the genera, which may be thus characterized:—

I. *Teeth* 3/4; *true grinders* 3/3; *hinder small*; *false grinders* 2/3 or 2/2; *front small, and often deciduous.*

1. *Cutting-teeth* 4/4; *lower in a regular series. Tail none. Gland of the penis bony. Pteropina.*

1. PTEROPUS. Wings from the sides of the hairy back. *P. medius.*

2. EUNYCTERIS. Wings from the vertebral line; the part of the wing over the back becoming bald. *E. phaiops*.

2. *Cutting-teeth* 4/4; lower in a regular series. Tail-end free. Gland of penis soft. Macroglossina.

* Head very long and slender; cutting-teeth in an arched series; grinders compressed, narrow.

3. NOTOPTERIS. Wings from the vertebral line; part over the back bald. Head very long and slender. False grinders 1/3. Tail elongate, free. *N. macdonaldi*.

4. MACROGLOSSUS. Wings from the sides of the hairy back. Head very long and slender. Tail very short. False grinders 2/3. *M. minimus*.

** Head moderate; cutting-teeth in a transverse series; grinders thick.

5. XANTHARPYIA. Wings from sides of the hairy back. Head elongate, tapering. Fur short, adpressed. *X. straminea*.

6. ELEUTHERURA. Wings from sides of the hairy back. Head short, broad. Fur dense, spreading. *E. marginata*.

3. *Cutting-teeth* 2/2; lower crowded before the base of the canines. Tail-end free. Index finger not clawed. Cephalotina.

7. CEPHALOTES. Tail short. Upper cutting-teeth broad; lower truncate. *C. peronii**

II. Teeth 28; true grinders 2/2, 2/2; false grinders 2/3, front minute, often deciduous. Wings from sides of the hairy back. Penis-gland fleshy.

4. *Cutting-teeth* 2/2 or 2/0, crowded between the canines. Head short, broad. Nostrils tubular, diverging. Harpyiana.

8. HARPYIA. Tail short, end free. False grinders 1/1. *H. pallasii*.

5. *Cutting-teeth* 4/4; lower in a regular series; false grinders 1/1. Head short, broad; nostrils rather prominent. Glands on shoulder with hair like back. Cynoptera.

9. CYNOPTERUS. Tail short, end free. *C. brevicaudata*.

10. MEGÆRA. Tail none. *M. ecaudata*.

* The accidentally placing of a label, that was intended for a bottle containing *Pteropus amplexicaudatus*, on a bottle containing *Cephalotes* has caused some confusion; thus *Cephalotes peronii* appears under the name of *Xantharpyia amplexicaudata* in the 'Voyage of the Sulphur,' and its teeth are described under the name of *Pteropus amplexicaudatus* in the observations on *Notopteris* (Proc. Zool. Soc. 1859, p. 36).

6. *Cutting-teeth* $4/4$; lower in a regular series. Head elongated, swollen in front. Glands on shoulder with a tuft of white hairs. Epomophorina.

11. EPOMOPS. Face moderate, rounded in front; nose and chin simple, hairy. Skull ovate; face much shorter than the brain-case; upper cutting-teeth separate, spaced. *E. franqueti*.

12. EPOMOPHORUS. Face very long, rounded in front; nose and chin simple, hairy. Skull elongate; face as long as brain-case; upper cutting-teeth close together. *E. whitei*.

13. HYPSIGNATHUS. Face very long, swollen and truncated in front; nose and chin with a fleshy disk, with raised edges. *H. monstrosus*.

The *Pteropidæ* are spread over the warmer parts of Africa and Asia, and are found in many of the smaller islands of the Indian and Pacific Oceans.

There is a general similarity in the colouring of the majority of the species; specimens found in the same locality or island often vary considerably from one another, even when the examination of the skull and teeth show that they are of the same species. On the other hand, specimens from different localities often resemble one another so much in their external colouring that it is difficult to distinguish them in any description that can be made; but when the skulls and teeth are examined they prove to be very different species. Under these circumstances the locality of the specimens is an important element in determining the species.

PTEROPUS WALLACEI, sp. nov.

Fur very soft, reddish grey brown; hair of the back black, of the belly ashy white with reddish tips; nape and sides of the shoulders grey; spot on cheek, at angle of mouth, a broad band along the upper lip, a streak upon the centre of the nose (each of them edged with darker brown), the back of the chin, and a lanceolate spot over each eye pure white; the hair on the dorsal surface of the upper arm greyish white. Ears elongate, bald, with two impressed longitudinal grooves.

Hab. Celebes: Macassar (*Mr. Wallace*, 1857).

This beautiful species was brought to England by Mr. Wallace, but appears to have been overlooked; for Mr. Edward Gerrard, Jun., purchased it at Stevens's sale-room, included in a considerable lot of skins of birds and other animals of little value.

The specimen described is very young (the epiphyses of the bones are all separate), and it doubtless grows to a larger size; but this does not in the least invalidate the distinctness of the species.

There are the young of many species of Pteropine Bats in the British Museum, sometimes with their mothers; but in every case the young is coloured like the parent, only the colours are not so decidedly marked. This would lead one to believe that the adult

of this species, if that were possible, would have the colours also more intensified, instead of less so.

I have great pleasure in naming it after Mr. Wallace, who has enriched our Museum with so many new and beautiful species. It is most like *Pteropus personatus*, but very distinct, and about one-third less in size.

The only other species that has the face ornamented is *P. personatus*; but that has only brown lines on the side of the face and round the eyes. It, like this, is a small species in the genus.

As *P. personatus* has not yet been figured, I have given figures of the heads of the two species for comparison.

Fig. 1.

*Pteropus wallacei.*

Fig. 2.

*Pteropus personatus.*

PTEROPUS LIVINGSTONII, sp. nov.

Deep black; the under surface and the rump with interspersed white hairs, most abundant on the latter part; a small round tuft of bright yellow hair on the upper part of each shoulder.

Hab. Island of Johanna, Comoro group (*Dr. Livingstone*).





J Smit lith.

M&N Hamhart imp

EUPHONIA RUFIVERTEX.





Great Brit.

M & N Han. art. imp

FORMICARIUS RUFPECTUS.

This species is larger and more densely haired than *Pteropus edwardsii*, found in the same island; and I do not think that it can be an extraordinary variety of that species. It was sent to the collection during the Zambesi expedition.

PTEROPUS ELSEYII, sp. nov.

Fur short, close, uniform reddish brown; head paler and duller; neck, upper part of shoulders, and chest bright pale red bay; under-side of body reddish bay; sides of the body and near the shoulders pale yellowish.

Young. Back black, grey-washed; belly black brown; neck bay; head blackish grey.

Hab. North-east coast of Australia: Claremont Island (*John Macgillivray*, 1860; *Dr. J. R. Elsey*).

I name this species after my late friend Dr. Elsey, the Surgeon in one of the Australian Land Expeditions, who collected many specimens under great difficulties.

7. Descriptions of Eight New Species of Birds from Veragua.

By OSBERT SALVIN, M.A., F.Z.S., &c.

(Plates VII. & VIII.)

During the past year two collections of birds were forwarded to Mr. Godman and myself by Enrique Arcé from Veragua. One was made near Santiago de Veraguas, and the other near a small village called Santa Fé, which is described as being situated thirty miles nearer to Panamá. The two collections comprise 156 species of birds of various orders; nine of these appear to be new to science, eight of which I now describe.

Santa Fé is a mountainous district, and the climate temperate, from which I gather, and also from the character of some of the birds sent, that the elevation at which the greater part of the collection was made, was from 2000 to 4000 feet. There are no species peculiar to greater altitudes.

Arcé is now at Chiriqui, and I trust ere long to receive a collection from that district. As the few species that have been received thence are mostly of great interest, I have hopes that considerable additions will be made to our collections. Through the exertions of Arcé and the collectors who are enriching the Smithsonian Institution, this section of Central America bids fair to become one of the best-explored of any portion of the Neotropical region.

In drawing up the following diagnoses I have endeavoured to compare the species I describe with as many of their nearest allies as I have access to, thereby, I trust, rendering the task of identifying them less laborious and more certain. In this I have been greatly assisted by Dr. Selater, and the use of the specimens in his rich collection.

1. CATHARUS GRISEICEPS, sp. n.

C. supra olivaceo-brunneus, capite toto cum collo griseis, pileo obscuriore: alis externe cinnamomeis, interne fuscis; cauda cinnamomea: subtus cinereus, gutture multo pallidior: ventre medio et crisso albis: rostro aurantiaco, pedibus flavidis.

Long. tota 6 poll., alæ 3·5, caudæ 2·6, tarsi 1·25, rostri a rictu ·85.

Hab. in Veragua.

Obs. Affinis *C. melpomene* (Cab.), sed capite griseo, etc., facile distinguendus.

This species, at once distinguishable from *C. melpomene* and its allies, bears a closer resemblance to them than to the other grey-headed species, described (P. Z. S. 1864, p. 580) as *C. gracilirostris*, which has an entirely black bill and more slender tarsi. In the colour of its back it resembles *C. frantzii* (Cab. J. f. O. 1860, p. 323), specimens of which are in our collection from Costa Rica and Guatemala. The wings are, however, cinnamon-colour, resembling those of *C. melpomene*; but the shade is not so dark, nor so pure, being tinged with olivaceous. A specimen marked "male" has a small purely orange-yellow-coloured bill; while a female has a larger bill, the culmen of which, together with the part surrounding the nostrils, is brownish. Both appear to be quite adult. I believe this difference of colour and size to be a constant sexual character in adult species of *Catharus*, as it is in many of the true *Turdi*. The character holds in three dissected specimens of *C. melpomene* before me; two males have a small yellow bill, and one female a slightly larger bill which is brown above. The bill in all the *Turdidæ* is an uncertain character, being subject to very great variation in size.

This species makes the seventh of the genus *Catharus* found in Central America and Mexico, which district must clearly be considered the metropolis of the genus. Three other species occur in the north-west provinces of South America, viz. *C. aurantiirostris*, Hartl. (perhaps the same as *C. melpomene*), *C. fuscater*, Lafr., and *C. maculatus*, ScL. This last species appears to be very closely allied to *C. dryas* (Gould). I have recently compared Dr. Sclater's types of *C. maculatus* with my specimens of *C. dryas* from Vera Paz. The contrast of the colouring of the back hardly exists, and the yellow tinge of the breast agrees in specimens of the same sex.

I strongly suspect, though I have no dissected specimens to prove it, that in the black-headed group (*Malacocichla*) of this genus the males are darker than the females. My specimens of *C. mexicanus* show a marked contrast in depth of colour on both upper and under parts.

The following is a list of the known species of *Catharus*, with the chief references:—

(1.) CATHARUS MELPOMENE (Cab.): Mus. Hein. 1850, p. 5; Sclater, P. Z. S. 1859, p. 323; Salvin, Ibis, 1860, p. 29; Baird, Rev. Am. Birds, pt. i. p. 7.

Hab. Mexico; Guatemala; Costa Rica.

(2.) CATHARUS AURANTIROSTRIS (Hartl.): Rev. Zool. 1850, p. 158; Contr. Orn. 1851, pl. 72. *C. immaculatus*, Bp. Consp. p. 278; Baird, Rev. Am. Birds, pt. i. p. 7.

Hab. Venezuela.

(3.) CATHARUS OCCIDENTALIS, Sclater, P. Z. S. 1859, p. 323; Baird, Rev. Am. Birds, pt. 1. p. 8.

Hab. Southern Mexico.

(4.) CATHARUS GRISEICEPS, Salvin (*vide supra*).

Hab. Veragua.

(5.) CATHARUS FRANTZII, Cab. J. f. O. 1860, p. 323; Baird, Rev. Am. Birds, pt. 1. p. 9.

Hab. Guatemala; Costa Rica.

(6.) CATHARUS GRACILIROSTRIS, Salvin, P. Z. S. 1864, p. 580.

Hab. Costa Rica (Volcan de Cartago).

(7.) CATHARUS MEXICANUS, Bp. Compt. Rend. xliii. p. 998, et Orn. Foss. p. 35; Sclater, P. Z. S. 1859, p. 324; Baird, Rev. Am. Birds, pt. 1. p. 11.

Hab. Mexico; Guatemala; Costa Rica.

(8.) CATHARUS FUSCATER (Lafr.): R. Z. 1845, p. 341; Sclater, P. Z. S. 1859, p. 324.

Hab. Ecuador.

(9.) CATHARUS DRYAS (Gould): P. Z. S. 1854, p. 285, pl. 75; Sclater, P. Z. S. 1859, p. 324; Baird, Rev. Am. Birds, pt. i. p. 10.

Hab. Guatemala.

(10.) CATHARUS MACULATUS, Sclater, P. Z. S. 1858, p. 64, et 1859, p. 324; Baird, Rev. Am. Birds, pt. i. p. 10.

Hab. Ecuador.

2. MICROCERCULUS LUSCINIA, sp. n.

Cyphorhinus philomela, Lawr. (nec Salv.) Ann. of N. Y. Lyc. vii. p. 467 (ex Panama).

Microcerculus philomela, Baird, Rev. Am. Birds, pt. i. p. 114 (partim).

M. supra castaneus, pileo et uropygio obscurioribus, hoc paulo rufescentiore: subtus gutture albido, tectricibus auricularibus et pectore cinereis: ventre medio cinereo, nigro et albo transversim lineato: corporis lateribus castaneis; alis et cauda fusco-nigris, tectricibus alaribus castaneo marginatis; rostro nigro, mandibulæ inferioris basi subtus albida: pedibus fusco-nigris.

Long. tota 4 poll., alæ 2·2, caudæ ·9, tarsi ·85, rostri a rictu ·85.

Hab. in prov. Veraguæ et Panamensi.

Obs. *M. philomelæ*, Salv. (P. Z. S. 1861, p. 202), ex Vera Pace,

affinis, sed dorso haud fasciato, gutture albido et corpore subtus non fuliginoso lavato, rostro quoque longiore differt.

The collection contains two specimens of this Wren, both of which agree with Prof. Baird's description (*l. c.*) of Mr. Lawrence's bird from Panama. All of them seem to differ considerably from the Vera Paz bird I described as *Cyphorhinus philomela*. I have therefore thought it necessary to distinguish this Veraguan form under a new name.

Through Dr. Selater's kindness I have now before me his type specimens of *M. albigularis* (Selater, P. Z. S. 1858, p. 67) (which certainly belongs here and not to *Pheugopedius*, as Prof. Baird asserts) and of *M. marginatus* (Selater, P. Z. S. 1855, p. 145). I have also, besides the present bird, *M. philomela* and two specimens of the Cayenne *M. bambla* (Bodd.), making five species, being all that I am acquainted with of this group of Wrens.

Compared with *M. albigularis* the present bird presents great similarity of coloration; it wants, however, the black edges to the feathers of the upper plumage; or, to speak more correctly, it has these in a less degree; for in the new species there are exceedingly faint indications of black margins to the feathers of the upper surface. It also wants the white wing-band, and differs in this respect from *M. bambla*. The throat of *M. albigularis* is rather purer white, the legs yellowish instead of dark brown, and it is smaller in all its dimensions. *M. lusciniæ* bears very much the relationship to *M. albigularis* that *M. philomela* does to *M. bambla*. Having examined five specimens of *M. philomela*, all of which agree in every respect, I can hardly concur in Prof. Baird's suggestion that the bird I now describe is the adult of *M. philomela*. The bars on the under plumage are subterminal, and not terminal margins, the indication of first feathers. These markings are quite similar to those we find in *M. bambla*.

The nostrils of *Microcerculus* present peculiarities which seem to justify its generic separation certainly from *Heterorhina*, and also from *Cyphorhinus*. In *Microcerculus* the nostril is partially covered with a membrane, which, being convex along its unattached lower edge, meets the lower margin of the nasal cavity towards its anterior end, leaving the posterior end open and comma-shaped, the tail of the comma extending anteriorly. No septum or division is seen externally; but by raising the valvular membrane it appears. This septum, however, is perfectly free and unattached to the membrane of the nostril, and does not adhere to it as Prof. Baird states (with doubt). The perfect nostril never appears double. In *Scytalopus*, with which genus these Wrens have been confounded, the nasal tegument is an oval thickened membrane, so attached as to leave only a slit for the nostril along the lower edge of the nasal fossa.

In *Cyphorhinus* the nostril is circular and surrounded by a membrane.

In *Heterorhina* and also *Thryothorus* the nostril is open, a longitudinal septum showing a division; the nostril itself extends backwards from the anterior edge of the nasal fossa. Thus *Microcerculus*

differs from both in having a membrane partially covering the nostril. *Heterorhina* appears to be a section of *Thryothorus*, differing from it by its proportionately shorter tail and stronger legs. (See Baird's remarks on the subgeneric characters of the American Wrens.)

The subjoined list gives the chief references to the several members of this genus:—

(1.) *MICROCERCULUS BAMBLA* (Bodd.), ex Buff. Pl. Enl.

Cyphorhinus (Microcerculus) bambla, Scl. Cat. no. 120; ex Cayenna.

(2.) *M. PHILOMELA*, Salv. P. Z. S. 1861, p. 202 (nec Lawr., nec omnino Baird); ex Vera Pace.

(3.) *M. ALBIGULARIS*, Scl. P. Z. S. 1865, p. 67; Cat. no. 122; ex Fl. Napo.

(4.) *M. LUSCINIA*, Salv., ex Veragua et Panama.

Cyphorhinus philomela, Lawr., et *M. philomela*, Baird, Rev. Am. Birds, p. 114 (partim).

(5.) *M. MARGINATUS*, Scl. P. Z. S. 1855, p. 145; ex Peru et Bogota.

M. philomela is a wonderful songster; I have often listened to it; the note is higher and clearer than that of any bird I know.

3. *EUPHONIA RUFIVERTEX*, sp. n. (Pl. VII.)

♂. *E. supra nitenti-purpurascenti-nigra, pileo toto et fronte rufocastaneis, hoc paulo flavidiore: loris, capitis lateribus et gutture purpurascenti-nigris: subtus flava, medialiter aurantiaca: crisso albo: alis nigris, tectricibus cærulescente marginatis, tectricibus subalaribus albis: macula in pogonio interno duarum rectricum utrinque extimarum alba, rectricibus reliquis nigris: rostro et pedibus nigris.*

♀. *Supra olivaceo-viridis, nucha plumbea, fronte rufo tincta: alis et cauda fusco-nigris, extus olivaceo-viridi marginatis: subtus cinerea: ventre imo et crisso dilutioribus: mento et corporis lateribus flavo-olivaceis: rostro et pedibus plumbeis.*

♂. Long. tota 3·75 poll., alæ 2·5, caudæ 1·5, tarsi ·65, rostri a rictu ·4.

Hab. in Veragua et Costa Rica.

Obs. Affinis *E. ruficipiti*, Laf. et D'Orb. ex Bolivia, sed pileo toto rufo-castaneo et crisso albo dignoscenda.

The white marking of the tail on the outermost rectrix extends to the inner margin of the web, but not to the extremity, and is about one-third of the length of the whole feather. The spot on the second rectrix is quite surrounded by black.

A single specimen received in a former collection from Arcé, from Turrialba in Costa Rica, had been labelled by me, with doubt, *E. gracilis*, Cab. The specimen is in quite young plumage, and on re-

examining it I find a few concealed chestnut feathers at the back of the head. I believe that it is a young male of the bird I now describe. The tail, however, is quite black, the crissum greyer than the female *E. rufivertex*, and the wings darker, having assumed the male character. *E. gracilis*, Cab., described from immature specimens, is said to have a clear-yellow belly, and the forehead also yellow. The forehead in this young bird shows none of the rufous of the adult female *E. rufivertex*. This makes the eleventh or twelfth species of *Euphonia* found in the great isthmus between the Americas.

4. BUARREMON MESOXANTHUS, sp. n.

B. supra olivaceus, pileo medio cum fronte castaneis: loris, regione oculari et tectricibus auricularibus cinereo-nigris: subtus plumis in gula albis, basibus nigris et nigro terminatis, versus pectus fere omnino cinereis: pectore, corporis lateribus et crisso olivaceis, ventre medio late flavo: alis fuscis, extus olivaceis dorso concoloribus: cauda fusca: rostro superiore corneo, inferiore albido: pedibus fuscis.

Long. tota 6 poll., alæ 2·85, caudæ 2·5, rostri a rictu ·7, tarsi 1·1.

Hab. in Veragua.

Obs. Affinis *B. castaneicipiti*, ScL. P. Z. S. 1859, p. 441, sed gula haud cinerea et ventre medio flavo facile dignoscendus.

In addition to the above differences, which at once distinguish this bird from *B. castaneiceps*, the bill shows some strong ridges, which, proceeding from the nasal hollow, run parallel to the culmen.

5. PHILYDOR FUSCIPENNIS, sp. n.

P. cinnamomeus, pileo et capitis lateribus obscurioribus, dorso obscuriore et olivaceo tincto: stria postoculari, corpore subtus et tectricibus subalaribus cinnamomeis; gula pallidiore; ventre, anum versus brunnescentiore: alis fuscis: cauda et uropygio intense cinnamomeis: rostro et pedibus fuscis.

Long. tota 6 poll., alæ 3·5, caudæ 2·75, tarsi ·75, rostri a rictu ·8.

Hab. Veragua.

Obs. Affinis *P. pyrrhodi* (Cab., Schomb. Guian. iii. p. 689), sed uropygio et cauda rufescentioribus et obscurioribus, dorso magis cinnamomeo et corpore subtus brunnescentiore dignoscendus.

This species seems quite distinct from *P. rufobrunneus*, Lawrence (Ann. of N. Y. Lyc. May 1865), which is described as having the upper tail-coverts dark rufous brown, each feather of the breast with a light ferruginous stripe down its centre, outer webs of the quills the same colour as the back, &c. It is, in fact, very nearly allied to *P. pyrrhodes*, with which I have compared it.

6. DYSITHAMNUS PUNCTICEPS, sp. n.

♂. *D. supra cinereus, plumis pilei a fronte ad nucham nigris cinereo excisis et macula in poyonio utrinque subapicali alba: capitis lateribus albo fasciatis, loris albidis: alis fuscis, extus cinereis dorso concoloribus, tectricibus alarum macula alba ter-*

minatis: alula spuria nigra, externe albo marginata: tectricibus subalaribus albis: cauda fusco-cinerea: subtus gula et pectore albis, nigro lineatis; ventre medio albo; corporis lateribus cinereo olivaceis: rostro superiore nigro, inferiore et pedibus plumbeis.

♀. *Supra obscure olivaceo-fuscus; plumis pilei fulvis, rachide nigra et nigro terminatis: subtus gula alba, nigro striata; pectore et ventre fulvis, illo nigro striato: alis extus brunneis, tectricibus fulvo maculatis; cauda fusco-nigra; rostro superiore nigro, inferiore et pedibus plumbeis.*

♂. Long. tota 4 poll., alæ 2·25, caudæ 1·5, tarsi ·85, rostri a rictu ·8.

Hab. Veragua.

Obs. *D. striaticipiti*, Lawr. (Ann. of N. Y. Lyc.), affinis, sed capite punctato nec striato, dorsoque cinereo nec olivaceo facile dignoscendus.

This species, and probably *D. striaticeps*, Lawr., ought perhaps to be referred to the genus *Thamnophilus* rather than to *Dysithamnus*, the bill being stronger than in any member of the latter genus, and even more abruptly hooked than in most *Thamnophili*. The bill, however, is not so high; and in this respect, and in having weaker legs and feet, the form more resembles *Dysithamnus*; while, on the other hand, the tail is more rounded.

7. FORMICARIUS RUFPECTUS, sp. n. (Pl. VIII.)

F. supra fusco-niger, uropygio obscure rufo, pileo etiam rufo tincto: loris et gutture nigris: pectore, crisso et ventre medio castaneo-rufis, hoc dilutiore; corporis lateribus fuliginosis: rostro nigro, pedibus fuscis.

Long. tota 7 poll., alæ 3·4, caudæ 2·25, tarsi 1·5, rostri a rictu 1·1.

Affinis *F. anali*, D'Orb. et Lafr., sed pectore castaneo-rufo primo visu distinguendus.

The genus *Formicarius* seems well defined, and separable from the allied forms by several trenchant characters. The plumage consists of short, moderately firm feathers, giving the bird a compact appearance, very different from that of *Phlogopsis*, all members of which genus have softer and longer feathers, more like those of *Pithys* and its affines. The region behind the eye is naked; in *Phlogopsis* the entire circlet is bare. The supranasal feathers of *Formicarius* are short and compact; in *Phlogopsis* they are long and prominent. The scutella of the tarsi of the former are distinct and divided, while *Phlogopsis* has a single shield on the front of the tarsus. The nostril of *Formicarius* is oblong and situated nearer the base of the bill than that of *Phlogopsis*, which is nearly round. The hind claw is longer and less curved. The tail is shorter, stiffer, and less rounded. I have compared these two genera more minutely, as several species have been included under *Formicarius* which indubitably belong to *Phlogopsis*. This latter genus contains four (perhaps five) species, viz., *P. nigro-maculata* (Lafr. & D'Orb.), Syn. Av. in Mag. de Zool. 1837, p. 14; *P. erythroptera* (Gould), Ann. N. H. ser. 2. xv. p. 345;

P. macleannani, Lawr. Ann. N. Y. Lyc.; and *P. trivittatus* (Scl.), P. Z. S. 1857, p. 47. *Pyriglena ellisiana*, Scl. P. Z. S. 1855, p. 109, pl. 100 (*Phlogopsis ellisiana*, Cat. Suppl. 1160*), belongs elsewhere. This leaves seven species for *Formicarius*, which I now enumerate, having before me examples of all the species.

Sect. *a*. Sp. aff. *F. cayennensi*, pileo castaneo, loris omnino nigris.

(1.) *F. CAYENNENSIS*, Bodd. ex Buffon, Pl. Enl. 821, et juv. 827; Scl. P. Z. S. 1858, p. 277.

The last reference gives the numerous synonyms of this species.

Supra olivaceo-brunneus; regione oculari, gula et pectore nigricantibus, pileo toto castaneo-fulvo; corpore subtus et crisso fuscis; alula spuria extus castanea.

Long. tota 6·75 poll., alæ 3·3, caudæ 2·2, tarsi 1·15.

Hab. in Guiana, Cayenne, et Brasilia.

A specimen in our collection from South-east Brazil has the head much more lightly coloured than one in Dr. Scater's collection, which agrees with others in the British Museum. I have not, however, from my present materials, been able to detect other differences sufficient to warrant its separation. Young birds have the lores white—a character of the *moniliger* group.

(2.) *F. NIGRIFRONS*, Gould, Ann. N. H. ser. 2. xv. p. 344, et P. Z. S. 1855, pp. 68, 145; Scl. P. Z. S. 1858, p. 277.

Similis præcedenti, sed fronte nigra; ungue postico brevior et debiliore.

Long. tota 6·75 poll., alæ 3·3, caudæ 2·0, tarsi 1·15.

Hab. in Eastern Peru, New Granada.

The colouring of the head agrees with Cayenne specimens.

Sect. *b*. Sp. aff. *F. anali*, loris omnino nigris.

(3.) *F. ANALIS*, D'Orb. & Lafr. Mag. de Zool. 1837, p. 14; D'Orb. Voy. p. 191, pl. 6. f. 1; Bp. Cons. p. 205; Scl. P. Z. S. 1860, p. 294.

Supra brunneus, capite toto et corpore subtus ad ventrem nigricantibus, abdomine fuliginoso, crisso vivide rufo.

Long. tota 7 poll., alæ 3·75, caudæ 2·1, tarsi 1·3.

Hab. in Bolivia, Ecuador, Panama, Costa Rica.

A specimen in our collection from Costa Rica has the bill much larger than the two from Ecuador in Dr. Scater's collection. It is also larger in all its dimensions, except in the length of the tarsi. A young bird from Veragua exhibits the precise plumage of the adult.

(4.) *F. RUFPECTUS*, Salv. (*vide supra*).

Hab. in Veragua.

Sect. c. Sp. aff. *F. moniliger*, macula in loris alba, colli lateribus rufis.

(5.) *F. MONILIGER*, ScL. P. Z. S. 1856, p. 294, & 1858, p. 278; ScL. & Salv. Ibis, 1861, p. 353; Cab. Journ. f. Orn. 1861, p. 96.

F. supra brunneus, pileo nigricantiore: gutture nigro, infra rufo cincto: subtus fuliginosus, abdomine medio griseo, crisso rufescentiore.

Long. tota 7 poll., alæ 3·65, caudæ 2·2, tarsi 1·25.

Hab. in Mexico et Guatemala.

(6.) *F. HOFFMANNI*, Cab. Journ. f. Orn. 1861, p. 96; ScL. & Salv. P. Z. S. 1864, p. 357.

Similis præcedenti, sed corpore subtus cinerascentiore, torque subgulari fere absente, crisso vivide rufo.

JUV. *Gula albida rufo tineta.*

Long. tota 6 poll., alæ 3·5, caudæ 2·1, tarsi 1·25.

Hab. in Panama et Costa Rica.

This species is certainly very closely allied to *F. moniliger*, but the above differences are constant in every specimen I have seen. The rufous band of *F. moniliger* is not absolutely wanting in *F. hoffmanni*, but is irregularly and faintly defined.

(7.) *F. CRISSALIS*, Cab. Journ. f. Orn. *Myiothera analis*, Cab. Schom. Guian. iii. p. 686. *F. analis*, ScL. P. Z. S. 1858, p. 277.

Similis præcedentibus, sed corpore subtus fuliginoso, crisso late rufo distinguendus.

Long. tota 6·7 poll., alæ 3·55, caudæ 2·1, tarsi 1·3.

Hab. in Trinidad, Guiana, Cayenne, Para.

In this species the lower edge of the black throat is not clearly defined, but blends gradually into the sooty colour of the breast. The crissum is deeper in colour than that of *F. hoffmanni*, resembling that of *F. analis* in this respect.

In every one of the above species the inner web of the base of the primary and secondary quills is pale fulvous; the under wing-coverts sooty black, while those nearer the shoulder have their bases pale fulvous.

8. TROGON CLATHRATUS, sp. n.

T. æneo-viridescens: corpore supra, capite toto et pectore concoloribus: regione oculari nigra: ventre et crisso late coccineis: alis nigris, secundariis extus et tectricibus omnibus minutissime albo variegatis; remigibus, nisi primus, albo marginatis: reetricibus duabus mediis dorso concoloribus, fascia apicali nigra, duabus utrinque proximis nigris, extus æneo-viridescens, reliquis nigris, lineis angustis regulariter transversim notatis: rostro flavo, pedibus plumbeis.

Long. tota 12 poll., alæ 6·2, caudæ 6·2, tarsi 6, rostri a rictu 1.

Hab. in Veragua.

At first sight this very distinct species has the appearance of *T. massena*, Gould; but in addition to a considerable inferiority in size,

the barred tail, a characteristic of a different section of the *Trogonidae*, viz. of that which includes *T. puella*, Gould, at once shows its complete distinctness. It partakes in fact to some extent of the characters of both the above-mentioned groups. There are five distinct notches on the edges of both upper and lower mandibles; but these are neither so deep nor so large as in *T. massena*.

The collection contains two males in adult plumage, but no female. Mr. Gould, who has kindly examined these specimens, considers the species to be quite distinct from any previously known to him.

8. Notes on the Breeding of several Species of Birds in the Society's Gardens during the year 1865. By A. D. BARTLETT, Superintendent of the Society's Gardens.

(Plate IX.)

The year just passed has been somewhat remarkable from the long continuance during the summer and autumn of dry hot weather; and this has probably much influenced the breeding, and the tendency to breed, among many animals that have not before reproduced, or shown signs of reproducing, in the Society's Gardens.

Among these, perhaps the most interesting to notice will be the Sun-Bittern (*Eurypyga helias*). A pair of these birds were purchased in September 1862, and have always appeared in good health and condition. Early in the month of May last they began to show signs of breeding, by carrying bits of stick, roots of grass, and other materials about; they were constantly walking round the pond, evidently in search of materials to compose a nest, and appeared to try and mix wet dirt with bits of moss, &c. This suggested the idea of supplying them with wet clay and mud, which they at once commenced to use. After a short time they settled to make a nest on the top of a pole or tree about 10 feet from the ground, on which was fixed an old straw nest. Both birds carried up mud and clay mixed with bits of straw, roots of grass, &c. The sides of the nest were raised, and thickly plastered inside with mud. One morning the keeper Travis came to me with the fragments of a broken egg, which he found on the ground under the place where the nest was, telling me he believed the egg had been dropped by the Sun-Bittern. Upon looking at the fragments I observed that the egg was spotted at the broad end, and that it resembled the egg of a Moor-hen, or perhaps rather the egg of a Woodcock than any other bird. I felt doubtful of the correctness of Travis's information, the more so as there was in the same aviary a Blue Water-hen which I strongly suspected to have been the producer of the egg in question. I therefore removed this bird, to prevent any mistake; and in the early part of June Travis again called my attention to the Sun-Bitterns, the female having laid an egg in the nest. I at once went up a ladder to look at it, and found it agree in every respect with the egg



ILLUSTRATED BY J. G. COOPER

1 EUKYPYGA HELIAS. Pull
2 PTEROCLES ALCHATA. Pull



already spoken of. The two birds were very attentive, and took turns at incubation, and in twenty-seven days the young bird was hatched (July 9th). On the following day I ventured to look at the young bird, and in a few seconds made a rough sketch of it, as I was fearful that the inspection of a stranger might interfere with and perhaps cause the old birds to desert the young one. Mr. Jennens has, however, made a very correct drawing of the bird from my description and sketch (see Pl. IX. fig. 1); it is certainly one of the prettiest young birds I ever saw. It is thickly covered with fine short tufts of down, and much resembles the young of the Plovers and Snipes, with this addition, that the head and body was thinly covered with rather longer hairs than are to be seen in the former-mentioned birds. The young bird remained in the nest and was fed regularly by both parents, the food consisting principally of small live fish, a few insects, &c. The mode of taking its food was somewhat peculiar: it did not gape and call or utter any cry like most nestlings; but as soon as the old birds flew upon the nest with the food in their bills, the young one snapped or pecked it from them and swallowed it at once. The young bird remained in the nest twenty-one days, by which time its wings were sufficiently grown to enable it to fly to the ground. It was there fed as before, and never afterwards returned to the nest; it grew quickly, and at the end of two months was indistinguishable from the old birds. Early in August the old birds began to repair the nest, and added a fresh lining of mud and clay, and at the end of August laid another egg. The male bird now appeared to attend to the duties of incubation with much greater care than his partner, who fed the now nearly full-grown young one; they, however, managed to hatch this second young bird on the 28th of September. But as both the old birds were seen feeding the *first* young one more frequently than the *second*, the keeper Travis was afraid the little fellow might starve from their neglect; so he frequently went up the ladder to the nest and fed the young one. It readily took food from his hand; and in this way both the young birds have arrived at maturity, and now appear perfectly adult.

In remarking upon these interesting facts, I may observe that the egg differs considerably from the eggs of any true Ardeine bird with which I am acquainted in its spotted and blotched markings, and in this character bears a strong resemblance to those of the Plovers and Snipes; nor are these the only resemblances, its downy covering, colour, and markings leading one to regard it as allied to these forms. The great difference, however, in habit is remarkable, as in all the Plovers and Snipes the young birds run about as soon as they are hatched or a few hours afterwards, and, as far as I know, find their own food. We have therefore in the inactivity of this bird in the nest, and in its being fed by the parent bird, an Ardeine character. I must not omit to call attention to another form, the genus *Rhy-chæa*, or Painted Snipe. I am inclined to believe, from some of the habits of this genus, that it may have affinities with *Eurypyga*; but I have not been able to determine this, not having the materials

(perfect specimens) to examine. That *Eurypyga* is less of a Heron than has generally been thought must now be admitted, and the spotted egg, together with the downy young one, abundantly shows. I feel, however, certain that this bird has its nearest ally in the Kagu (*Rhinochetus jubatus*), as has been already stated (see P. Z. S. 1862, p. 218).

Since writing the foregoing, Mr. Bates has called my attention to his account of the habits of this bird, published in vol. i. page 82 of the 'Naturalist on the River Amazon,' from which I copy the following:—

“I was told by the Indians that it (the Sunbittern) builds in trees, and that the nest, which is made of clay, is beautifully constructed”*.

The Pin-tailed Sand-Grouse (*Pterocles alchata*) have repeatedly laid eggs in the aviary, and made frequent attempts to hatch them without success until the last summer, when two eggs were laid about the 4th of August, in a small depression in the sand in the aviary, and on the 29th of August one young bird was hatched, from which the figure (Pl. IX. fig. 2) was taken a day or two afterwards. The young bird was tolerably active, but much less so than the young of a Fowl, Pheasant, or Partridge, probably owing to the shortness of its legs; it was at the same time strong and vigorous, and grew to a considerable size, but died before it reached maturity.

Of other birds that have laid eggs, and some of which have hatched for the first time, I may mention the following:—

Hatched.

- Nicobar Pigeon (*Calœnas nicobarica*).
- Lineated Pheasant (*Euplocamus lineatus*).
- Spotted-sided Finch (*Amadina lathamii*).
- Variiegated Sheldrake (*Tadorna variegata*).

Laid eggs.

- Scarlet Ibis (*Ibis rubra*).
- Saras Crane (*Grus antigone*).
- Hardwick's Francolin (*Galloperdix lunulosa*).
- Red-headed Pigeon (*Erythrœnas pulcherrima*).
- Guira Cuckoo (*Guira piririgua*).
- Sœmmering's Pheasant (*Phasianus sœmmeringii*).
- Cinereous Vulture (*Vultur monachus*).
- Long-billed Butcherbird (*Barita destructor*).
- Wattled Fruit-Pigeon (*Carpophaga microcera*).

THE NICOBAR PIGEON (*Calœnas nicobarica*).

A pair of these birds took possession, in the early part of June, of an artificial nest made of straw and sticks, and laid one white egg; the nest was 10 or 12 feet from the ground. The period of incubation was twenty-eight days. The young bird when hatched was

* Consult also the notes on the nidification of this bird by the well-known French naturalist Goudot, in the 'Revue Zoologique,' 1843, p. 1; and the figure of the egg given in the 'Magasin de Zoologie,' 1843.—ED.

black, or nearly so, and naked ; the down-feathers grew slowly ; and the tail-feathers, which are white in the adult birds, are black in the young one, and still continue so. This led to the young bird being described a few years ago as a second species*.

GUIRA CUCKOO (*Guira piririgua*).

One of these birds during the early part of the summer dropped or laid an egg on the ground in the aviary ; but unfortunately the specimen was broken by the fall, or by the birds themselves or their companions. Sufficient pieces, however, were saved to enable a good drawing to be made ; and it is interesting to find this bird lays an egg that agrees completely with the egg of the Anis (*Crotophaga*), to which it is doubtless closely allied.

SCARLET IBIS (*Ibis rubra*).

A female of this bird has been in the aviary with other birds since March 1864 ; and, notwithstanding that there were three of her own species in the same aviary, she paired with a white Ibis in June last. These two birds built a nest upon the ground, composed principally of twigs, pieces of birch-broom, sticks, &c., upon which was laid an egg of a pale green, thickly spotted and blotched with a dirty-brown colour. The egg was constantly attended by both birds, and the nest was raised considerably under the egg by the constant addition of materials, the egg being rolled from side to side as the sticks, &c., were placed under it. This raising the nest continued for about ten days, after which time the birds began to incubate, taking turns on the egg. After sitting four weeks, the egg was found to be addled, and was removed in order to save the specimen, which is now on the table.

February 13, 1866.

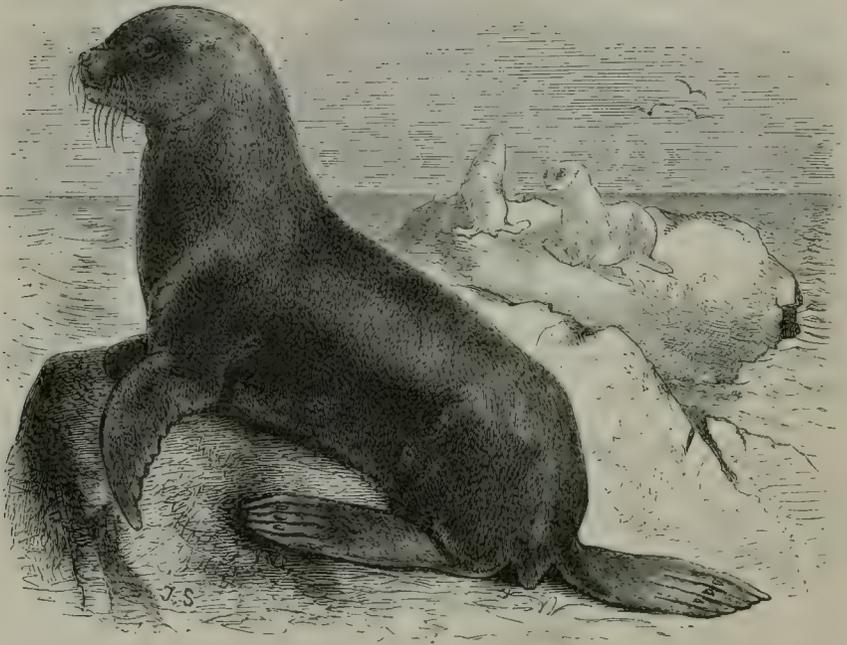
John Gould, Esq., F.R.S., V.P., in the Chair.

Mr. Sclater called the attention of the Meeting to three Monkeys recently received from the Island of St. Kitts, West Indies. Mr. Edward Greey, Fellow of the Society, having reported the existence of Monkeys in a wild state in considerable numbers upon this island, had been urged by Mr. Sclater to attempt to obtain some specimens, in order that it might be ascertained to what species they were referable, as it had been always believed that there were no native *Quadrumana* in the Lesser Antilles. Through the assistance of Mr. John Carden, of St. Kitts, Mr. Greey had succeeded in obtaining a specimen of this Monkey ; and two others from the same island had

* *Columba gouldiæ*, Gray, Ind. Zool. pl. 37 ; *Catœnas gouldiæ*, auct.

at the same time been presented to the Society by Mr. H. B. Cameron, Superintendent of the R. W. I. M. S. P. Company at St. Thomas's. The animals were undoubtedly referable to the common Green Monkey (*Cercopithecus callitrichus*, Geoffr.) of Western Africa, and must have been introduced years ago, as they were stated to be now very abundant in the woods of St. Kitts, and to cause great damage to the sugar-plantations.

Mr. Selater also called the attention of the Meeting to several recent additions to the Society's Menagerie. Amongst these were particularly noted:—(1) A young male Sea-Bear (*Otaria hookeri*), which had been captured on the sea-shore near Cape Horn, in the month of June 1862, by a French sailor named Leconte, then serving on board the 'Paulina' of Buenos Ayres. A female captured shortly



afterwards had not survived to reach Europe. M. Leconte had kept the animal ever since, and had made an exhibition of it in various parts of France and England. (2) A female Formosan Deer (*Cervus taevanus*), purchased for the Society in China by Mr. Swinhoe, and more particularly acceptable, as a male of this fine new species had been now for some time in the Menagerie without a mate.

Mr. Selater exhibited part of a collection of Mammals and Birds forwarded by Mr. Henry Whiteley from Japan, having been collected in the vicinity of Nagasaki during the summer of 1865, and made remarks upon some of the more interesting species contained in it. Amongst these were examples of *Mustela melampus*, Temm.,

Urotrichus talpoides, Temm., *Dicrurus leucophæus*, Vieill., and *Urocissa sinensis*.

Mr. W. H. Flower read the first part of a Memoir on the Osteology of the Sperm-Whale (*Physeter*). This will be published in the Society's 'Transactions,' with Illustrations,

The following papers were read:—

1. A Revision of the Genera of Rhinolophidæ, or Horseshoe Bats. By Dr. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S., &c.

At the preceding Meeting I gave an account of the genera of *Pteropidæ*. I have lately been revising my former manuscript on the Horseshoe Bats, and adding descriptions of the specimens which have been received at the British Museum since it was composed.

The family *Rhinolophidæ* is characterized as containing Leaf-nosed Bats, which have only rudimentary intermaxillary bones, suspended in the nasal cartilages. They sometimes have upper cutting-teeth; but these are generally early deciduous. The hinder, erect portion of the nose-leaf is often complicated and divided by septa into cells.

I. *Nose-leaf broad, expanded, horseshoe-shaped in front, with the nostril near the centre; the hinder portion erect, triangular, acute, with cells on the side of its front surface. Tragus none.*

1. *The hinder, erect part of the nose-leaf with three cells on each side in front, and a compressed central process; front portion simple, without any pits. Tail and heel-bone distinct. Teeth 32; molars 3/3, premolars 2/3. Rhinolophina.*

1. **AQUIAS.** Front edge of the central longitudinal nasal process broad, with a membranous edge, which is expanded and folded down on each side of its base. *A. luctus* and *A. trifoliata*.

2. **PHYLLOTIS.** Front of the central longitudinal nasal process broad, with a membranous edge, which is continued so as to form a concavity between the nostrils. *P. philippensis*.

3. **RHINOLOPHUS.** Front of the central longitudinal nasal process flat, without any membrane on the edge or lobe at the side of the base. *R. hastatus*.

2. *The hinder, erect part of the nose-leaf with one cell on each side, and one in the centre of the front, and with a compressed longitudinal process; the front, horseshoe-shaped portion fringed with a longitudinal crest, ending in a pit between the nostrils. Rhinonycterina.*

4. **RHINONYCTERIS.** *R. aurantius*.

II. *The hinder portion of the nose-leaf convex, with a transverse ridge in front below, with the broad apex bent down over the ridge, and divided by longitudinal folds into cells beneath; without any central longitudinal ridge in front.*

Phyllorhina

1. *The upper edge of the upper part of the nose-leaf entire. Tail and heel-bone distinct. Teeth 30; molars 3/3, premolars 1/2.*

5. MACRONYCTERIS. Forehead with a central longitudinal pore in both sexes; horseshoe portion of the nose-leaf with raised membranaceous edges, forming a cup; sides of the nose leafy; forehead hairy. *M. gigas*.

6. GLOIONYCTERIS. Forehead with a transverse pore in both sexes; the horseshoe portion of the nose-leaf with a raised membranaceous edge, forming a cup; sides of the nose leafy; forehead glandular on the sides. *G. armigera*.

7. RHINOPHYLLA. Forehead with a small transverse pore with two small pores close together on each side of it; front edge of the horseshoe portion of the nose-leaf raised, membranaceous, and bent up in the middle, forming a central notch; sides of the nose leafy; forehead hairy; wings from lower part of the ankles. *R. labuanensis*.

8. SPEORIFERA. Forehead with a large transverse pore in the males, and its place marked with a pencil of dark hairs in the females, and with two pores on the sides; the front edge of the horseshoe portion of the nose-leaf closely applied to the lip; sides of nose leafy; forehead hairy. *S. vulgaris*.

9. CHRYSONYCTERIS. Forehead with a transverse central pore in both sexes, with two pores near it on each side of it; the front edge of the horseshoe portion of the nose-leaf flat, closely applied to the lip; sides of the nose leafy; forehead hairy. *C. fulva*.

10. PHYLLORHINA. Forehead without any pores behind the nose-leaf. *P. nobilis* and *P. pygmæa*.

2. *Upper edge of the upper part of the nose-leaf two- or three-toothed. Teeth 28; molars 3/3, premolars 1/2.*

11. ASELLIA. The upper edge of the upper part of the nose-leaf three-toothed. Tail and heel-bone distinct, produced. *A. tridens* and *A. tricuspadata*.

12. CÆLOPS. The upper edge of the upper part of the nose-leaf two-toothed. Tail and heel-bone none. *C. frithii*.

III. *Nose-leaf simple, coriaceous; the hinder, upper portion erect, leaf-like, without any cells in front. Tragus distinct.*

1. *The nose-leaf flat, with the nostril simply pierced in its front part. Forehead concave. Tail elongate, free, longer than the short interfemoral membrane. Teeth 28; molars 3/3, premolars 1/2. Rhinopomina.*

13. RHINOPOMA. *R. microphyllum*.

2. *Nose-leaf with a central midrib, the sides of which are extended downwards between and covering the nostrils. Tail none; interfemoral membrane very large. Megadermina.*

14. MEGADERMA. *Nose-leaf divided into two parts by a transverse ridge behind the nostrils; front portion flat on the nose. Teeth 32; molars 3/3, premolars 2/2.*

a. *The transverse ridge ascending on each side, forming an oval disk. Megaderma. M. lyra.*

b. *The transverse ridge bent down in the centre, forming a cordate disk. Spasma. M. spasma.*

15. LAVIA. *Nose-leaf simple, without any transverse ridge behind the nostrils; the front portion concave, with a raised front edge. Teeth 30; molars 3/3, premolars 1/2. L. frons,*

IV. *The nostrils in the front of a deep longitudinal cavity on the nose, with two pairs of laminae on each side of it; the front pair with a subspirial fold in front. Tail elongate; terminal joint with a transverse process on each side, edging the membrane. Nycterina.*

The wings from the ankles; the skull broad; forehead with a deep circular concavity, truncated in front; intermaxillary well developed, free on the sides. Cutting-teeth $\frac{2-2}{6}$; upper free from the canines. Chin with two longitudinal ridges enclosing a triangular prominence.

16. NYCTERIS. *Ears united at the base, very long. Africa. N. thebaica.*

17. NYCTEROPS. *Ears separate, as long as the head. Africa. N. pilosa.*

18. PELATIA. *Ears separate, very long. Asia. P. javanica.*

The laminae on the sides of the nose-leaves and the glands on the forehead and other parts of the body may be very distinctly seen in the newly born specimens that have been preserved in spirits, the short hair allowing them to be seen more distinctly than in the adult animals.

The name of *trifoliatus* was given by Temminck to one species of the genus *Aquias*; and two species are distinguished by that author—one as having a nose-leaf like a St. Andrew's cross, and the other as having a nose-leaf like a trefoil; and they are so figured in his Monograph, ii. t. 30, 31. These forms of the nose-leaf, however, are entirely dependent on the art, or rather want of care, of the animal-preserver; for the lobes that are expanded to produce them are, in specimens preserved in spirits, and doubtless also in living animals, bent down over the cavity between the nostrils.

2. Report on the Mammals of Palestine. By the REV. H. B. TRISTRAM, M.A., F.L.S., C.M.Z.S.

The subjoined catalogue contains eighty species, all of which, excepting when the contrary is stated, were collected by us in our expedition in 1864. The mammalian fauna contains a much larger proportion of African species than any other branch of the fauna of the country. Twenty-three species may be considered strictly African or Arabian. All the others belong to the types of the Mediterranean basin, though several species are peculiar. It is remarkable that we have scarcely any trace of Indian forms. I believe that the list, considerable as it is, will be largely extended by further research in the southern and desert regions, especially as regards the Cheiroptera and Rodentia; for many species eluded our efforts to capture them, and, as all collectors know, no class of animated life so easily escapes observation. Of the Phocidæ and Cetacea of the coasts I am unable to give any information.

1. HYRAX SYRIACUS, Schreb.

“Shaphan,” Hebr. “Tübsoon,” Arab.

The Coney is not uncommon by the shores of the Dead Sea, in rocky gorges, rare in the rest of the country, but is occasionally found in the mountainous ridge north of the plain of Acre. Not known in Hermon, or the Lebanon; extremely abundant in the Sinaitic peninsula. Has three or four young at a birth.

2. SUS SCROFA, L.

Abundant in the wooded hills and maritime plains alike. Swarms in all the thickets by the Jordan and Dead Sea, and in the forest country east of Jordan. Extends even to the bare wilderness of Judæa, and almost into the desert, where there is no cover, and where its only food is the roots of the desert bulbs.

3. BOS TAURUS, L.

Neat cattle are not extensively reared in the central districts. In the south, and on the east side of Jordan, they are the principal stock. There are two very marked varieties:—(1) A small rough one, not unlike the Scotch horned cattle in appearance, but rather larger, which is the breed of the southern wilderness. There is also a larger race in the forests of Gilead. The colour of this breed is generally black or red, rarely with any white. (2) A very large Ox, apparently allied to the Tuscan breed, generally light-coloured, and called in the country the Armenian cattle. I have only observed it in the northern plains.

4. BOS BUBALUS, L.

The Buffalo takes the place of the common Ox in the Ghor or Jordan valley, especially in the northern districts and marshes of

Huleh. It is also reared by the Beni Sakkrs and other Bedouin tribes in the forest region of Bashan.

N.B. The remains of at least two extinct species of Ox were found by us in recent bone-breccia in caves in the Lebanon. They have been pronounced by Mr. Dawkins to belong probably to *Bos primigenius*, and *Bison bonasus*.

5. OVIS ARIES, L.

Two varieties of Sheep are found in Palestine, by far the most common being the broad-tailed Sheep, var. *laticaudata*, which, indeed, is the only race we observed in the southern parts of the country. The tail is frequently protected by a board placed on its underside; but we never saw the wheeled carts mentioned both by Herodotus and later writers. The other breed, which appears to be confined to the northern parts of the country, is a large-boned, rather narrow-backed animal, with somewhat of the character of the Merino, but larger and resembling in shape the old Cotswold breed of England. The ram is always horned.

6. CAPRA HIRCUS, L.

The Goat is more abundant in every part of this hilly and scantily watered country than the Sheep, and constitutes its chief wealth. There are at least three very distinct races found in Palestine. In the neighbourhood of Hermon is a breed very much resembling that of the British Isles. In the southern parts of Lebanon the Mohair Goat (*Capra angorensis*, L.) is bred for the sake of its long silky hair; but this variety is never found in the rough bushy districts which occupy the larger portion of Palestine. The common Syrian Goat (*Capra mambrica*, L.) is almost universal throughout the country. It is black, and may be at once recognized from any other race by the long pendent ears, a foot long, hanging down far below the recurved horns.

7. CAPRA BEDEN, Wagn. (= *C. sinaitica*, Ehrenb.).

The Syrian Ibex, or Beden of the Arabs. Only found in Palestine in the neighbourhood of the Dead Sea, especially about Engedi. Very abundant on the east side, in the mountains of Moab, and still more so throughout the Sinaitic peninsula. It formerly extended to the Lebanon, where its teeth have been found in cave-breccia by ourselves and by M. Lartét (see Bull. Soc. Géol. de France, xxii. p. 543). Quite as wild, nimble, and wary as the Ibex of the Alps. It drops its kid in March or April, and has but one at a birth. Several young ones were brought to us, and reared for some time by hand. The horns of the female are much smaller than those of the male. The flesh is excellent, far superior to that of the Gazelle. The horns of the male are subquadrangular, sharply emarginated at the inner anterior angle, and with from twenty to twenty-four (in fully adult specimens) bold ridges on the front face only.

8. ANTILOPE LEUCORYX, Pall.

Common in North Arabia, and found in the Belka and Hauran. Its horns may be purchased at Damascus.

9. ANTILOPE ADDAX, Licht.

More strictly confined to the desert regions than the former. I never obtained it, but have seen it near enough to be able to make out distinctly the species by the shape of the horns. Both of these Antelopes are well known to the Bedouin.

10. ALCELAPHUS BUBALIS, Pall.

"Bekker-el-wash," "Wild Cow," of the Arabs.

I never saw in Palestine this species, with which I am familiar in North Africa; but the Jehalin Arabs know it well by the same name, and assure me they often obtain it when it comes to drink at the streams on the east side of the Dead Sea.

11. GAZELLA DORCAS, Pall.

"Ghazal," Arab.

Extremely common in every part of the country south of Lebanon. It wanders in small bands everywhere, approaching even the gates of Jerusalem. I have seen it on the back of the Mount of Olives.

12. GAZELLA ARABICA, Ehrenb. (= *G. cora*, H. Smith).

Abundant on the east side of Jordan, especially in all the forest glades of Gilead.

13. CERVUS CAPREOLUS, L.

Only found, so far as our knowledge extends, in the bare hilly country of North-eastern Galilee.

14. DAMA VULGARIS, Gesn.

Rare. A few are still to be found on Mount Tabor, and the woods between that mountain and the gorge of the Litany River. We met with it once about ten miles west of the Sea of Galilee. Hasselquist mentions having found it on Mount Tabor. M. Lartêt has found its teeth in bone-breccia in the Lebanon, but does not appear to have been acquainted with the fact of its present existence in Palestine (see Bull. Soc. Géol. de France, xxii. p. 542).

[CERVUS ELAPHUS, L.

CERVUS TARANDUS, L.

ALCES PALMATUS, Gr.

Teeth and bones, ascribed to the Red Deer, Reindcer, and Elk, were found by us imbedded in breccia in the Lebanon, along with flint-flakes, thus proving the former existence of these species in a much lower latitude than had hitherto been ascertained.]

15. *CAMELUS DROMEDARIUS*, Erxl.

The common beast of burden in the south and east of Palestine. The Bactrian Camel we never saw, even in caravans from Persia.

16. *EQUUS CABALLUS*, L.

West of the Jordan the pure Arab breed is only to be found in the possession of sheikhs and wealthy men. East of the Jordan we never saw a badly bred horse.

17. *ASINUS VULGARIS*, Gr.

The most important beast of burden in the west and north. The Ass is taller, stronger, and fleetier in Palestine than in any other country I have visited. Much care is taken in the breeding; and in Galilee I have seen herds of several hundred breeding Asses.

18. *ASINUS HEMIPPUS*, Geoffr.

The Syrian wild Ass, though most common in Mesopotamia, is still found in the Ledjah and the Hauran, and is occasionally brought into Damascus.

19. *LEPUS SYRIACUS*, Ehrenb.

“Arneb,” Arab.

The only Hare in the wooded and cultivated portions of Palestine. Extends on the coast from the Lebanon and Hermon to Hebron and Gaza. It has four young at a birth. It is very different from the following species, with which it has been united by Giebel.

20. *LEPUS SINAITICUS*, Ehrenb.

“Arneb,” Arab.

Confined in Palestine to the immediate neighbourhood of the Dead Sea. Much smaller than the last species, with a longer and narrower head; ears half an inch longer, but the black tip not extending so far. Only found in the rocky district and gorges round the Dead Sea.

21. *LEPUS ÆGYPTIACUS*, Geoffr.

The Hare of the southern region of Judæa and of the Jordan valley. The ears are not quite so long as in the last species, which is smaller; and their inside edges are fringed with long white hairs. Abundant wherever found.

22. *LEPUS ISABELLINUS*, Cretzschm (= *L. æthiopicus*, Ehrenb.).

This species appears to be very scarce, and confined to the sandy deserts of the south-east. One specimen only was obtained by us. It may probably be a variety of the last species.

N.B. The Rabbit (*L. cuniculus*) does not exist in Syria.

23. *HYSTRIX CRISTATA*, L.

The Porcupine is common in all the rocky districts and mountain-glens. I have picked up a skull near the southern shore of the Dead Sea. Its flesh is highly prized by the Bedouin. We found no trace of the other species (*H. hirsutirostris*, Brandt) said to inhabit Syria.

24. *SPALAX TYPHLUS*, Pall.

Very common in all the plains and cultivated districts, and also among the hills wherever there is sufficient soil. Never observed in the Jordan valley. Resorts much to the débris of old ruins, among which it burrows. It is caught by a trap let into its run and baited with onion. I have kept a Blind Mole alive for several days in a box, and it ate heartily of carrots and onions.

25. *ACOMYS CAHIRRINUS*, Geoffr.

Confined entirely in Palestine to the Dead-Sea basin and the ravines abutting on it. We trapped it as far up the country as the monastery of Marsaba.

26. *ACOMYS DIMIDIATUS*, Rüpp.

More abundant than the former species on the Dead-Sea shores; but, so far as our observation goes, not extending up the rocky ravines. We trapped several, and I also shot it feeding in the daytime among the bare gravel above Ain Feshkhah.

27. *ACOMYS RUSSATUS*, Wagn.

Obtained by us once in the rocky ravine above Sebbeh, the ancient Masada. Very common about Sinai.

28. *MUS DECUMANUS*, Pall.

As common here as elsewhere.

29. *MUS TECTORUM*, Savi.

At Beyrout.

30. *MUS MUSCULUS*, L.

Common in all the towns.

31. *MUS SYLVATICUS*, L.

In the plains. Once captured in our tent.

32. *MUS PRÆTEXTUS*, Licht.

In the Jordan valley and Dead-Sea basin.

33. *CRICETUS*, sp.?

There is a species of Hamster not uncommon; but we were not fortunate enough to meet with it. Its habits are fully described by Russell in his 'Nat. Hist. of Aleppo.' It is perhaps the *C. auratus*, Waterhouse.

34. GERBILLUS TÆNIURUS, Wagn.

Mount Carmel and the hill country generally.

35. GERBILLUS MELANURUS, Rüpp.

In the Jordan valley and Dead-Sea basin.

36. GERBILLUS PYGARGUS, Cuv. ?

Another small species, which appears to answer to *G. pygargus* of Cuvier, and is found in the wilderness of Beersheba.

37. PSAMMOMYS OBESUS, Rüpp.

Extremely abundant in sandy places throughout the Dead-Sea basin and the plains and uplands of Southern Judæa.

38. PSAMMOMYS MYOSURUS, Wagn.

Appears to take the place of the above in the higher ground.

39. PSAMMOMYS TAMARACINUS, Kuhl ?

A small Rodent met with at the south end of the Dead Sea seems referable to this species.

40. DIPUS ÆGYPTIUS, Licht.

Very common in the desert.

41. ARVICOLA AMPHIBIUS, Desm.

Only observed by us in the north.

42. ARVICOLA MONTICOLA, Wagn.

I caught a Vole, near the snow-line on the top of Hermon, which, on comparison, appears identical with a specimen in my possession from the Pyrenees. If the species be identical, the range of this Vole is much more extensive than has been hitherto supposed.

43. ARVICOLA ARVALIS, De Sélys.

Very common.

44. ARVICOLA SOCIALIS, Desm.

In the desert near Damascus, and probably also in Southern Judæa, where we saw a very light-coloured, short-tailed Field-Vole.

45. GLIS VULGARIS, Kl.

The great Dormouse is very abundant in the oases of the Jordan valley, especially about Jericho, where it has its nest in every dôm-tree. Through some oversight we did not bring a specimen home; but it has been mentioned by several writers, from Russell downwards. At Jericho it was very lively in winter when disturbed.

46. MYOXUS NITELA, Desm. ?

47. *MYOXUS MELANURUS*, Wagn. ?

There are two smaller species of Dormouse—the one living chiefly in olive trees in Central Palestine, the other in holes in the rocks in the Dead-Sea basin. We did not succeed in preserving specimens ; but there can be little doubt as to the species, which have been mentioned by other writers as from Syria and Arabia Petræa. See Russell, Giebel, and Ehrenberg.

48. *SCIURUS SYRIACUS*, Ehrenb.

Extremely abundant in the woods south of Hermon, throughout the Lebanon, and at Damascus. Never noticed by us south of Banias.

49. *URSUS SYRIACUS*, Ehrenb.

Seen by us in a gorge behind Gennesaret. Found in a few places in the Lebanon. The snow near the top of Hermon was intersected in all directions by their tracks, and three were seen together on the top of Hermon by my friend the Rev. Fr. W. Holland.

50. *MELES VULGARIS*, Desm.

The Badger is found in every part of the country, and by no means scarce.

51. *MUSTELA PUTORIUS*, L.

In the north.

52. *MUSTELA VULGARIS*, Erxl.

A Weasel more than once escaped me. I do not think there can be much doubt of the species, which is found in Persia and Egypt.

53. *LUTRA VULGARIS*, Erxl.

By the Sea of Galilee.

54. *HERPESTES ICHNEUMON*, Wagn.

The Ichneumon is extremely common in every part of the country. It was scarcely possible ever to take a walk soon after sunrise without meeting with this little animal trotting away to its hole.

55. *VULPES NILOTICUS*, Rüpp.

The common Fox of the southern and central regions of Palestine. Extremely abundant in Judæa and on the east side of Jordan.

56. *VULPES FLAVESCENS*, Gray.

The Fox of the wooded districts of Galilee appears to agree with the diagnosis of *V. flavescens* of Dr. Gray (Ann. & Mag. N. H. xi. p. 118). Is it more than a variety of *V. vulgaris*?

57. *CANIS LUPUS*, Desm.

“Deeb,” Arab.

The Wolf is the dread of the shepherds from one end of the country

to the other, and a single Wolf is far more destructive than a whole pack of Jackals. Again and again have I put up the Syrian Wolf, and fired at it without success. Near Beersheba, in the hill country, in the forests of Bashan and Gilead, in the ravines of Galilee and Lebanon, and in the maritime plains it is alike distributed. We never saw two together, and I never heard of their hunting in packs. It is much to be wished that some traveller may be able to secure a specimen for examination; for it may possibly prove to be a distinct variety. It is of a lighter fawn-colour than any European Wolf I ever saw, and appears decidedly larger. I can confirm the statement of Dr. Russell, that the natives speak of another, larger and fiercer species, called "Sheeb;" but I could never obtain any clear definition of the distinctions between the two. Can the latter be *Canis lycaon*, Desm.?

58. CANIS FAMILIARIS, L.

Three distinct breeds of Dogs are found generally in Syria:—(1) The familiar Pariah Dog of the towns and villages. (2) The Sheep Dog, of the same build and type, but much larger, and resembling our Colly, or Scotch Sheep-Dog, which also it considerably exceeds in size; it is bold, intelligent, and faithful, and will rush on the wolf to its own destruction sooner than desert its flock. (3) The Persian Greyhound, much prized by the Bedouin sheikhs, and used for the chase of the Gazelle. With its elegant shape and the long silky hair of its ears and tail, it is perhaps the most beautiful race of its kind.

59. CANIS AUREUS, L. (= *C. syriacus*, Ehrenb.?).

The Jackal swarms in incredible numbers in every part of the country.

60. HYÆNA STRIATA, Zimm.

Common in every part of Palestine, and indifferent as to the character of the country. We obtained the young occasionally in spring, and procured on Mount Carmel the largest pair of adults I ever saw. The old rock-hewn tombs afford to the Hyæna convenient covert. It attacks the graves, even in the vicinity of towns.

61. FELIS JUBATA, Schreb.

The Cheetah is scarce, though found in different parts of the country. A few still haunt the neighbourhood of Tabor and the hills of Galilee. In Gilead it is more common, and a sheikh there presented me with three skins of Cheetah shot by his people.

62. FELIS LEO, Linn.

In spite of the assertions of several modern travellers, who have mistaken the Leopard for it, the Lion must be admitted to be now extinct in Palestine. Of its former abundance there can be no question, and it seems to have existed down to the times of the Crusades. Its bones have been found in recent diluvium by Dr. Roth.

It still occasionally occurs west of the Euphrates, and not many years ago a carcass was brought into Damascus.

63. *FELIS LEOPARDUS*, Linn.

“Nim’r,” Arab.

The Leopard is more generally distributed than the Cheetah, but in very small numbers. It is found all round the Dead Sea, in Gilead, and Bashan, and occasionally in the few wooded districts in the west. A magnificent pair were killed on Mount Carmel while we were there, and the skins purchased by the Pasha for £20.

64. *FELIS PARDINA*, Oken.

We never met with the Lynx; but I have occasionally seen, in the possession of the Arabs, battered skins which I take to belong to this species. It is spotted on the belly, and called “Wushak” by the Arabs.

65. *FELIS CARACAL*, Güld.

We never met with the Caracal; but have seen the skin, stated to have been killed in the east of the country.

66. *FELIS CHAUS*, Güld.

Several times seen by us, and once taken by us in a trap at Jericho.

67. *FELIS* — ?

I shot, in a wood near Carmel, a small Wild Cat, about two-thirds the size of *F. chaus*, and with a much longer tail. Though wounded, it escaped into an inaccessible crevice in the rocks. It is at any rate an additional species, not enumerated above.

68. *SOREX PYGMÆUS*, Pall.

I picked up one specimen dead among the cliffs under Marsaba.

69. *SOREX ARANEUS*.

The common Shrew of Northern Palestine.

70. *SOREX CRASSICAUDATUS*, Ehrenb.

This pretty silver-grey species is found in the desert and southern ravines.

71. *ERINACEUS EUROPÆUS*, L.

In the Lebanon. I believe the species in the south is smaller and distinct. Unfortunately three specimens of the latter which we kept alive made their escape. The Hedgehog is very common.

72. *PLECOTUS AURITUS* (L.).

By the Sea of Galilee.

73. *VESPERTILIO MURINUS*, L.

Tyre and Beyrout.





1/3

M & N Harhart imp

BOOBIA LARIBATA.

74. SCOTOPHILUS — ?

Plain of Acre.

75. VESPERUGO KUHLII, Kuhl.

Jerusalem, Cave of Adullam, and elsewhere.

76. TAPHOZOUS NUDIVENTRIS, Rüpp.

In immense numbers in ravines in Galilee.

77. RHINOPOMA MICROPHYLLUM, Geoffr.

Swarms in the Jordan valley and Dead-Sea basin.

78. RHINOLOPHUS FERRUM-EQUINUM, Leach.

Abundant throughout the country.

79. RHINOLOPHUS CLIVOSUS, Rüpp. ?

Near the Sea of Galilee.

80. XANTHARPYIA ÆGYPTIACA (Geoffr.).

In a cave in the wady Kern, Central Palestine.

3. On an Undescribed Species of Petrel from the Blue Mountains of Jamaica. By ALEXANDER CARTE, M.A., M.D. Dubl., M.R.I.A., F.L.S., &c.

(Plate X.)

In a collection of Jamaica birds, presented to the Natural-History Museum of the Royal Dublin Society by William Thomas March, Esq., of that island, were two specimens, male and female, of a species of *Procellaria*, marked "The Blue-Mountain Duck;" and as I believe no detailed account of this interesting bird has been hitherto published, I have much pleasure in forwarding to the Zoological Society of London the following description.

Both sexes are similar in size and colour of plumage.

PTERODROMA CARIBBÆA, n. sp. (Pl. XI.)

P. capite, collo, dorso alisque fuliginoso-nigricantibus; vertice et pogoniis externis primariarum plumarum aliquanto nigricantioribus; plumis abdominis tectricibusque sub cauda aliquantulum pallidioribus; tectricibus super caudam plumisque circum uropygium canis vel candidulis; iridibus fuscis; rostro, tarsis, pedibus unguibusque nigris.

Long. $12\frac{3}{4}$ poll.

Hab. Blue Mountains in insula Jamaica.

Colour.—Head, neck, back, and wings of a uniform dark sooty brown; vertex and external webs of the primaries a shade or so darker; abdominal feathers and under tail-coverts a shade or two lighter than those of the back; upper tail-coverts and basal portion of tail-feathers of a light grey or dirty white.

This light-coloured patch on the rump is conspicuous when the wings are expanded, but completely concealed when they are closed.

Irides dark hazel. Tarsi, toes, webs, and nails jet-black.

Dimensions.

	inches.
Length, from point of bill to tip of tail, about	12 $\frac{3}{4}$
Expanse of wings.	34
Length from carpal joint to tip of first primary	10 $\frac{3}{4}$
Length of bill, measured from the gape.	1 $\frac{5}{8}$
—— of nasal tubes	$\frac{1}{16}$
—— of interval between nostrils and commencement of apical curve of upper mandible	$\frac{1}{4}$
—— of tarsi	1 $\frac{5}{10}$
—— of toes, outer and middle, subequal	2
—— of inner toe	1 $\frac{5}{8}$
First and second primaries subequal, and about $\frac{1}{2}$ inch longer than the third. Tail about 4 $\frac{1}{2}$ inches long and round at extremity. The closed wings extend about 1 $\frac{1}{2}$ inch beyond the tail. Hallux small, and in shape triangular.	

This bird evidently belongs to that section of the *Procellariinae* to which Bonaparte* has assigned the name of *Pterodroma*, and, of the three species mentioned by him of this subgenus, appears to bear a close resemblance to *P. macroptera*, Smith, but differs from it in being somewhat smaller in size, and especially in having the basal portion of the tail and upper tail-coverts of a grey or dirty-white colour. This latter peculiarity will also serve as a distinguishing mark for it from *P. fuliginosa*, Banks, *P. atlantica*, Gould, and indeed from all the known species of this subgenus.

With respect to the habits of the bird, Mr. March has most kindly furnished me with the following interesting details:—

“It is a night-bird, living in burrows in the marly clefts of the mountains at the east and north-east end of the island.

“The burrows form a gallery 6 to 10 feet long, terminating in a chamber sufficiently commodious to accommodate the pair; from this they sally forth at night, flying over the sea in search of food (fishes), returning before dawn.

“It is often seen on moonlight nights and at sunrise running about the neighbourhood of its domicile, and sometimes crossing the road regardless of the labourers going to their work. I know nothing of its nidification.

“The first specimen recorded was obtained by the late George

* *Vide Conspectus Generum Avium*, tom. ii. p. 191.

Atkinson. The second by Sir Henry Barkly. The next, a pair, were sent by me to the Royal Dublin Society*.

“The last bird I have heard of was killed by a labourer digging cane-holes on the side of a hill on a property in Metcalf; the digging-bill suddenly sinking into the marl and cutting the bird through the back.”

Mr. Gosse†, in referring to what appears to me to be this bird, says, quoting from information supplied to him by Mr. Hill, “In the Blue Mountains, high up towards their summits, is a curious *burrowing* bird, which is called the Blue-Mountain Duck. It is described as having webbed feet, and a hooked parrot-bill. This description would indicate a species of *Alca*. It inhabits holes in the cliffs, and is said to burrow to the extent of 10 feet. Nothing is known of its habits of feeding. E. M’Geachy, Esq., Crown Surveyor of the County of Surrey, first informed me of the existence of such birds. He had himself taken them from the burrows. These facts have also been assured to me by other observers.”

Mr. Gosse also refers to a specimen of this bird as being in the possession of Mr. Atkinson of Newcastle-on-Tyne; but I have not been able to find that this gentleman ever published a description of it.

In Mr. March’s letter he says that Mr. Hill recognized the bird as that mentioned under the name of “Diabloton” by Attwood, in his work entitled ‘The History of the Island of Dominica,’ published in London in 1791; on referring to which, at page 30 *et seq.*, I find it thus described:—“The Diabloton, so called by the French from its uncommonly ugly appearance, is nearly the size of a Duck, and is web-footed. It has a big round head, crooked bill like a Hawk, and large full eyes like an Owl. Its head, part of the neck, chief feathers of the wings and tail are black, the other parts of its body are covered with a milky-white down; and its whole appearance is perfectly singular. They feed on fish, flying in great flocks to the sea-side in the night-time; and in their flight make a disagreeable loud noise like Owls, which bird they also resemble in their dislike of making their appearance in the daytime, when they are hid in holes in the mountains, where they are easily caught.”

As I am given to understand by Mr. March that the name of *Prion caribbaeum* has been applied to the bird by Mr. Mitchell in MS., I think it preferable, although I have failed to discover that this gentleman has left any record on the subject, to describe it under the same specific name, so as to avoid confusion in case it should hereafter be found that the species has been previously described.

* The specimens now described.

† Birds of Jamaica, p. 437.

4. On the Birds of the Vicinity of Lima, Peru. By P. L. SCLATER, M.A., Ph.D., F.R.S., &c. With Notes on their Habits; by Professor W. NATION, of Lima, C.M.Z.S. (Part I.)

(Plate XI.)

Our Corresponding Member, Prof. W. Nation, of Lima, Peru, has recently sent me a small collection of birds obtained in the vicinity of that city, to which he has been kind enough to add some interesting notes on their habits, localities, &c. I have carefully determined the species, and appended some few observations on the synonymy and other points which appeared to call for remark.

The ornithology of this part of Western Peru is not yet very well known to us, Tschudi's (somewhat imperfect) 'Fauna Peruana' being our chief authority on the subject. Some few species were collected on this coast during the voyage of the 'Beagle;' and the well-known French collector, Delattre, passed through Lima on one of his journeys. The new species obtained by the latter naturalist were described by Lafresnaye in the 'Revue Zoologique' for 1847.

Prof. Nation, who is a resident at Lima, informs me that he has made a considerable collection in this neighbourhood, and promises to send me a second portion of it for examination very shortly; so that I hope to have before long a second paper to submit to the Society on this subject.

The species contained in the present collection are the following, the nomenclature adopted being, unless the contrary is stated, that of my American Catalogue:—

1. *TURDUS CHIGUANCO*, Lafr. & D'Orb.

"Migratory: arrives in June, departs in October. Resorts to the valleys near Lima. Feeds on spiders, small snails, &c. Irides reddish brown."—W. N.

2. *MIMUS LONGICAUDATUS*, Tsch. F. P. p. 190, pl. 15. f. 2.

"Haunts corn-fields and woody parts of the Rimac. Feeds on worms, &c., and Indian corn. Nest artlessly made of small sticks in Acacia trees; lays two eggs. Irides blackish brown."—W. N.

This is the first specimen I have met with of this Mocking-bird, which, as Tschudi observes, is nearly related to the Chilian *M. thenca*, but differs in its longer and more curved bill and longer tail. *Mimus leucospilos*, von Pelzeln (Sitz. Ak. Wien, xxxi. p. 323), seems to be the same as Tschudi's bird.

3. *TROGLODYTES FURVUS* (Gm.).

"Found on the tufts of reeds, along with *Cyanotis omnicolor*. Habits just like those of *Cyanotis*. I have a nest; it is somewhat like the nest of the Marsh-Wren of North America. Irides brownish black."—W. N.



Small J. H. K.

W. & F. Hazenart, sculp.

Fig 1 MYIOBIUS NATIONI.
2 PULCHER



4. ANTHUS, sp.?

"Common in all the meadows near Lima: soars in the air almost perpendicularly for about 60 feet, and sings while ascending. Feeds on worms, &c. The female lays four eggs, of a dirty-white colour. Irides dark brown."—W. N.

5. TANAGRA DARWINI, Bp.

"Possibly *T. darwini*, but cannot be *T. striata*, as we have males and females here in Lima. Tschudi never saw a female; his description only refers to the male. In the months of August and September one or two male birds can be found in every fruit-garden in Lima. The females are extremely scarce. This year I shot in one garden thirty birds, and only obtained two females. When the fruit-season is over they go away, I do not know where. They rarely build in Lima; only once I saw a nest; it was on the top of a willow in a garden, in the month of September. A mischievous fellow shot the female on the nest. Irides reddish."—W. N.

Certainly *Tanagra darwini*, Bp. (*Tanagra frugilegus* of Tschudi's 'Fauna Peruana'), and quite distinct from *Tanagra striata* (Gm.), although at one time I held a contrary opinion. See my note, P. Z. S. 1858, p. 453.

6. SALTATOR STRIATIPLECTUS, Lafr.

"More common than *T. darwini*. Frequents fruit-gardens and bushes on the sides of cultivated fields. I think this species does not migrate like the other. Irides light red."—W. N.

7. CATAMENIA ANALOIDES (Lafr.).

"Migratory; I have one alive in a cage. I never saw this bird till last year. I ran after it day after day for three months. With all my trouble and expense I could only procure two birds. They generally arrive in December and go away in May. Feeds on the seeds of *Sida maculata*. I never saw a bird so graceful when it is in its bush feeding. Irides nearly black."—W. N.

In my American catalogue I have placed the genus *Catamenia* near *Spermophila*. I am now, however, quite convinced that it is much more nearly allied to *Phrygilus*. My *C. homochroa* is in fact an intermediate form, perhaps more correctly referable to the latter group.

8. VOLATINIA JACARINA (Linn.).

"One of the commonest birds around Lima, exceedingly tame and gentle. Makes its nest in low bushes; and lays two eggs, with brownish patches on a dirty-white surface. I have among my 'Birds of Peru' a carefully made drawing of the male and female, which, strange to say, have never been described yet by any ornithologist. All the descriptions I have seen refer to the male only. When the female is sitting on the eggs, the male makes a number of jumps in the air from a branch near the nest. Irides nearly black."—W. N.

9. *GEOSITTA PERUVIANA*, Lafr. Rev. Zool. 1847, p. 75.

"Frequents plains so dry and dusty that one would think nothing animate could be found in them. Feeds on atomic Coleopterous insects and spiders. I have lately found out its haunt. Irides brownish black."—W. N.

The first example I have met with of this interesting species, described by Lafresnaye from examples procured by Delattre near Lima.

10. *GEOSITTA CRASSIROSTRIS*, sp. nov.

"Found on the hills around Lima and by the sea-side. It is a very shy bird, and I know very little about it yet."—W. N.

I was inclined at first to refer this species to *Certhilauda tenuirostris*, D'Orb. (Voy. p. 359, pl. 43. f. 2), although it does not quite agree with D'Orbigny's description; but having entrusted the specimen to Mr. Salvin to compare with the typical specimens of that species in the Paris Museum, I am enabled, through his kindness, to say that it is quite different. I therefore propose to call it *Geositta crassirostris*. Its description is as follows:—

G. supra obscure nigricans, plumis pallido fusco marginatis; superciliis et capitis lateribus albicantibus: alis obscure nigris, remige externo unicolore, secundo et sequentibus plaga magna fulvo-rufa, gradatim crescente et in secundariis basin totam utriusque pogonii occupante, notatis: remigis septimi et sequentium et secundariorum apicibus fusco-rufis: subtus cinerascenti-alba, gutture puriore, lateribus et crisso fulvo tinctus: alarum tectricibus inferioribus læte rufis: cauda fulvo-rufa, fascia lata ante-apicali nigra; rectricibus duabus mediis dorso concoloribus: rostro et pedibus obscure fuscis.

Long. tota 6·5, alæ 3·6, caudæ 2·1, rostri a rictu lin. dir. 1·2, tarsi 1 poll. Angl.

Hab. in Peruviae occidentalis regione maritima.

Obs. Aff. *G. tenuirostri*, sed rostro brevior et crassior et alis brevioribus distinguenda.

Mr. Salvin remarks that "the bill of this species is *much* stronger and shorter than in *G. tenuirostris*, and that in the latter the bill is dark yellowish brown, clear yellow one-third of the base of the under mandible. Also the tarsi and feet of the present bird are much stouter, and the hind claw stronger and more curved. The whole bird is of a darker brown above than *G. tenuirostris*; the secondary quills and tail of *G. tenuirostris* have no subterminal dark band, or rather only have it faintly shown on the underside of the feather; the under plumage of *G. tenuirostris* is more tawny."

These differences have since been confirmed by examination of two examples of *G. tenuirostris* in the British Museum.

11. *PHLEOCRYPTES MELANOPS* (Vieill.).

"Everywhere near Lima, not a wall, not a ditch, not a heap of rubbish, but one or two of these birds can be seen. A Tartar for

the spiders. Makes its nest in old walls, banks, &c. Irides dark brown."—W. N.

12. *MUSCISAXICOLA MENTALIS*, Lafr. et D'Orb.

"Perhaps migratory. I saw this species for the first time last March in a meadow, running on the ground very fast and moving its tail. It feeds on Coleopterous insects. Irides dark brown."—W. N.

13. *SERPAPHAGA CINEREA* (Strickl.).

"Frequents sides of rivers, stony places in streams, and old arches. Hunts on the wing and on the ground. Feeds on Coleopterous insects. Solitary. Irides reddish brown."—W. N.

14. *CYANOTIS AZARÆ*, Licht.

"Haunts tufts of reeds in an inaccessible swamp a few miles from Lima. In habits and manner of feeding just like the American Marsh-Wren. Feeds on small insects on the reeds. Irides nearly black."—W. N.

15. *ELAINEA PAGANA* (Licht.).

"Migratory, arrives in December, departs in June. Feeds on berries of *Cestrum auriculatum*. I never saw a vestige of an insect on dissecting it. Irides blackish brown."—W. N.

16. *PYROCEPHALUS RUBINEUS* (Bodd.).

"Found all the year near Lima. Has all the habits of a *Tyrannus*. Frequents fields and open plains; feeding entirely on Coleopterous insects. Irides dark brown."—W. N.

I have hitherto referred west-coast specimens to *P. nanus*, Gould, described (Zool. Voy. Beagle, iii. p. 45) from the Galapagos. But I find on comparison they are not fairly distinguishable from the eastern bird. On the other hand, the northern *P. mexicanus* is decidedly of larger dimensions, as far as I can judge from my examples, and may for the present remain apart.

17. *PYROCEPHALUS OBSCURUS*, Gould.

"Has all the habits of the last species. I have shot some with a few red feathers on the breast mixed with the others. Irides dark brown."—W. N.

In my American Catalogue (p. 228) I have omitted to insert an important synonym of this species, viz. *Myiobius atropurpureus*, Tsch. F. P. Aves, pp. 24, 156.

18. *MYIOBIUS NATIONI*, sp. nov. (Pl. XI. fig. 1.)

"Resorts to bushes of the thickest foliage and in the most unfrequented places; hunts on the wing from branch to branch like a *Dendroeca*. Makes its nest at the extremity of a slender branch, in the fork. Irides dark brown."—W. N.

This little Tyrant appears to belong to an undescribed species of

Myiobius, to which I propose to append its discoverer's name as a specific appellation. It is most nearly allied to *M. cinnamomeus* and *M. vieillotides*, and must follow them in the arrangement which I have given of this group in these 'Proceedings' (1860, p. 466). It may be characterized as follows:—

M. Murino-brunneus, uropygio fulvicante : pilei plumis intus aurantiacis : alis caudaque obscure nigris, illarum fasciis duabus, tetricum apices occupantibus, cum toto corpore subtus clare fulvis ; rostro superiore nigro, inferiore pallescente : pedibus nigris.

Long. tota 4·5, alæ 2·3; caudæ 2.

Obs. Aff. *M. vieillotidi* et ejusdem formæ, sed statura minore, et corpore supra fusco subtus fulvo, nec rufo, distinguendus.

As a companion to the present bird, I figure (Pl. XI. f. 2) my *Myiobius pulcher*, of Ecuador, which was described in P. Z. S. 1860, p. 464.

19. COCCYZUS MELANOCORYPHUS, Vieill.

"Migratory, somewhat rare. I have procured eight or nine examples in thirteen years. Arrives in March, and stops with us a few months. Feeds on grasshoppers, caterpillars, &c. Resorts to low bushes and such as have thick foliage. Irides dark blue."—W. N.

20. CONURUS AURIFRONS (Less.).

"Abundant in the fields about Lima; always found in flocks of ten or twelve. Feeds on Indian corn. When they alight on a tree or bush they always select one of a light-green foliage. Makes its nest in the rocks, where they roost by night."—W. N.

21. CHAMÆPELIA ANAIS (Less.).

Metriopelia anais, Bp. Consp. ii. p. 76.

"Feeds on the plains, roofs of houses, and farmyards. Builds in holes in walls, &c., about Lima. When alive the naked space around the eye is of a beautiful yellow."—W. N.

22. CHAMÆPELIA AMAZILIA, Bp. Consp. ii. p. 78.

"Makes its nest on the ground among the alfalfa (Lucerne), and lays two eggs of a milky white. Feeds in meadows. Irides reddish."—W. N.

23. CHAMÆPELIA CRUZIANA (D'Orb.).

Columbula cruziana, Bp. Consp. ii. p. 80.

"Feeds on the ground, in places where there is little herbage. Makes its nest in a bush, a few feet from the ground. The female lays two eggs, of a milky white."—W. N.

5. Description of a New Species of Monœcious Worm, belonging to the Class Turbellaria and Genus *Serpentaria*.
By W. BAIRD, M.D., F.L.S., &c.

The Worm which I now bring before the notice of the Zoological Society is in the collection of the Derby Museum (the Free Public Museum) of Liverpool; and I am indebted to the kindness of Mr. Moore, the Curator of that institution, for an inspection of it. It was presented to the Museum by Captain Berry, of the ship 'Richard Cobden' of Liverpool; and I have given his name to the species.

SERPENTARIA BERRYI, nov. sp.

Body flattened, ribbon-shaped, thicker and broader at the anterior extremity, becoming thinner and narrower as it descends. The central portion of the body is the thickest, becoming sharp at the outer edges. The anterior part of the body is rather convex, and finely striated across for a length of about 5 or 6 inches. After that, it is smooth, but marked on the dorsal surface with a keel or raised narrow ridge, which runs down throughout the remainder of its length to the posterior extremity. It is divided into very numerous narrow segments. The mouth is very small and obscure. The fissures on each side of the head are distinctly marked; and the aperture underneath leading to the visceral cavity is large, oval, and strongly puckered on its inner edge. As preserved in spirits, the colour appears to be a uniform dull greyish yellow.

Total length of specimen, preserved in spirits, 16 inches; breadth at about 2 inches from the anterior extremity 9 lines, breadth near the tail about 3 lines.

In general shape this Worm approaches very nearly to one found on the northern shores of our own coast, the *Serpentaria fragilis* of Goodsir, especially as that species is represented by Sir J. Dalyell in his 'Powers of the Creator,' vol. ii. pl. 6. A large Worm from the coast near Montrose has also been described by Dr. Gray in the 'Proceedings of the Zoological Society' for 1857, under the name of *Lineus beattiae*, which in many respects resembles this species, though perhaps that may be identical with the *Serpentaria fragilis* of Goodsir.

Captain Berry, in his notes upon the capture of this Worm, says, "This Worm was taken in a drift-net off Singapore, and kept alive in a bucket of water for a day or two. When at rest it lay at the bottom, contracted to about 6 inches in length. When swimming, it stretched to about the length it now is (16 inches); but when irritated, it stretched to a length of between 2 and 3 feet. When put into spirits, it vomited the other Worm in the bottle."

One of the peculiarities of the family to which the genus *Serpentaria* belongs, is the curious facility which these Worms possess of vomiting, or expelling from the large aperture under the head, the whole of the alimentary canal. A case of this sort was recorded by

the late Mr. Beattie of Montrose, in regard to the *Lineus longissimus*, in the Society's 'Proceedings' for 1858 (p. 307). The specimen there referred to is now in the collection of the British Museum. We have a specimen also, in the same collection, of the *Serpentaria fragilis*, belonging to the collection of "non-parasitical Worms" of the late Dr. Johnston, which, according to the usual habit of these Worms, is broken into many pieces, and in which this tube or alimentary canal appears partly detached and partly remaining fixed in the body of the Worm. The case under notice at present is the third instance which has occurred to me of this curious fact. Capt. Berry, having seen the Worm vomit forth the whole tube, considered the expelled part an Entozoon; whilst Mr. Beattie, in his case, looked upon it as the young of the *Lineus*, thus making these animals to be viviparous. Diesing, in his 'Systema Helminthum,' mentions two genera in which this circumstance occurs, and quotes two species in which, he says, "tubus cibarius totus interdum expellitur." In all probability it is a circumstance which is common to all the species of the genera *Lineus*, *Meckelia*, and *Serpentaria*.

6. Notes on some Recent Brachiopoda dredged by the late Lucas Barrett off the North-east Coast of Jamaica, and now forming part of the Collection of Mr. R. MacAndrew. By THOMAS DAVIDSON, Esq., F.R.S., F.G.S., &c.

(Plate XII.)

During his residence in Jamaica the late Lucas Barrett dredged several new and interesting small species of Brachiopoda, which he brought to England in 1862, and placed in the hands of the late Dr. S. P. Woodward for description; but, alas! owing to that naturalist's state of health, this task was never accomplished. In May 1864 Dr. Woodward requested me to describe and figure a new and very remarkable species of *Thecidium*, which formed part of the little series above mentioned; and more recently Mr. R. MacAndrew has deposited the whole collection in my hands for description. I will therefore briefly allude to the species already known, and give descriptions of those that are new to science.

The Brachiopoda found by Mr. Barrett seem to belong to five species, of which three are new.

1. TEREBRATULINA CAPUT-SERPENTIS?

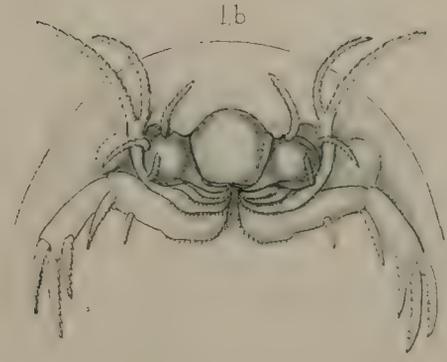
Some seven examples were dredged on the north-east coast of Jamaica, at depths of 60 and 150 fathoms; but as none of the specimens exceeded two lines in length and were very young shells, it is not possible to say with certainty whether the full-grown shell may not have presented peculiarities which would have distinguished it from Linnæus's well-known and far-spread species.



1a



1



1b



1c



1d



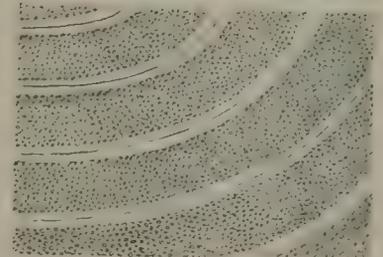
2a



2c



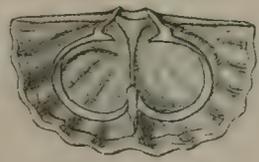
2b



2d



3a



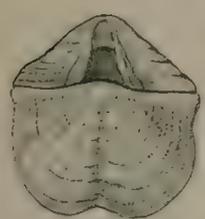
3b



3c



3



4a



4b



4c



4

W. Westring



2. *ARGIOPE BARRÉTTIANA*, Dav. (Pl. XII. fig. 3.)

Shell small, somewhat pentagonal; dorsal valve semicircular, slightly indented in front; hinge-line straight, as long as the entire breadth of the shell, and forming acute angles at its junction with the lateral margins of the valves; hinge-area narrow; valves unequally convex, dorsal valve very slightly so and with a shallow depression along the middle; ventral valve very convex, with a deep sinus. Surface ornamented with from eight to twelve corresponding radiating rounded ribs, with interspaces of almost equal width, but of which one is a little wider and deeper along the middle of each valve, while in the sinus of the larger valve there sometimes exists a smaller or shorter rib. Area in the ventral valve acutely triangular, foramen large, deltidium rudimentary: shell punctate. In the interior of the dorsal valve the apophysary system consists of a distinct loop or riband-shaped lamella, originating at the base of the sockets, and forming a curve on each side so as to meet and adhere to the single central prominent submarginal septum, this lamella being also partly confluent with the valve. Proportions variable; the largest specimen measured about 3 lines in length by a little more than 4 in width.

This beautiful *Argiope* is of a light yellow colour, the interspaces between the ribs being slightly tinged with red. It approaches most nearly to *Argiope cuneata* (Risso), but is a much larger shell, and possesses when full-grown a larger number of ribs. In external shape it also bears some resemblance to certain examples of *A. decollata*, as well as to some other fossil species, but may be at once distinguished by its loop, which is two- and not four-lobed.

Hab. North-east coast of Jamaica, at a depth of about 150 fathoms.

I have named this shell after my lamented friend Lucas Barrett, whose life was so prematurely sacrificed to his zeal for scientific discovery.

3. *ARGIOPE WOODWARDIANA*, Dav. (Pl. XII. fig. 4.)

Shell very small, somewhat pentagonal, indented in front; dorsal valve semicircular; hinge-line as long as the width of the shell, moderately convex, but divided into two lobes by a deep median sulcus; ventral valve deeper and more convex than the opposite one, and with a longitudinal groove along the middle; beak very prominent; area acutely triangular, foramen large, deltidium rudimentary. External surface smooth, whitish yellow, with a few red patches arranged in radiating interrupted lines from the beaks. The shell is also marked with numerous concentric lines of growth. In the interior of the dorsal valve the loop is two-lobed, adhering to a central submarginal elevated septum. Shell-structure punctate. Proportions variable; the largest specimen measured, length $2\frac{1}{2}$, breadth 2, depth $1\frac{3}{4}$ lines.

This interesting stout little shell differs from its congeners in its shape as well as in its smooth and spotted surface. It was also found alive by the late Lucas Barrett, at a depth of 60 fathoms, on the north-east coast of Jamaica, and is a much smaller shell than

the preceding one. We name it after our much lamented able friend Dr. S. P. Woodward, whose premature death was a very great loss to science as well as to his many friends; for no observer was more acute and conscientious or more correct in his varied researches.

4. *THECIDIUM BARRETTI*, Woodward, MS.; Davidson, Recent and Tertiary Species of *Thecidium* (Geological Magazine, i. pl. 2. f. 1, 2, 3, July 1864).

As stated in the paper above mentioned, in external shape this most remarkable species cannot be distinguished from the Mediterranean shell; but its interior is very different, and resembles, in its simple arrangements, that of several Jurassic forms, such as *Thecidium moorei*, *Th. triangulare*, &c.

Thecidium barretti was obtained by Mr. Barrett, at 60 fathoms, on the north-east coast of Jamaica, and was also found by him fossil in the newest pliocene beds of the same country.

5. *THECIDIUM MEDITERRANEUM*, Risso.

Two specimens of this species were dredged alive by Mr. Barrett, at 60 and 150 fathoms, on the north-east coast of Jamaica. In pl. 2. fig. 5, of vol. i. of the 'Geological Magazine' for July 1864, I have described and represented the interior of the dorsal valve of one of these specimens.

DESCRIPTION OF PLATE XII. figs. 3 & 4.

Fig. 3. *Argiope barrettiana*, nat. size.

3 a. ———, magnified.

3 b. ———, interior of dorsal valve.

3 c. ———, ventral valve of another specimen.

Fig. 4. *Argiope woodwardiana*, nat. size.

4 a. ———, magnified.

4 b. ———, profile view of both valves.

4 c. ———, ventral valve.

February 27, 1866.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

Mr. P. L. Sclater called the attention of the Meeting to the fine male example of the diminutive Pudu Deer of Chili (*Cervus pudu*), recently presented to the Society's Menagerie by Mr. Charles Bath of Ffynone, Swansea.

In the temporary letterpress accompanying the figure of this animal in the second series of 'Zoological Sketches' (pl. 11), Mr. Sclater had stated that it appeared somewhat dubious whether this Deer ever developed horns at all. There could, however, be no longer any doubt upon the subject, as the present example showed



Head of *Cervus pudu*, ♂.

a pair of small straight horns, without any branches, measuring about 2 inches in length.

Dr. Gray exhibited a series of glass models of *Actinæ*, made in Dresden, which had been presented to the Trustees of the British Museum by the Rev. Robert Hudson.

The following papers were read:—

1. On the Habits of the Prongbuck (*Antilocapra americana*), and the Periodical Shedding of its Horns. By COLBERT A. CANFIELD, M.D.*

“Monterey, California,
September 10, 1858.

“SIR,—Your report on the Mammalia of this western coast, and more especially the description and account of the Prong-horned Antelope (*Antilocapra americana*) in vol. viii. of the ‘Railroad Reports,’ has induced me to send you the results of my own observations on this Antelope, believing that I can furnish you some new facts that will sufficiently interest you to repay you for the trouble of learning them. I take the liberty of saying this because I have observed the Antelope for several years, have hunted them and killed a number of them (perhaps 150 of all ages and sexes), have caught and raised young ones, and am as familiar with them as most people are with goats and sheep. In the region where I have observed them (in the south-eastern part of the county of Monterey, California) they run in bands of from six or eight up to hundreds. I lived several years in a valley, half a mile wide and several miles long, surrounded by open, dry grass-hills, the favourite habitat of the Antelope. Scarcely a day passed that Antelopes did not pass by in sight of the house, or did not come down to the water (100 yards

* A letter addressed to Prof. Baird, Assistant Secretary to the Smithsonian Institution, Washington, F.M.Z.S., and communicated by him to the Society.

from the house) to drink. It was not difficult, when they came to drink, to kill them with a Colt's revolver.

From the first of September to the first of March Antelopes run in bands, the bucks, does, and kids all together. At the end of that time the does separate themselves from the band, one by one, to drop their kids; they produce two at a birth. After a little the does collect together with their young ones, probably for mutual protection against the Coyotes. The old bucks, in the meantime, go off alone, each one by himself, or at most two together, leaving the young bucks and young does together in small bands. The old bucks now for a month or two wander a great deal, and are seen in the timberlands and in other places where they never go at any other part of the year, evidently tired of 'the world,' and fleeing from society. After two or three months the young bucks and does join the old does and their kids; and finally, by the first of September, the old bucks and all are together once more in bands of hundreds or thousands. Any particular band of Antelopes does not leave the locality where they grow up, and never ranges more than a few miles in different directions. In the summer months they sometimes wander a little distance from their customary range for the sake of water, at which time they drink once a day, or sometimes twice in three days. But when there is any green food for them to eat they do not drink water; and this is the case the greater part of the year. When there is scarcely a blade of grass to be seen anywhere, I have been very much surprised to see the stomachs of Antelopes full of green food.

"A band of Antelopes, when frightened, never run directly away from you, but cross over in front of you, running across your path from one side to the other repeatedly, and keeping about 100 yards ahead. On this account it is sometimes easy on a smart horse to run into a drove of them and catch one of them with a noose.

"When an Antelope is alone, and is watching a person or animal, and becomes frightened, it makes a sort of shrill blowing noise like a whistle, and then commences bounding off. On the neck it has a heavy, thick, chestnut-coloured mane, 5 or 6 inches long, and on the rump a white patch of coarse hair; and when the animal is frightened it always erects the mane and the hair of the white spot on the breech, thus giving it a very singular and characteristic appearance as it runs bounding away from you. The Antelope has a very peculiar odour, strong and (to some persons) offensive. This comes principally from the glands in the white patch on the breech. One of these is placed over each prominence of the *ischium*, below and each side of the tail; and one over the junction of the *sacrum* with the spine, 6 or 8 inches anterior to the tail. From these glands a yellow saponaceous substance is secreted, which has a very powerful odour. In the males this odour is often much greater than in the females; so that it sometimes gives the meat of the bucks, when poor, a very rank flavour, offensive to most people; but on the whole I consider the meat of the Antelope to be very excellent, much better than that of the Black-tailed Deer. Of the pelage I can add only that there is frequently a very sparse

crop of woolly hairs among, and about two-thirds the length of, the coarse ones, and that the winter coat has a bluish or purplish cast when it first appears, and afterwards fades to a lighter colour. It is easy to catch the kids of the Antelopes while yet small, while only a few days old. If a week old, it is difficult to catch them, and they will not live if caught. One I obtained under very singular circumstances. I shot a doe Antelope very heavy with young, and broke one of her hind legs; I chased her down without much difficulty, and, immediately cutting her throat, opened the belly to empty it of its contents, when I perceived that one of the two fetuses with which she was pregnant was still alive. I instantly delivered it from the uterus and membranes and tied the umbilical cord. The kid (a male) breathed and was lively, and I carried it home three or four miles. It sucked readily an artificial teat supplied with cows' milk, and thrived well for several days. At the end of that time, being obliged to leave home, I left it (with one or two other little Antelopes) to be taken care of by other persons. For want of care they all died in my absence. Kids a day or two old, when chased, run a little way and throw themselves flat down on the ground to hide themselves. In three different seasons I caught some twenty little ones, but of all these I was able to raise only two males. Almost all young Antelopes, upon exercising a little patience towards them, will suck an artificial teat, and after a while learn to drink. I used a horn like a powder-horn, but open at the large end, and with a quill inserted in the small end so that it projected an inch, and wrapped around with soft cloth; I fed them on cows' milk, new and sweet. At first, for a few days, they are exposed to have an attack of diarrhoea or dysentery. If they escape this they live a long time, one, two, or three months, growing slowly; but at the end of this time all the female kids and almost all the male ones become diseased, have scrofulous inflammation of the joints, get a cough, become lame and poor, and finally die, after lingering some weeks. I never yet have known of a *female* Antelope being raised artificially; the males are more hardy, and with care nearly all can be raised. I think that cows' milk is not sufficient nutrition for them; for the milk of the Antelope is very rich and sweet, like that of the goat; and I should expect to succeed better in raising them on goats', or even by enriching cows' milk with sugar, boiled cornmeal, &c. In the spring of 1855, of seven or eight that I caught, I succeeded in starting only two kids, a buck and a doe. They both grew well for several months, were gentle and great pets, when the doe became diseased with the scrofulous trouble of which I have spoken, and, after three or four weeks, died of *phthisis pulmonalis*, as a *sectio cadaveris* showed. The male, however, continued in good health; and in July or August his horns began to appear, very small at first, conical, and concealed in the hair of the forehead. They grew to be perhaps $\frac{3}{4}$ of an inch long and quite blunt, when they dropped off, in the month of December I think, leaving small mammillary knobs that projected from the frontal region about $\frac{1}{2}$ an inch, and were slightly villous with silky hairs. Within a day or two, or a week at most, these

protuberances began to be tipped with a point of horn once more, that grew from the base, and increased in size for a year. They dropped off in January, I think, being about 5 inches long, slightly curved inwards at the tips, cylindrical, and the substance of the horn hard and well developed. The knobs that remained were about $1\frac{1}{2}$ inch long, slightly hairy, as before, and nearly concealed in the long hair that grows around the base of the horns at that time of the year. Sharp points immediately began to form as before; the knobs changed from a rounded form to an oval outline, longer from before backward; and, directly, another protuberance began to be developed at the base of each horn, in front; and each of these at length became tipped also with horn. These were the anterior prongs, not as yet connected with main horn, but which very soon became consolidated. This was the condition of the animal's horns in October 1857, or when he was two years and a half old. They were about 9 inches long, measuring in a straight line from the frontal bone to the extreme curve of the points. At that time he received a kick from a mule, that broke one of his fore legs. I splinted and bandaged the leg, and he ran about with it so for more than three months, when he was killed, I suppose, by a pack of wolves. It was a great pity that he did not live two or three years longer, so as to have made further observations on the growth of his horns. But I think that the phenomena exhibited by his horns while he did live, and those exhibited by other Antelopes, have furnished me with data sufficient to establish the proposition that I now make, viz. that *their horns drop off annually!* When I began to be acquainted with the Prong-horned Antelope, I believed (as you and all the scientific world do) that they have permanent horns like goats and sheep; but after knowing them a year or two I became convinced that they shed their horns every year! And to convince you of this singular fact is my principal object in making you this communication. As the buck grows older his horns change their form, until, the second time of shedding them, they are cylindrical and slightly curved inward at the tips. After the prong appears, the points of the horns become more and more incurved, until in the oldest bucks they are remarkably hooked, some of them almost as much so as a fish-hook, and very sharp and hard. In the months of December and January I have never killed a buck with large horns; and at that time of the year all the bucks appear to be young ones, because their horns are so small; whereas in the spring and summer months almost all the bucks appear to be old ones, for their horns are large and noticeable. Another proof of my proposition is the following:—In the summer months I have noticed that the line of demarcation is very apparent and abrupt between the horn and the skin from which it grows, but that in the winter there is no demarcation, the horn being very soft at its base, passing insensibly into cuticular tissue, and the soft horny substance being covered thinly with hair. The horns of Antelopes are very loosely set on the medullary base, and are susceptible of considerable movement in all directions. So 'loose,' apparently, have I seen them, that it

would not appear very strange that a little force should make them fall. Again, all the *Cavicornia*, so far as I know, have rings on their horns, and each year add one very perceptible width to the horn at its base. Even the horns of Goats and Sheep are so; but the Antelope is an exception. The horns, although rough, tuberculated, and warty, and sometimes having longitudinal striæ or furrows, *never* show any circles or transverse rugæ. This fact appears to me a very strong proof of the truth of my proposition. I think that my observations *prove beyond a doubt*, then, that these animals shed and renew their horns every year until they get full-grown ones—say, until they are four or five years old or more,—and, furthermore, that it is *very probable* that they renew them annually after that age; but I have no positive proof of this. The does frequently have horns, sometimes 4 inches or even more in length, but very much incurved—so much so that in two specimens that I killed the points or distal extremities of the horns were concealed in the hair of the forehead. In my opinion, it is easy to determine pretty nearly the age of a male Antelope by the shape and size of his horns. Thus, in plate 25 of the ‘U. S. P. R. R. Ex. and Surveys,’ No. 1912 is (as you say) the horn of a young buck; 1081 is a new horn of a young male; 890, a three-year old buck with new horns; 2-2 (at the lower left-hand corner), a three-year-old buck with old horns; 655, new horns of an older buck than the last; 2471, old horns of a buck of the same age as 655; 963, a still older buck; C, *a* & *b*, horns of a very old buck, the oldest in the lot, except perhaps B; B, a new horn of a very old buck, or else an abnormal condition of the horns. By the way, there is scarcely a good specimen of horns in the plate, I might kill a dozen bucks, every one of which would have better horns than those in your plate. It cannot be objected to my facts that my pet Antelope was in an artificial condition, and that on account of debility he lost his horns; for he, on the contrary, was always very large for his size, much larger than the young wild Antelopes. He was so gentle and playful that he was saucy and troublesome. He always fed within sight of the house, and slept near the house at night. He used to follow the ranch dogs; and in the night, if they chased Coyotes, he would run after Coyotes also, always ahead of the dogs, for nothing could outrun him. He was the most salacious animal that I have ever seen. When three months old he commenced to leap upon the other pet Antelopes, the dogs, young calves, sheep, goats, and even people sitting down or bent over to pick up anything from the ground; and as he grew older the more salacious he became. He always raised himself on his hind feet, and thus walked up behind the animal that he wished to leap on; and without sustaining himself at all by his belly or fore legs he continued walking around, directing the erected penis only by movements of the body poised on the hind feet; until having introduced the penis, he instantly gave one convulsive or spasmodic thrust, at the same instant of the thrust claspings spasmodically the female with the fore legs, which he had before held up in the air without touching her. He would in this way go to anything that was held for him. After he was a year old he would

chase small animals about, making a noise like a ram when rutting, and sometimes made the same rutting noise when going to leap on an animal. He liked very much to have any one play with his head and horns; but would not allow any other part of his body to be handled or touched, and was very skittish and untractable, though apparently so gentle. He would follow the dogs all day in the hills with me when hunting; but if separated from me by accident would immediately go to the house. He thus returned home alone, one day, a distance of twelve miles. He frequently ran out to meet the Antelopes that were crossing the valley, or that were coming in to drink; and although he sometimes went off with them to the hills, he always returned immediately to the valley. I raised also another little buck Antelope; but he was very wild, and ran away when eight or nine months old, after the older one was killed; so that I learnt nothing from him, except that his first little horns fell off in November, when he was six months old or more.

“The doe Antelopes almost invariably bring forth two kids at a birth. It is very rare (in fact I never have known) that a female has been killed pregnant with only one foetus; and, on the other hand, they never have *more* than two at a birth. In this respect they are very different from the females of the Black-tailed Deer (*Cervus columbianus*), which frequently bring forth only one at a birth, and not uncommonly *three*. It is not rare to see a doe Deer with three fawns following her; and I am assured by reliable hunters that they have killed, occasionally, doe Deer pregnant with three fetuses. In this respect, as in many others, the Antelope is much more regular in his habits, much more conformable to fixed rules, than most other wild animals. For example, the female Antelopes all bring forth their kids about the same time, within the space of about a month; whereas female Deer are dropping their fawns for three or four months. Doe Antelopes are always ‘in good order,’ except when giving milk, though they never get *very fat* as do the bucks sometimes. The fat of the Antelope is very hard, like spermaceti, and makes excellent candles. The Antelope trots, gallops, and bounds, and is the swiftest animal in North America. The greyhound cannot catch it in a fair chase; a fast horse can hardly overtake one with one leg broken. I chased a buck three miles on one occasion, having broken his forearm, and the ball having penetrated to the lungs; my horse was an excellent one, fast and ‘long-winded;’ but it required all my efforts to overtake the buck in that distance. The hide of the Antelope is thin and weak, but makes soft and pliable ‘morocco’ or dressed leather.

“In your report you say nothing of the existence of the Antelope on this side of the Sierra Nevada; but I can assure you that they abound everywhere in all the plains and valleys of the western slope, down to the Pacific Ocean.

“Much more could be added to the above, relative to the habits, &c., of the Prong-horned Antelope; but this must suffice; and if what I have written you will be of any value to science, you are at liberty to make such use of it as you think proper.”

2. Revision of the Genera of *Phyllostomidæ*, or Leaf-nosed Bats. By Dr. JOHN EDWARD GRAY, F.R.S., V.P.Z.S., &c.

The *Phyllostomidæ* may be defined as the Leaf-nosed Bats, with well-developed intermaxillary bones, bearing permanent cutting-teeth; they have two bony joints in the index finger, and are confined to the warmer part of the western hemisphere.

The dentition of the different genera of this family is very similar. They, like other Bats, have normally three grinders on each side of each jaw; but in one large tribe the hinder grinder is small, rudimentary, and early deciduous, or altogether wanting; and in another genus that lives entirely on the blood of animals, and has very peculiar digestive organs, the two hinder grinders in each jaw are deficient, and the one that is present is reduced to a small size.

They generally have two premolars in front of the molar in the upper jaw, and three in the lower. The hinder premolar, which is probably analogous to the flesh-tooth in Carnivora, is always present; but the front one is often very small and deciduous, and in some genera entirely absent.

The more normal genera have four cutting-teeth in each jaw; but sometimes the hinder tooth on each side of the jaw is early deciduous, being pressed out by the enlargement of the canine, or, if present, is sometimes in front of that tooth, especially in the lower jaw.

The number of the premolars has been extensively used in dividing the species into groups; and considerable weight has been attached to the presence or absence of the lateral cutting-teeth: but in studying this character care should be taken as to the age of the specimen under examination; in some specimens these teeth are shed when the canines enlarge, instead of being retained in front of them.

The family, since I wrote upon them in 1842, has received considerable attention. MM. Gervais and De Saussure have written on them; the former has figured the skulls and teeth of many of the species and genera.

Mr. Tomes has published a revision of the species of *Vampyrus*, a description of the very curious genus *Lonchorhina*, and some other genera.

Dr. Peters has for years been paying great attention to them, having a monograph of them in the press illustrated with plates, and has very lately published a revision of the genera and species of the genus *Vampyrus* for the purpose of his monograph, of which the paper above referred to must be regarded as the forerunner. Dr. Peters has examined many of the typical specimens described by Natterer, Wagner, and others in the continental museums, and has thus got rid of a large number of nominal species.

I am very much pleased to observe that, in his last paper, Dr. Peters has placed considerable reliance in his generic characters on the form and disposition of the warts on the chin, as this confirms

the opinion that I formed when I published my paper on the "Genera of Bats" in the 'Magazine of Zoology and Botany' in 1837, more especially as the use of these warts to distinguish the groups and species was a source of considerable amusement to my zoological associates. Yet the genera now used are in several instances only names given to the sections that I proposed in 1837.

Dr. Peters, in his paper, has described one or two genera, or rather subgenera, that are not in the Museum Collection. They are marked with an asterisk in this table.

Mr. Tomes and Dr. Peters have divided the family into a few genera, each containing several subgenera. This seems to me to necessitate the use of three names when only two are enough; and several of the forms which they have regarded as only subgenera seem to me (and this is particularly the case as regards Dr. Peters) to be deserving of a higher position according to their own theory of nomenclature. I have therefore been induced to publish the arrangement here given, the tribes occupying the places which these zoologists give to genera, and showing, by making the groups tribes, where I think they have overlooked the importance of certain forms.

The colour of the fur in some species, and perhaps in most, seems to be of little importance for their distinction. I have found it the same in the Horseshoe Bats. There are in the British Museum specimens of the large *Fer de Lance* of Brazil (*Phyllostoma hastatum*) entirely sooty black, black above, and more or less blackish grey or grey beneath, reddish brown above and more or less pale beneath, and bright red bay above and beneath. These different colours are not confined to specimens of one sex. Other species also vary, but the Museum specimens do not show so large a series of differences. This may arise from the fact that we have not so many specimens of other kinds, the *Fer de Lance* being a large and conspicuous Bat, and therefore collected and sent home by many persons.

In skinning Bats the tail is often entirely, and sometimes partially withdrawn from the skin, and sometimes even the skin of it withdrawn into the body. In drying the skin the position of the wings on the feet or ankles is often altered, being either drawn down too low or pulled up too high, and sometimes even the form of the nose-leaf is changed. Several species, and even some genera, have been described from specimens so altered.

SYNOPSIS OF GENERA.

Section I. *Nostrils in the front of a disk which is expanded behind into an erect, free, lanceolate leaf.*

Subsection 1. *Head elongate; margin of the lips entire. True grinders 3/3, the hinder well developed, short, transverse (except in Carollia); premolars 2/2 or 1/2.*

A. *Tongue moderate, flat, smooth on the sides, and with a group of recurved spines in the middle of the front part; lower cutting-teeth in a continuous series.*

A. *Nose-leaf produced behind, entire; interfemoral membrane well developed. Tail distinct (except in Rhinops).*

a. *Front plate of the nose-leaf with an elevated edge and a central process in front; lower lip with two small triangular warts.*

Tribe 1. LONCHORHININA.

1. LONCHORHINA. Tail elongated to the end of the produced conical interfemoral membrane. False grinders 2/2. *L. aurita.*

b. *Front of the nose-leaf simple, with a thin flat front margin more or less closely applied to the surface of the nose.*

a. *Wings narrow behind, from the knee to the ankle.*

Tribe 2. MACROPHYLLINA. Tail elongate to the end of the very long truncated interfemoral membrane.

2. MACROPHYLLUM. Chin with warts. Cutting-teeth 4/4; false grinders 2/2. End of nose hairy. *M. newwiedii.*

β. *Wings broad behind, extending to the feet.*

Tribe 3. VAMPYRINA. Lower lip slightly notched. Chin with two triangular warts in front. Nose hairy, with porous tubercles.

* *Tail none; interfemoral membrane very long, truncated. Nose and chin only slightly hairy, with scattered glands; nose-leaf subtridentate at the tip.*

3. VAMPYRUS. The nose-leaf free in front. Wings to the base of the toes. False grinders 2/3. *V. spectrum.*

** *Tail short; ending on upper surface of the large truncated interfemoral membrane.*

† *Wings from the base of the toes.*

4. CHROPTERUS. Ears very large. Cutting-teeth 4/2; false grinders 2/3. *C. auritus.*

†† *Wings from the ankles. Lower cutting-teeth 2, with a groove in front.*

5. LOPHOSTOMA. Ears large. Cutting-teeth 4/2; false grinders 2/3. *L. bidens.*

6. MICRONYCTERIS. Ears long, rounded. Nose-leaf moderate. Cutting-teeth 4/4; lower small, equal. Heel-bone long. Premolars 2/3. Chin-wart elongate, longer than broad. *M. megalotis.*

7. MIMON. Ears large. Nose-leaf very long. Cutting-teeth 4/2; lower with longitudinal grooves in front; false grinders 2/2. Chin-wart short, broad, transverse. *M. bennettii.*

*** Tail elongate, produced behind to the edge of the truncated interfemoral membrane. Wings to the end of the shins.

8. MACROTUS. Ears very large. Nose-leaf hairy, attached to the nose on each side in front, and with a row of glands on each side of its base. Cutting-teeth 4/4; false grinders 2/3. *M. waterhousii*.

Tribe 4. PHYLLOSTOMINA. The lower lip with a triangular disk, with two or three warts surrounded by one or more series of warts, and with a series of conical glands on each side of the base of the nose-leaf. Tail short (in *Rhinops* wanting).

* Interfemoral membrane elongate, truncated. Tail short.

† Wings from the base of the toes.

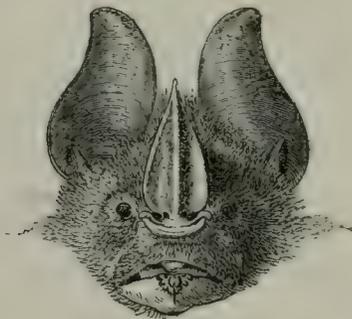
9. TYLOSTOMA. Nose hairy, without any glands in front of the nose-leaf. Cutting-teeth 4/2; premolars 2/2. *T. childreni*.

10. GUANDIRA. Nose with a series of glands in front of the nose-leaf. Cutting-teeth 4/4; premolars 2/3. *G. cayanensis*.

†† Wings from the ankles.

11. PHYLLOSTOMA. Nose-leaf ovate, lanceolate, front part flat, front edge close on nose; upper lip hairy; lower lip with a smooth triangular space with a series of round warts on each side. Cutting-teeth 4/4; premolars 2/2. *P. hastatum*.

12. ALECTOPS. Nose-leaf lanceolate, with a very strong central ridge, front part concave, with a raised front and side edge; upper lip hairy, not glandular; lower lip with a triangular disk, with three warts, the central one being oblong and longitudinal, and edged with a series of oblong diverging warts. *Alectops ater*. Fur deep black; forearm $2\frac{1}{2}$ inches. Surinam.



Alectops ater.

** Interfemoral membrane moderate; hinder edge more or less concavely cut out. Tail short (or none?).

13. CAROLLIA. Nose not warty; lower lip with three long warts, with a series of broad warts on each side of it. Interfemoral mem-

brane short, reaching to the knee. Tail short. Wings from the ankles. The third upper grinder small, oblong. *C. brevicaudata*.

14. SCHIZOSTOMA. Nose not warty; lower lip with a long smooth triangular space, with a series of small oblong radiating warts on each side. Interfemoral membrane rather large. Cutting-teeth $4/4$, lower equal; premolars $2/3$. Tail short. Wings from the ankles. First joint of index shorter than second: *S. elongatum*. First and second joint of index equal: *S. minutum*.

15. RHINOPS. Face elongate, slender. Nose hairy, not warty; lower lip with a triangular space with a series of oblong radiating warts on the sides. Interfemoral membrane moderate; hinder edge arched. Cutting-teeth $4/4$; lower two middle large, truncated; lateral small. Tail none? *R. minor*, n. s.

*16. RHINOPHYLLA. Face short, broad; lower lip with three warts, the centre largest, with a series of oblong warts on the sides. Interfemoral membrane moderate; hinder edge arched. Tail none. Wings from base of toes. Cutting-teeth $4/4$; middle broad, bifid; grinders compressed, last upper small, circular; premolars $2/2$, front upper minute. *R. pumilio*.

N.B. The third upper grinder of *Carollia*, as also that of *Rhinophylla* in a greater degree, resembles that of the *Stenodermina*, as these genera also do in the small size of the interfemoral.

Tribe 5. TRACHYOPINA. The end of the nose and chin flattened, bald, with elongated fleshy processes; front of the nose-leaf soldered on to the nose.

17. TRACHYOPS. Wings from the ankles. Interfemoral membrane elongate, truncated. Cutting-teeth $4/4$; premolars $2/2$. *T. cirrhosus*.

B. *Nose-leaf scarcely raised behind, and bifid, separated from the nose by a deep groove behind and on the sides; end of nose hairy. Interfemoral membrane small, margining the legs. Tail very short, or none. The third upper grinder long and broad.*

Tribe 6. BRACHPHYLLINA.

18. BRACHYPHYLLA. Tail very short. Lower lip with a smooth triangular space bearded on the edges. Premolars $2/2$; the third upper grinder large, oblong, like the first and second. *B. cavernarum*.

B. *Tongue elongate, slender, exerted, with a band on each side formed of many series of recurved spines. Lower lip with a narrow deep notch in front. Lower cutting-teeth in two groups, divided by a space in the middle.*

Tribe 7. GLOSSOPHAGINA.

19. GLOSSOPHAGA. Interfemoral membrane large, truncated.

Tail short, with tip in upper surface of membrane. Front of nose-leaf soldered to the nose. Lower lip with a triangular groove edged on the side with round tubercles. Premolars 2/3. *G. soriana*.

20. MONOPHYLLUS. Interfemoral membrane distinct, deeply and angularly cut out. Tail very short, free at the tip. Premolars 2/3. Lower lip with two small triangular warts. *M. redmanni*.

21. ANOURA. Interfemoral membrane merely edging the legs. Tail none. Premolars 3/3. Lower lip with two triangular grooves, fringed or bearded on the edges. *A. geoffroyi*.

Subsection 2. *Head short, broad; margin of the lip crenated, inner edge bearded. Interfemoral membrane small, angularly cut out, or only margining the legs. Tail none. True grinders 3/3; the hinder small, circular, early deciduous or entirely wanting in one or both jaws.*

Tribe 8. STENODERMINA.

These Bats are nearly of the same colour, with a more or less distinct streak on the sides of the crown and cheeks; some have a dorsal streak. Some of the genera can only be determined by the skull and teeth.

* *Wings from the base of the toes. Interfemoral membrane moderate, with the hinder edge angular or arched from the heel to near the pelvis.*

† *The palate produced and contracted behind; the hinder nasal opening on a level with the middle of the zygoma. Shoulders without any white tufts.*

‡ *Upper cutting-teeth broad, bifid; the upper jaw regularly arched on the side; grinders oblong, transverse. Nasal bone perfect; nasal aperture entire, transverse.*

22. ARTIBEUS. Lower lip with a transverse triangular space with three tubercles nearly in a transverse line; the middle largest, edged on each side with round tubercles. The upper grinders oblong, transverse, the second smaller than the first, hinder absent; last lower grinder very minute. *A. jamaicensis*.

23. VAMPYRUPS. The lower lip with three round warts surrounded by a series of small ones. The upper grinders nearly square; the second rather larger than the first; hinder minute or wanting. Middle upper cutting-teeth broad, entire. Nose-leaf with a lamina behind. *V. vittatus*.

*24. URODERMA. "Like *Vampyrups*; but upper cutting-teeth broad, bifid. *U. personatum*."

†† Upper cutting-teeth elongate, simple; the upper jaw rather flattened on the sides, converging in front; upper grinders oblong, transverse, second larger than the first. Nasal bone very narrow, having a central notch on upper part of nose.

25. CHIRODERMA (*Mimetops*, Gray, MS.). *C. villosum*. *C. pictum*.

†† The palate short, broad; the hinder nasal opening before the end of the tooth-line. Upper cutting-teeth bifid. Nasal bone complete. Shoulders without any white tuft.

26. ARITEUS. Front edge of the nose-leaf attached to the lip by a narrow space in the middle; greater part of the sides free. Lower lip with a round tubercle above and two below it, forming a triangle, and with a series of round tubercles along the outer edge of the lip; inner edge bearded. Wings from the base of the toes. Lower phalange of the index-finger flattened, arched. Upper cutting-teeth two-lobed. *A. flavescens*.

††† The palate very short, broad; the hinder nasal opening just behind the tooth-line. Upper cutting-teeth conical, acute, isolated. The foot rather more free from the wings. Shoulders with white epaulets (over glands?).

27. PYGODERMA. Lower lip with a transverse disk, and a central tubercle edged by a series of round tubercles. Face of skull high. Nasal opening oblong, large. *P. leucomum*.

28. AMETRIDA. Lower lip triangular, high, with three tubercles in a triangle edged with a series of very small round ones. Face of skull depressed. *A. centurio*.

** Wings from upper part of ankles. Interfemoral membrane small, only margining the legs, hairy above.

29. STURNIRA. Front edge of nose-leaf attached to the lip by a broad space in the middle, free on the sides. Lower lip with three oblong warts in a broad triangle edged with warts on the sides. Interfemoral membrane very narrow. Wings from the ankles; lower phalanges of index finger slender, cylindrical, straight. Legs and feet hairy. *S. lilium*.

Subsection 3. *The head short, broad; lips entire. Nose-leaf small, bifid behind. The grinders small, rudimentary; true grinders 1/2, compressed. Upper cutting-teeth 2, large, conical; lower separated into two groups, trifid. Cardiac end of the stomach assuming the form of an elongated cæcum.* (See Huxley, P. Z. S. 1865, p. 386.)

Tribe 9. DESMODINA.

30. DESMODUS. Lower lip with a triangular space with simple sides. Nose-leaf small, bifid behind. *D. rufus*.

*31. DIPHYLLA. Tail none. Premolars 0/1 (*Peters*), or 1/1 (*Gervais*). *D. ecaudata*.

Section II. *Nostrils in the concavities of a small disk, with prominent side edges. The face with symmetrical erect cartilaginous ridges. Interfemoral membrane marginal. Tail none. Ears with an expanded lobe on each side, hooding the face.*

Tribe 10. CENTURIONINA. Face with a small flat nasal disk, lobed on the sides, having an erect sinuous process behind it, and with a crescent-shaped palate on the forehead in front of a frontal pore. Tragus small, distorted. Middle finger four-jointed. Chin with transverse ridges.

32. CENTURIO. Chin with three transverse elevated leathery bands, the lowest one largest and covered with hair. *C. senex*.

*33. TRICHOCORYTES. "Chin with five transverse elevated bands; the two front ones smaller, and placed in front of the three former in *Centurio*." *T. macmurtrii*.

3. Note on the Genus *Brahmæa* of Walker.

By ARTHUR G. BUTLER, F.Z.S.

In laying before the Society the result of my investigations with regard to these figures, which were prepared for Mr. Adam White, formerly Assistant in the Zoological Department of the British Museum, and intended to illustrate a paper in the Society's 'Proceedings,' I wish it to be thoroughly understood that I have seen none of the specimens from which they were taken, and that I am therefore compelled to depend upon the drawings alone for the descriptions of the species. There are two examples of the old species *B. certhia* in the National Collection.

Genus BRAHMÆA, Walker.

Section 1.

1. BRAHMÆA CERTHIA. (Fig. 1.)

Bombyx certhia, Fabricius, Ent. Syst. iii. 1. p. 412 (1797).

Brahmæa certhia, Walker, List Lep. IIet. Brit. Mus. pt. vi. p. 1316 (1835); F. Moore, Cat. Lep. Mus. East Ind. Comp. ii. p. 410. desc. 932 (1858-9).

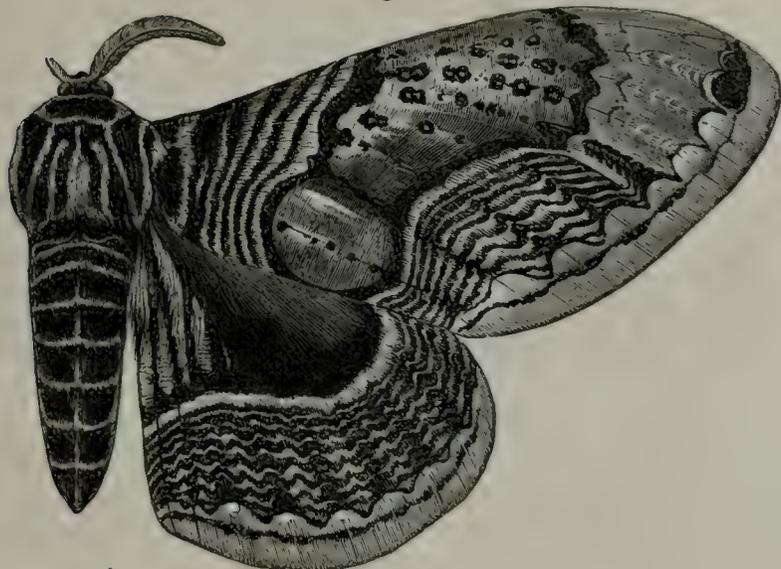
Bombyx wallichii, J. E. Gray, Zool. Misc. p. 39 (1832).

Bombyx spectabilis, Hope, Trans. Linn. Soc. xviii. p. 443, pl. 31. f. 3 (1841).

Hab. Sylhet; Nepal (*Moore*).

B.M.

Fig. 1.

*Brahmæa certhia.*

2. BRAHMÆA WHITEI, sp. n. (Fig. 2.)

Corpus supra luteo-fuscum, rivulis pallidis variegatum: alæ anticæ integræ, concolores, basi rivulis octo nigris; medio paulo magis fuscescente, linea nigra utrinque irregulari incluso, maculisque parvis in venas dispositis; apice antico lineis continuis, lunulatis, nigris, albo marginatis; margine postico pallido, maculis apud apicem duabus, nigris, introrsum albo mar-

Fig. 2.

*Brahmæa whitei.*

ginatis, maculisque sex albis submarginatis; apice postico rivulis decem nigris: alæ posticæ dimidio basali nigro, lineis pallidis pilosis; dimidio apicali pallido, lineis nigris valde irregularibus interrupto; margine postico pallido, fascia pallida, introrsum convexitatibus novem elevata submarginato: antennæ bipectinatæ, breves.

Hab. North-western India?

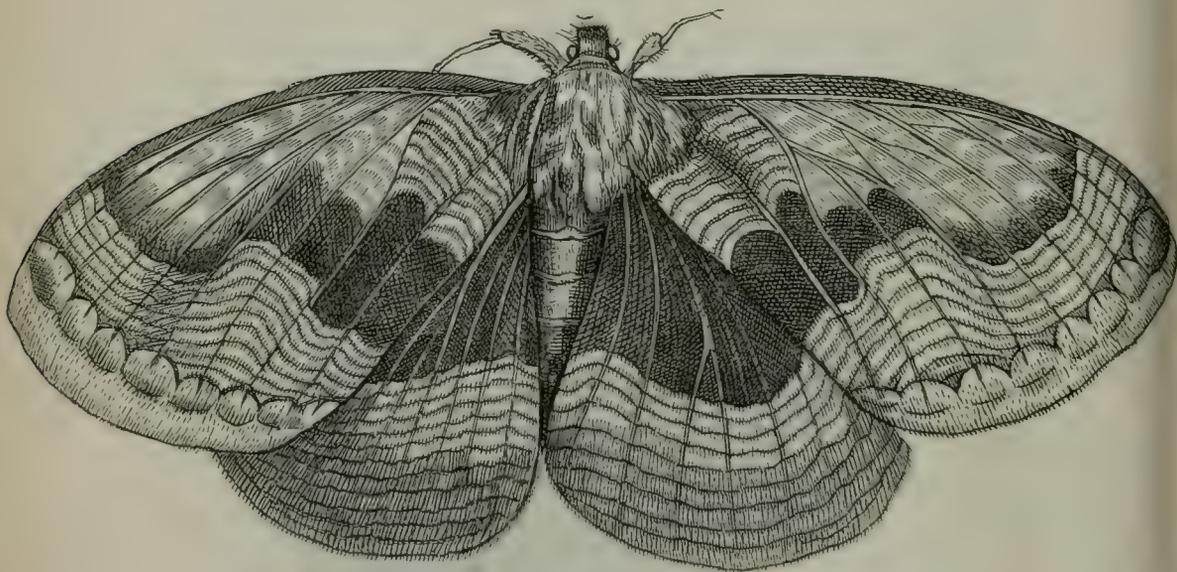
Closely allied to *B. certhia*; differs from it as follows:—Front wings proportionally narrower; central band narrower, with smaller and more numerous black spots; inner edge of pale apical patch convex and more regular, the lunulate lines entire, black margined with white, their concavities reversed. Hind wings shorter and narrower; apical half with the markings much more elongate. Body: thorax narrower; abdomen with broader pale bands; antennæ much shorter.

3. BRAHMÆA PETIVERI, sp. n. (Fig. 3.)

Brahmæa petiveri, Petiv. Gazoph. Cat. Class. et Top. p. 2. n. 213 (*Phal. maxima*, Chusan, obscura, fusca, &c., 18. 3, C. 212).

Brahmæa certhia, synon., F. Moore, Cat. Lep. Mus. East Ind. Comp. ii. p. 410 (1858–9).

Fig. 3.



Brahmæa petiveri.

Alæ anticæ basi rivulis decem nigris; medio lineis angularibus brevibus albis maculato, pone fusco ad costam coarctato; area apicali rivulis decem fuscis; margine postico pallido, maculis octo pallidis submarginato: alæ posticæ dimidio basali nigro; apicali pallido, lineis multis fuscis, ex æquo distantibus interrupto.

Hab. Island of Chusan (China).

Note.—In the markings of the front wings this species seems more nearly allied to *B. lucina* (Drury).

The above insect must, I think, be quite distinct from *B. certhia*; for, although the figures in Petiver's book are undoubtedly quite out of date, it seems unlikely that any artist in making a representation of a species would go so far out of his way, to make the likeness a bad one, as to neglect characters in the hind which he had not overlooked in the front wings, as, for instance, we find in the figure by Petiver that the submarginal spots, common to the species of this genus, are represented in the front, but not in the hind wings. The numerous other differences will be at once seen by reference to the figures; and I think, taken in conjunction with the locality in which this species was captured, they fully justify its separation as a species.

Section 2.

4. BRAHMÆA LUCINA. (Fig. 4.)

Phalæna attacus lucina, Drury, Illustr. iii. pl. 34. f. 1.

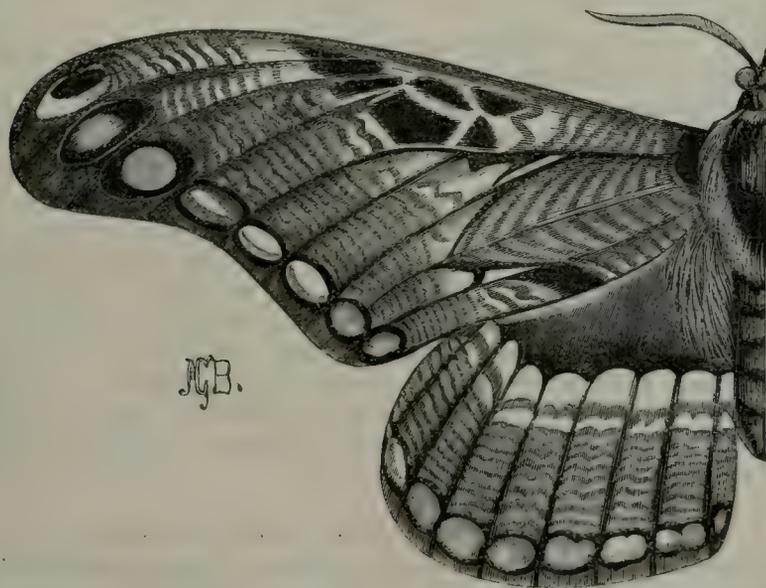
Bombyx lucina, Oliv. Enc. Méth. Ins. v. p. 31. 27.

Saturnia lucina, Westw. ed. Drury, iii. p. 45, pl. 34. f. 1; Proc. Zool. Soc. Lond. (1849) p. 56. n. 25.

Brahmæa ?lucina, Walker, List Lep. Het. Brit. Mus. pt. vi. p. 1316. n. 2.

Hab. Sierra Leone.

Fig. 4.



Brahmæa lucina.

4. Description of Two New Species of Phyllopodous Crustaceans. By W. BAIRD, M.D., F.L.S., &c.

(Plate XII.)

1. *LEPIDURUS ANGASII*, sp. nov. (Pl. XII. fig. 1.)

Animal, including flap of tail-segment, about an inch long. Carapace rounded, oval, of a pale horny colour (in spirits), covering more than two-thirds of the abdomen. Central keel somewhat blunt or obtuse for two-thirds of its length, becoming, near the extremity, sharp and prominent. It is quite smooth and free from dentations. Lunated notch at the extremity of the carapace rounded and finely toothed on its margin. The edges of the carapace are smooth, except for a very short distance at the posterior extremity, not dentated or serrated, but of a rather thicker consistence, and of a darker colour than the rest of the carapace. The dentations at the posterior extremity are very small and blunt, requiring a good magnifying-power to see them. The rings of the abdominal portion of body are beset with a few stout spines, curved downwards. The flap of the tail-segment has a fine keel running down its centre, with a few spines on its anterior half; and its edges are distinctly, but very finely, toothed or serrated. The filaments of the tail are rather more than half the length of the body, and are densely clothed with numerous very short fine setæ. The appendages of the first pair of feet are short, each articulation being shortly toothed on each side at the upper portion.

Hab. Rain-pools on the Gawler Plains, north of Adelaide, South Australia (*G. F. Angas, Esq.; Mus. Brit.*).

Two specimens of this new animal were brought to this country from South Australia by Mr. Angas. In 1850 I described, in the 'Zoological Proceedings' of that year, a species of *Lepidurus* (*L. viridis*) from Van Diemen's Land, which approaches somewhat, in general appearance, this species from South Australia. The *L. viridis*, however, is about double the size; the carapace covers less of the body, and the edges of the lower half of its length are serrated; while in *L. angasii* the carapace covers nearly two-thirds of the body, and the edges are smooth and not serrated. The carapace, also, in this species is more rounded in shape than in *L. viridis*, which is decidedly more of an oval form. The colour of *L. angasii* is of a pale horny hue; whilst in *L. viridis*, as its name implies, it is of a fine green.

2. *ESTHERIA NEWCOMBII*, sp. nov. (Pl. XII. fig. 2.)

Carapace oval in shape. Beaks prominent, placed near anterior extremity. The dorsal margin slopes directly down to the posterior extremity, which is nearly as broad as anterior extremity. Ribs of carapace about sixteen in number, narrower at the beaks, and becoming broader as they descend towards the ventral margin. The intervals of the ribs are dotted with punctations, which are small



P. 45 1866 P. 13



M. N. Harhart, Imp.

Scrit del. et lith.

ANTROSTOMUS PARVULUS



PLATE 1007 1114

PLATE 1007 1114

PLATE 1007 1114



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PLATE 1007 1114

and very numerous, and run into each other so as to produce a sort of running pattern.

Length nearly $\frac{1}{2}$ inch; breadth about $\frac{1}{4}$ inch.

Hab. California (*W. Newcombe, Esq.; Mus. Brit.*).

DESCRIPTION OF PLATE XII. figs. 1 & 2.

Fig. 1. *Lepidurus angasii*, p. 122.

- 1 a. Whole animal, natural size.
- 1 b. Anterior portion seen from beneath.
- 1 c. Abdominal portion, to show the spines.
- 1 d. Abdominal portion, to show tail-flap.

Fig. 2. *Estheria newcombi*, p. 122.

- 2 a. Natural size.
- 2 b. Dorsal view.
- 2 c. Ventral view.
- 2 d. Portion of carapace highly magnified to show the structure.

5. Notes upon the American *Caprimulgidæ*. By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to the Society.

(Plates XIII., XIV.)

In the notes upon the American representatives of this family of birds which I have to offer to the Society I shall confine my remarks to such specimens as I have had an opportunity of examining myself, not venturing in this very difficult group to give any opinion upon species unknown to me.

The principal authorities I have to refer to upon the subject are (1) Mr. G. R. Gray's list of the specimens of this family in the British Museum*, published in 1848, (2) Mr. Cassin's 'Catalogue of the *Caprimulgidæ* in the Collection of the Academy of Natural Sciences of Philadelphia' (1851), and the same naturalist's critical remarks upon the American species published in the 'Proceedings' and 'Journal' of the same Academy†, and (3) Burmeister's account of the Brazilian species of this family in his 'Syst. Uebersicht d. Thiere Brasiliens' (vol. ii. p. 370 *et seq.*). As regards the northern species, our best authority is of course Professor Baird's 'Birds of North America.'

Before, however, I speak of the American species of *Caprimulgidæ* known to me, I will commence with a few preliminary observations upon the whole of the family, and its geographical distribution.

The *Caprimulgidæ*, as they are usually limited, present us with two very different types of structure in their feet, which enable us to separate them readily into two divisions. The first of these affords us one of the few known instances of deviation from the normal rule

* List of Specimens, &c., part 2, sect. I., *Fissirostres*.

† "Notes on an Examination of the Birds of the Family *Caprimulgidæ*, &c." (Proc. Acad. Phil. v. p. 175, 1851); and "Monograph of the Birds composing the Genera *Hydropsalis*, Wagler, and *Antrostomus*, Nuttall" (Journ. Acad. Phil. ser. 2. vol. ii. p. 113).

as regards the number of the phalanges of the digits in the class of Birds—the fourth or outer toe having only four phalanges, like the third or middle one. This peculiarity is accompanied by the presence of the well-known pectination of the inner edge of the claw of the long middle toe. This structure of the feet is met with in all the typical *Caprimulgidæ*—that is, in all the forms allied to our common *Caprimulgus europæus*. (See figs. 1, 2.)

Fig. 2. Fig. 1.



Fig. 1. Left foot of *Antrostomus vociferus*.
2. Left foot of *Nyctidromus albicollis*.

In the second division, containing the genera *Steatornis* and *Nyctibius* of the New World and *Podargus*, *Batrachostomus*, and *Ægotheles* of the Old World, the pectination of the medial claw is wanting, and the outer digit has the normal number of *five* phalanges. (See figs. 3, 4, and 5.)

A second part of the skeleton of the *Caprimulgidæ*, which presents us with some very important characters, is the sternum. The great differences between the sterna of *Caprimulgus* and *Podargus* have been well pointed out by M. Blanchard*, and may be seen at a glance on reference to the two sterna of *Caprimulgus stictomus*, Swinhoe, and *Podargus plumiferus*, Gould, which I now exhibit. (See figs. 6 and 8.) They are such as scarcely occur in any other natural family of birds, and may probably ultimately necessitate the separation of the forms allied to *Podargus* into a distinct family †. Of the sternum

* *Ostéologie des Oiseaux*, p. 94.

† Dr. Cabanis has proposed (*Orn. Not. in Wiegmann's Arch.* 1847, p. 343) to remove the *Podarginæ* into the family *Coraciidæ*, but without giving any very good reason for so doing. At the same time, he leaves *Nyctibius* with the *Caprimulgidæ*. Dr. Cabanis considers that the *Podarginæ* are most nearly allied to the *Eurylaminæ*, which, however (except *Peltops*, which is a Muscipine form allied to *Monarcha*), I agree with Mr. Wallace in placing next to the American *Cotingidæ*. It seems to me that wherever *Podargus* and its allies go *Nyctibius*

Fig. 3.

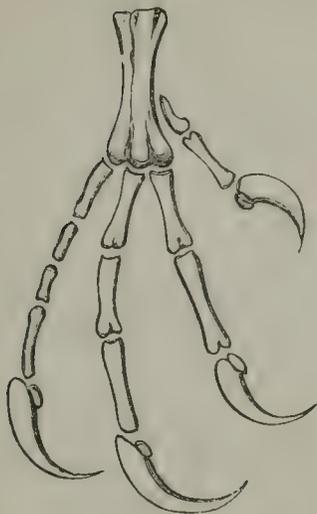


Fig. 4.



Fig. 5.

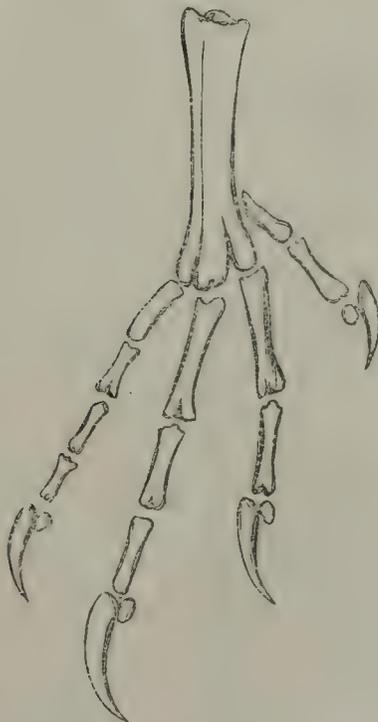


Fig. 3. Right foot of *Steatornis caripensis*.
4. Left foot of *Nyctibius jamaicensis*.
5. Right foot of *Podargus cuvieri*.

must follow. But *Steatornis*, being undoubtedly allied to *Nyctibius*, offers us a transition between the two extremes which renders it difficult to place them at any distance apart.

of *Nyctibius* I am likewise enabled to exhibit a specimen, through the kindness of Mr. Eyton. (See fig. 7.) It will be evident that

Fig. 6.

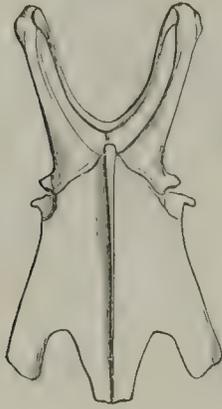


Fig. 7.

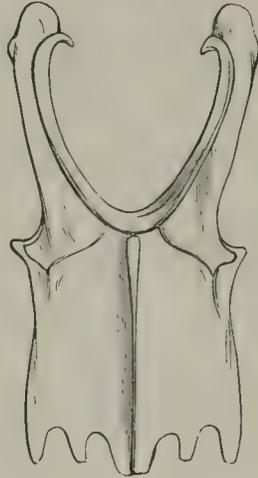
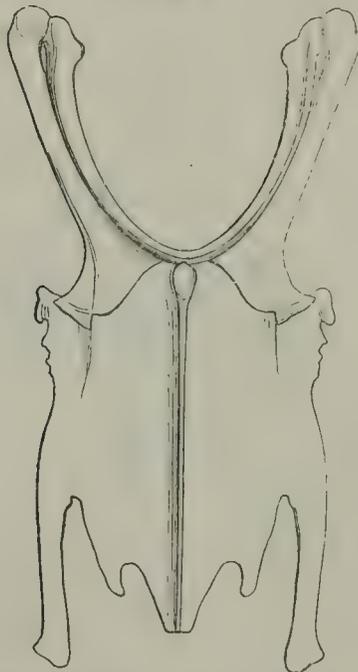


Fig. 8.



- Fig. 6. Outline of sternum of *Caprimulgus stictomus*.
7. Outline of sternum of *Nyctibius jamaicensis*.
8. Outline of sternum of *Podargus plumiferus*.

this form represents the *Podargi* in the New World. Its sternum has the same shortened squared shape as that of *Podargus*, and has also the two posterior fissures, although the outer pair are not deeply

cut in beyond the inner pair as in *Podargus*. Unfortunately I am not able to show a sternum of the curious form *Steatornis*; but M. Blanchard has given a figure of it (*Ostéologie*, pl. 3. f. 3), whereby it appears that it resembles that of the typical *Caprimulginae* in the outline of the posterior margin, but has the general squared conformation of that of the *Podarginae*. Under these circumstances I think we may divide the *Caprimulgidæ* very naturally into three different subfamilies as follows:—

Subfam. I. PODARGINÆ.

- | | | |
|---|-----------------------|---|
| | New World. | Old World. |
| Claw of middle toe not pectinated;
outer toe with five phalanges; sternum
with two pairs of posterior fissures. | | |
| <i>a.</i> Outer pair of posterior fissures
much deeper than inner pair;
tarsus long and naked; eggs
colourless..... | | { 1. <i>Podargus</i> .
2. <i>Batrachostomus</i> .
3. <i>Egotheles</i> . |
| <i>b.</i> Outer pair of posterior fissures
not deeper than inner pair;
tarsus extremely short, and
feathered; eggs coloured .. | 4. <i>Nyctibius</i> . | |

Subfam. II. STEATORNITHINÆ.

- Claw of middle toe not pectinated;
outer toe with five phalanges; sternum
with one pair of shallow posterior
fissures; eggs colourless* 1. *Steatornis*.

Subfam. III. CAPRIMULGINÆ.

Claw of middle toe pectinated; outer toe
with four phalanges only; sternum
with one pair of shallow posterior
fissures; eggs coloured.

- | | | | |
|--|---|----------------------------|---------------------------|
| <i>a. Glabrirostris</i> : rictus smooth.. | { | 1. <i>Podager</i> . | 4. <i>Lyncornis</i> . |
| | | 2. <i>Lurocalis</i> . | |
| <i>b. Setirostris</i> : rictus armed with
strong bristles | { | 3. <i>Chordeiles</i> . | 6. <i>Caprimulgus</i> . |
| | | | 7. <i>Scotornis</i> . |
| | | | 8. <i>Macrodipteryx</i> . |
| | | 9. <i>Antrostomus</i> . | |
| | | 10. <i>Stenopsis</i> . | |
| | | 11. <i>Hydropsalis</i> . | |
| | | 12. <i>Heleothreptus</i> . | |
| | | 13. <i>Nyctidromus</i> . | |
| | | 14. <i>Siphonorhis</i> . | |

I now proceed to discuss the American species of these three subfamilies:—

Subfam. I. PODARGINÆ.

Of this subfamily there is but one genus in the New World, namely

NYCTIBIUS, Vieill.

Besides the very short and feathered tarsi, this genus is distinguish-

* Cf. Des Murs, *Rev. Zool.* 1843, p. 33; et *Trait. d'Ool. Orn.* p. 259 *et seq.*

able from the Old-World *Podarginæ* by the singular form of the bill (which has a strong tooth on the margin of the upper mandible), and by other peculiarities. I have seen specimens of *five* very distinct species of this genus, which may be shortly distinguished as follows:—

1. NYCTIBIUS GRANDIS.

Caprimulgus grandis, Gm. (ex Buff. Pl. Enl. 325); Max. Beitr. iii. p. 295.

Nyctibius grandis, Vieill.; Gray & Mitch. Gen. Birds, i. pl. 16; Jard. & Selby, Ill. Orn. ser. 1. vol. ii. pl. 89; Schomb. Reise, iii. p. 711; Burm. Syst. Ueb. ii. p. 374.

Albo-cinereus, partim rufescens, nigro vermiculatus; axillis nigris, humeris rufis: subtus dilutior, fascia pectorali indistincta nigra: long. tota 19, alæ 14, caudæ 10 poll. Angl.

Hab. Cayenne (Buff.); British Guiana (Schomb.); littoral of S.E. Brazil (Max.); Upper Ucayali (Bartlett).

Easily distinguished from all its relatives except *N. æthereus* by its dimensions. It is well figured in Gray and Mitchell's 'Genera' (*l. c.*) about two-thirds of the natural size. The egg of this bird is described by Burmeister in Cabanis's Journal (i. p. 171), and has been figured by Thieueman.

2. NYCTIBIUS ÆTHEREUS.

Caprimulgus æthereus, Max. Beitr. iii. p. 303.

Nyctibius æthereus, Cassin, Cat. Capr., et Pr. Acad. Phil. v. p. 184; Burm. Syst. Ueb. ii. p. 375.

Rufus, nigro striatus, subtus dilutior, magis ochraceus; maculis pectoris rotundis et striis in ventre nigris: long. tota 20, alæ 13, caudæ 12.

Hab. Littoral of S.E. Brazil, province of Bahia (Max.).

This large species is easily distinguishable from *N. grandis* by its shorter wings and longer tail, by the rufous colouring above, the large black terminal spots on the breast-feathers, and the longitudinal black striæ on the belly. There is a specimen in the British Museum, and others in Mr. Eyton's and Mr. Salvin's collections.

Mr. Cassin (Pr. Acad. Nat. Sc. Phil. v. p. 184) says very truly according to my ideas) that this species is a "much larger bird" than the next following, "being about the size of *N. grandis*." But the figure given by Mr. Cassin in the 'United States Exploring Expedition,' Atlas, Ornithology, pl. 14, and stated (p. 191) to be "of the natural size," is of much smaller dimensions than those assigned to it, and in some other respects more nearly resembles *N. longicaudatus*.

3. NYCTIBIUS LONGICAUDATUS.

Caprimulgus longicaudatus, Spix, Av. Bras. ii. p. 1, pl. 1.

Nyctibius longicaudatus, Tsch. F. P. p. 124; Cassin, Cat. Capr., et Pr. Ac. Phil. v. p. 184.

Rufus, nigro vermiculatus; maculis pectoris rotundis et striga subripectali distincta nigris; alis caudaque subtus distincte nigro

transvittatis; crisso et plaga humerali pallide fulvis: long. tota 18, alæ 12·2, caudæ 10.

Hab. Forests of the River Japura (*Spix*); Eastern wood-region of Peru, prov. Maynas (*Tsch.*).

Easily distinguishable from *N. æthereus* by its smaller size, brighter rufous colouring, especially below, and the distinct broad black bars on the wings and tail. Specimens are in the British Museum and in Mr. Eyton's collection.

4. NYCTIBIUS JAMAICENSIS.

Caprimulgus jamaicensis, Gm. S. N. i. p. 1029.

Nyctibius jamaicensis, Gosse, B. Jam. p. 41; Ill. pl. 6; Cassin, Pr. Acad. Phil. v. p. 185.

Caprimulgus cornutus, Vieill. Nouv. Dict. x. p. 245, et Enc. Méth. p. 538 (ex Azara, no. 308).

Nyctibius cornutus, Burm. Syst. Ueb. ii. p. 376; Tsch. F. P. 123.

N. urutao, Lafr. Mag. de Zool. 1837.

N. pectoralis, Gould, Icon. Av. pl. 8.

Fusco-cinereus, nigro striatus et maculatus, avillis nigris, humeris rufo indutis: subtus dilutior, scapis plumarum omnium et maculis pectoris rotundis nigris: long. tota 15 ad 13, alæ 12 ad 9·5, caudæ 8·5 ad 6·5.

Hab. Jamaica (*Gosse et Osburn*); Guatemala (*Constancia*); Ecuador, near Quito (*Fraser*); wood-region of Eastern Peru (*Tsch.*); Paraguay (*Azara*); S.E. Brazil (*Burm.*).

I agree with Mr. Cassin (Pr. Acad. Sc. Phil. v. p. 185) in considering all the names given above referable to one widely distributed and somewhat variable species. Hitherto (see Cat. of American Birds, p. 278) I have kept the Jamaican bird distinct, but merely on account of its larger size. But Mr. Salvin's Guatemalan specimen is larger than any Jamaican I have met with; and, as will be seen by the subjoined table, in which the measurements of nine individuals are given, there seems to be every gradation of size when a series is examined. However, it is possible that more extensive research may enable the southern species to be discriminated.

Gosse's *Nyctibius pallidus* (B. Jam. p. 49, et Ill. pl. 7) is commonly regarded as only a variety of this species. But I am rather doubtful whether this is correct. Mr. March (*in litt.*) states that he believes it to be distinct.

Measurements of Nyctibius jamaicensis.

Patria.	Mus.	Long. tota,	alæ,	caudæ.	Lat. rostri.
1. Jamaica	P. L. S.	14·5	11·4	8·0	2·1
2. Jamaica	P. L. S.	14·0	11·1	7·7	1·9
3. Jamaica	Eyton	14·0	11·0	7·9	2·0
4. Guatemala	O. Salvin.....	15·0	12·0	8·5	2·1
5. Andes near Quito ..	P. L. S.	13·5	10·6	7·6	1·7
6. Squth America	P. L. S.	13·0	9·9	6·5	1·7
7. Ign.	Eyton	14·0	10·2	7·2	1·9
8. Ign.	Eyton	13·0	9·5	6·8	1·6
9. Ign.	P. L. S.	13·0	10·0	7·0	1·7

5. NYCTIBIUS LEUCOPTERUS.

Caprimulgus leucopterus, Pr. Max. Beitr. iii. p. 311.

Nyctibius leucopterus, DesMurs, Icon. Orn. pls. 49, 50; Burm. Syst. Ueb. ii. p. 377.

Cinereus nigro maculatus, axillis nigris, humeris pure albis: long. tota 11, alæ 8·3, caudæ 5·2.

Hab. Coast-region of S.E. Brazil, Caravellos, and Bahia (*Max.*).

At once distinguishable by its small size and the snowy-white patch on the middle coverts. The only example I have seen of this species has been kindly lent to me by Mr. Eyton.

I have not yet met with examples of two other species, which are apparently valid, namely—

6. NYCTIBIUS BRACTEATUS.

Nyctibius bracteatus, Gould, P. Z. S. 1846, p. 1; Cassin, Cat. Capr., et Pr. Acad. Sc. Philad. v. p. 184.

Castaneo-fuscus, scapularium apicibus et abdomine maculis albis, quasi bracteis, ornatus: long. tota 9·5, alæ 6, caudæ 5·5 (Gould).

Hab. New Granada, Bogota.

Mus. Reg. Inst. de Liverpool et Acad. Philadelphicæ.

This must be a scarce species. In the thousands of Bogota skins I have examined I have never met with it.

7. NYCTIBIUS RUFUS.

Nyctibius rufus, Cab. in Schomb. Guian. iii. p. 711.

Hab. British Guiana (*Schomb.*).

Apparently well marked by its rufous general colouring and small size.

Subfam. II. STEATORNITHINÆ.

Of this subfamily there is only a single known representative, namely,

STEATORNIS CARIPENSIS.

Caprimulgus steatornis et *Steatornis caripensis*, Humboldt.

Steatornis caripensis, l'Herminier, Ann. d. Mus. ser. 3. iii. p. 321, t. 15; E. C. Taylor, Ibis, 1864, p. 88.

This remarkable bird was discovered by Humboldt and Bonpland in 1799, near the Mission of Caripé in the province of Cumana, Venezuela. It also inhabits the caves beneath the ravine crossed by the celebrated "Natural bridge" of Pandi near Bogota, and the "Quebrada negra" of Guaduas in the same neighbourhood*, the chasm called the Hoyo del Aire, fourteen miles N.N.E. of Velez in New Granada†; and in all probability other similar localities in New Granada and Venezuela.

* Roulin, Compt. Rend. iii. p. 94 (1836).

† Holton's New Granada (New York, 1857), p. 263.

Mr. E. C. Taylor (*l. s. c.*) has lately given us an interesting account of his excursion to the caves inhabited by this bird in Trinidad, and I am indebted to that gentleman for one of the specimens procured on that occasion. Its existence in Trinidad was first determined by M. Hautessier. (See Bory St. Vincent in *Compt. Rend.* viii. p. 474, 1838.)

Mr. G. R. Gray (*Gen. of Birds*, i. p. 44) states that the *Steatornis* is also found in Guadeloupe; but this I believe is an error, originating in the fact that M. l'Herminier, who has so well described the bird in the 'Annales du Musée,' lived in Guadeloupe. But M. l'Herminier expressly tells us that he obtained his specimens from Caripé; and I believe the form to be strictly a continental one—Trinidad belonging zoologically to the neighbouring terra firma, and having nothing to do with the Antilles. M. l'Herminier does not mention in his description that the tibiæ as well as the tarsi of this eccentric bird are naked, being covered only by a smooth horny skin, and that there is no appearance of tarsal scutes.

There can be no doubt that this singular form is purely frugivorous. Dr. Funck, who visited the cavern of Caripé in 1843, gives us (*Bull. Acad. Brux.* xi. pt. 2. p. 373) the names of the fruits upon which it feeds.

Subfam. III. CAPRIMULGINÆ.

We now come to the more typical *Caprimulgidæ*, which are always distinguishable by the outer toe having only four digits, and by the pectinated claw of the middle toe. The American species of this subfamily are easily divisible into two sections. The *Caprimulginae glabrirostræ* containing the genera *Chordeiles* and its allies, do not possess the strong bristles springing from the edge of the upper mandible at its base and covering the gape, which distinguish the more typical section or *Caprimulginae setirostræ*. The genera of this subfamily may be briefly distinguished as follows:—

Sect. I. CAPRIMULGINÆ GLABRIROSTRES.

- A. Tarsis validis, digito medio longioribus, omnino nudis. . (1.) *Podager*.
- B. Tarsis modicis, digito medio brevioribus, plus minusve vestitis.
 - a. Cauda brevi, fere quadrata (2.) *Lurocalis*.
 - b. Cauda elongata, paulum furcata (3.) *Chordeiles*.

Sect. II. CAPRIMULGINÆ SETIROSTRES.

- A. *Aeræ*: tarsi brevibus, plus minusve vestitis.
 - a. Alis normalibus; remigibus ii^{do} et iii^o longissimis.
 - a'. Cauda modica, apice rotundata. (4.) *Antrostomus*.
 - b'. Cauda elongata, apice æquali (5.) *Stenopsis*.
 - c'. Cauda longissima, furcata aut bifurcata . . (6.) *Hydrogobius*.
 - b. Alis in mari abnormalibus; rem. vi. primis fere æqualibus (7.) *Heleothreptus*.
- B. *Terricolæ*: tarsi elongatis, nudis.
 - a. Rostro modice lato: narium apertura vix exstante. (8.) *Nyctidromus*.
 - b. Rostro latissimo: narium apertura longe eminente. (9.) *Siphonorhis*.

Sect. I. CAPRIMULGINÆ GLABRĪROSTRES.

Genus 1. PODAGER.

PODAGER NACUNDA.

Caprimulgus nacunda, Vieill. (ex Azara, sp. 312).

Podager nacunda, Schomb. Reise, iii. p. 711; Burm. Syst. Ueb. ii. p. 400.

Caprimulgus diurnus, Max. Beitr. iii. p. 326.

C. campestris, Licht. Doubl. p. 59; Temm. Pl. Col. 182.

♂. *Fuscus, nigro vermiculatus et maculatus, gula, abdomine et caudæ apice albis; primariis nigris, late albo vittatis: long. tota 11·5, alæ 8·8, caudæ 4·3, tarsi 1.*

♀. *Caudæ apice concolore.*

Hab. Paraguay (*Azara*); S.E. Brazil (*Max. & Burm.*); Brit. Guiana (*Schomb.*); Bolivia (*Bridges*); Lower Ucayali (*Bartlett*).

The egg of this species is described by Burmeister in *Cab. Journ.* f. Orn. i. p. 170.

Genus 2. LUROCALIS.

This form is most nearly allied to *Chordeiles*, but easily distinguished by its short square tail. The tarsi are short, feathered in front down to the toes, but naked behind. There is no white bar on the wings or tail, but a narrow white throat-band. There are only two known species of this genus, which differ little from each other, except in size. These are—

1. LUROCALIS SEMITORQUATUS.

Caprimulgus semitorquatus, Gm. (ex Pl. Enl. 734).

Lurocalis semitorquatus, Cassin, Proc. Acad. Phil. v. p. 189.

Podager gouldi, Gray & Mitch. Gen. B. pl. 18.

Chordeiles semitorquatus, Burm. Syst. Ueb. ii. p. 397.

Minor: long. tota 7, alæ 6·7, caudæ 3.

Hab. Cayenne (*Buff.*); Cameta, South Brazil (*Mus. Berol. teste Burmeister*).

2. LUROCALIS NATTERERI.

Caprimulgus nattereri, Temm. Pl. Col. 107.

Lurocalis nattereri, Cassin, Proc. Acad. Phil. v. p. 190.

Chordeiles nattereri, Burm. Syst. Ueb. ii. p. 398.

Major: long. tota 7·8, alæ 7·8, caudæ 3·2.

Hab. S.E. Brazil, near New Freiburg (*Burm.*).

A skin of a species of this genus in Mr. Eyton's collection, which for the present I am inclined to refer to this species, is much larger than the dimensions above given, measuring, long. tota 9·7, alæ 8·5, caudæ 4. It does not otherwise differ materially from smaller-sized specimens.

Genus 3. CHORDEILES.

The eight species of this genus which are known to me may be shortly distinguished as follows:—

Subgenus I. *Chordeiles*, t̄arsis in parte summa antice vestitis, postice omnino nudis.

a. Primariis externis albo vittatis.

a'. Primariis v. primis albo vittatis .. { 1. *virginianus*.
2. *henryi*.

b'. Primariis iv. primis albo vittatis .. { 3. *minor*.
4. *texensis*.

b. Primariis externis non vittatis { 5. *acutipennis*.
6. *pusillus*.

Subgenus II. *Podochætes*, tarsis omnino vestitis { 7. *rupestris*.
8. *leucopygus*.

I have a few remarks to offer on these species.

Subgenus 1. *Chordeiles*.

1. CHORDEILES VIRGINIANUS.

Chordeiles virginianus, auctt. plur.

C. popetue, Baird, B. of N. A. p. 151.

Hab. Atlantic States of North America, southwards through Central and South America into Brazil.

I cannot agree with my friend Prof. Baird in rejecting the old and generally adopted name of *virginianus* for this species, although it is no doubt true that Gmelin's *Caprimulgus virginianus* is only in part applicable to it.

This Night-Hawk seems to be widely distributed in America. It extends from the Atlantic northern states, throughout Mexico and Central America, to Panama, whence Mr. McCleannan has forwarded specimens. Natterer collected examples in the interior of Brazil (his species no. 93) which I cannot separate from the northern bird. My two specimens, obtained by that naturalist at Araguay in October 1823, are of the dark-coloured variety with little rufous on the back, as in most examples from the northern Atlantic states.

2. CHORDEILES HENRYI.

Chordeiles henryi, Cassin; Baird, *l. c.* p. 153.

Similis *C. virginiano*, sed *alis extus albo variegatis, et ventre imo crissoque purius albis*.

Hab. New Mexico and Northern Mexico.

This seems to me little more than a pale variety of *C. virginianus*, as already suggested by Prof. Baird. Mr. Dresser obtained it at Matamoras, as mentioned in the 'Ibis,' 1865, p. 47, along with *C. virginianus*.

I shall leave it, however, to Prof. Baird, who has much better opportunities than myself for forming an opinion, to say whether this form is to continue to rank as a species or not.

3. CHORDEILES MINOR.

Chordeiles minor, Cab. J. f. Orn. 1856, p. 5; Sclater, Cat. p. 279.

Similis *C. virginiano*, sed *minor*: *long. tota 7·7, alæ 7, caudæ 4*.

Hab. Cuba (*Gundl.*); Jamaica (*Osburn*).

4. CHORDEILES TEXENSIS.

Chordeiles texensis, Lawr. ; Baird, B. N. A. p. 154 ; Sclater, Cat. p. 279.

Hab. Valley of Rio Grande and southwards, west to Gulf of California (*Baird*) ; Mexico ; Guatemala (*Salvin*) ; Nicaragua (*Salvin*).

This species, although very closely allied to the common South-American *Chordeiles acutipennis*, is, I think, distinct. It is of larger size, has longer wings, and has the larger wing-coverts and primaries beyond them, nearly down to the white bar, marked with distinct rufous spots on the outer web. These spots are certainly apparent in the females and younger birds of *Ch. acutipennis*, but are hardly seen in the adult males. I subjoin a table of measurements of a series of the two species in Mr. Salvin's collection and my own :—

		Localit.	Long. tota,	alæ,	caudæ.
<i>C. texensis</i> ,	♂	Guatemala	8·7	7·3	4·5
—	♂	Realejo, Nic.	8·3	6·5	4·0
—	♂	Guatemala	8·3	7·3	4·3
—	♀	Guatemala	8·7	7·3	4·5
—	♀	Guatemala	8·2	6·9	4·3
—	♀	Guatemala	8·4	6·9	4·2
<i>C. acutipennis</i> ,	♂	Brazil	7·7	6·4	4·0
—	♀	Brazil	7·7	6·4	3·6
—	♂	Cayenne	7·8	6·4	3·6
—	♂	Tobago	7·6	6·5	3·9
—	♀	South America	7·3	6·6	3·8

5. CHORDEILES ACUTIPENNIS.

Caprimulgus acutipennis, Bodd. (ex Buff. Pl. Enl. 732).

C. acutus, Gm. S. N. i. p. 1031.

Chordeiles acutus, Cassin, Pr. Acad. Phil. v. p. 188 ; Burm. Syst. Ueb. ii. p. 395.

C. labeculatus, Jard. Ann. & Mag. N. H. 1846, p. 118.

C. acutipennis, Cassin, Cat. Capr.

Caprimulgus sapiti, Natt. in Mus. Vindob. (no. 94) ; Bp. Consp. p. 63.

Hab. Tobago (*Kirk*) ; Cayenne (*Buff.*) ; S.E. Brazil, coast-region (*Burm.*) ; Rio Branco and Rio Negro (*Natt.*).

This is a very common South-American species. It comes nearest to *C. texensis*, but, as I have already shown, is of inferior dimensions, and is not so much spotted with rufous on the outer primaries.

I cannot make out what *Chordeiles brasilianus*, Cassin (ex Gmelin) (Pr. Acad. Phil. v. p. 187) is. Burmeister also gives a species of *Chordeiles* as Brazilian, under the name *Chordeiles pruinus* (Syst. Ueb. ii. p. 394), and makes it identical with Cassin's *C. brasilianus*. Cassin gives no description of his species. According to Burmeister it is very closely allied to the present* ; but he mentions that the five first primaries are barred with white. If this be really the case, the species is probably *C. virginianus* ; but that is a much larger bird than the present. As I have already stated, there is not much difficulty in separating the species of *Caprimulgidæ* when the speci-

* Of *C. acutus* he says, " Gestalt und Grösse ganz wie bei den vorigen Art. i. e. *C. brasilianus*" (*l. c.* p. 396).

mens are before one ; but it is not easy to reconcile the conflicting opinions as regards the synonyms of the older authors.

Herr von Pelzeln informs me that Natterer's MS. name *sapiti*, concerning which there has been so much discussion, is undoubtedly referable to this species, having been formerly applied to it in Natterer's catalogue. Natterer subsequently identified this species with *Caprimulgus semitorquatus*, Gm. (Pl. Enl. 734) ; but I follow Cassin and Burmeister in considering that the latter synonym must be referred to *Lurocalis gouldi*.

I consider *Caprimulgus hirundinaceus*, Spix (Av. Bras. ii. pl. 3. f. 1), probably identical with this species. The bill is drawn as if bristled, it is true ; but that is also the case in the accompanying figure of *Chordeiles leucopygus*.

6. CHORDEILES PUSILLUS.

Chordeiles pusillus, Gould, P. Z. S. 1861, p. 182.

Hab. S.E. Brazil, Lagoa Santa (*Lund, in Mus. Hafn.*) ; Fazenda and Corunda, Brazil (*Natt.*, no. 605).

The diminutive size of this little species, together with the white crissum and chestnut shoulders, render it unmistakable. My specimens (from Natterer) measure as follows :—

Localit.	Long. tota,	alæ,	caudæ.
♂. Fazenda, July 1825	6.2	5.3	3.0
♀. Corunda, July 1825	6.0	5.2	3.0

The remaining species of the subgenus varies greatly from the typical coloration. This is

7. CHORDEILES RUPESTRIS.

Caprimulgus rupestris, Spix, Av. Bras. ii. p. 2, pl. 2.

Chordeiles rupestris, Burm. Syst. Ueb. ii. p. 393.

♂. *Supra cinereus, fusco variegatus : subtus albus ; pectore cinerascente, fusco vario ; ventre fusco maculato : alis nigris, speculo alari et secundariis intus albis : caudæ rectricibus in pognio interno (nisi duæ mediæ dorso concolores) albis, harum apicibus nigris : long. tota 8.3, alæ 6.7, caudæ 3.7.*

♀. *Mari similis, sed magis rufescens et coloribus minus puris.*

Hab. Rocky Islands of Rio Negro (*Spix*) ; Lower Ucayali (*Bartlett*).

Subgenus 2. *Podochætes*.

8. CHORDEILES LEUCOPYGUS.

Caprimulgus leucopygus, Spix, Av. Bras. ii. p. 3, pl. 3. f. 2.

Chordeiles leucopygus, Burm. Syst. Ueb. ii. p. 393.

Lurocalis leucopygus, Cassin, Cat. Capr.

Hab. Brazil, vic. of Para (*Mus. Berol.*) ; banks of the Amazon (*Spix*) ; Matogrosso, Brazil, Nov. 1826 (*Natt.*, sp. no. 761).

Easily known by the want of any white wing-bar, the square white mark on the three outer pairs of rectrices, and its short tarsi, feathered down to the base.

Cassin (Cat. Capr.) and Burmeister (Syst. Ueb.) refer "*Capr. minutus*, Natt.," Bp. Consp. p. 63, to this species. But Herr von Pelzeln kindly informs me that there is no such name as this to be found in Natterer's MS., and suggests that it may be a misprint for *mixtus*. This specific name of Lichtenstein was attached by Natterer to his no. 357, which is *Antrostomus parvulus*.

Cassin, in his catalogue, refers the present species to *Lurocalis*; but its general form, except as regards the tarsi, is much more that of *Chordeiles*. Spix's specific name is not very applicable, as the rump is not white; but I suppose he refers to the white mark on the tail-feathers.

Sect. II. CAPRIMULGINÆ SETIROSTRES.

Subsect. A. *Aereæ*: tarsi brevibus, plus minusve vestitis; rostro plus minusve compresso.

Genus 4. ANTROSTOMUS.

Of this genus I cannot at present give a detailed account, for want of additional specimens. Nor am I quite satisfied where the line is to be drawn (if it is to be drawn at all) between *Antrostomus* and *Stenopsis*, nor as to any real generic difference between both these groups and some of the shorter-winged *Caprimulgi* of the Old World. Reserving these points for future discussion, I may say a few words about each of the species of this and the following groups which are known to me.

The species of *Antrostomus* may be divided into two sections, as follows:—

Sect. A. Without any white wing-spot.

Sect. B. With a white wing-spot on the second, third, and fourth primaries of the male bird.

I possess examples of nine very distinct species of this genus, besides three skins of females or immature birds which at present I do not venture to introduce into the system.

Sect. A. Speculo alari nullo.

1. ANTROSTOMUS CAROLINENSIS.

Caprimulgus carolinensis, Gm. S. N. i. p. 1028.

Antrostomus carolinensis, Baird, B. N. A. p. 147.

Hab. South-Atlantic and gulf-states of North America (*Baird*); Cuba (*Gundlach*); Jamaica (*March, in litt.*); Guatemala, Dueñas (*Salvin*).

At once distinguishable by its large size, and by the bristles of the upper mandible being bordered with lateral filaments, which I have not observed in any other species.

2. ANTROSTOMUS RUFUS.

Caprimulgus rufus, Bodd. et Gm. (ex Pl. Enl. 735).

Antrostomus rufus, Cassin, Pr. Acad. Phil. v. p. 183, et Journ. ii. p. 120.

A. rutilus, Burm. Syst. Ueb. ii. p. 385.

Caprimulgus cortopao, Natt. Mus. Vindob. sp. no. 741.

Hab. Cayenne (*Buff.*); Para (*Natt.*).

I have a single female example of this species, from Natterer's collection. Mr. Salvin's collection also contains a specimen.

3. ANTROSTOMUS SERICEO-CAUDATUS.

Antrostomus sericeo-caudatus, Cassin, Proc. Acad. Phil. iv. p. 238, et Journ. ii. p. 121, pl. 12.

Hab. South America.

I have a skin, believed to be from Venezuela, which I think may probably be referable to the female of this species. There is a similar specimen in the British Museum, said to be from Bahia.

4. ANTROSTOMUS VOCIFERUS.

Caprimulgus vociferus, Wils.

Antrostomus vociferus, Cassin, Journ. Ac. Phil. ii. p. 122; Baird, B. N. Am. p. 148.

Hab. Eastern United States to the plains (*Baird*); Cuba (*Lem-leye*); South Mexico, Jalapa (*De Oca*); Guatemala (*Salvin*).

This species seems to be abundant in Guatemala. Mr. Salvin obtained examples at Coban and San Geronimo, besides other localities in Vera Paz.

5. ANTROSTOMUS MACROMYSTAX.

Caprimulgus macromystax, Wagl. Isis, 1831, p. 533 (?).

Antrostomus macromystax, Sclater, P. Z. S. 1858, p. 296.

Similis A. vocifero, sed paulo major, alis longioribus, rostro longiore et magis compresso: narium aperturis exstantibus; tarsi longioribus et magis denudatis: long. tota 9·7, alæ 6·6, caudæ 5, rostri a rictu lin. dir. 1·4.

Hab. In Mexico merid. La Parada (*Boucard*).

Whether this bird is really Wagler's *C. macromystax* is certainly problematical; but there is no doubt at all of its being quite distinct from *A. vociferus*, although at first sight it is surprisingly like that species in coloration. I have not yet met with a second example of this species.

6. ANTROSTOMUS NUTTALLI.

Caprimulgus nuttalli, Aud.

Antrostomus nuttalli, Cassin, Journ. Acad. Phil. ii. p. 123; Baird, B. N. A. p. 149; Coues, Ibis, 1865, pp. 158 et 538; Dresser, ibid. p. 470.

Hab. High central plains of North America, extending to the Pacific Coast; Kansas and Arizona (*Coues*); Texas (*Dresser*).

Easily distinguishable from *A. vociferus* by its smaller size. It appears also, judging from the specimens in my collection, to have nearly the whole tarsus bare of feathers.

7. ANTROSTOMUS OCELLATUS.

Caprimulgus brasiliensis, Max. Beitr. iii. p. 337.

Caprimulgus ocellatus, Tsch. Consp. Av., et Faun. Per. pl. 5. f. 2.
C. brasiliensis, Tsch. F. P. p. 125.

Antrostomus ocellatus, Cassin, Proc. Acad. Phil. v. p. 183; ejusd. Mamm. et Orn. Expl. Exp. p. 187; Burm. Syst. Ueb. ii. p. 386.

Caprimulgus lunulatus, Natt. MS. (no. 518).

Hab. South-eastern Brazil (*Max.*); wood-region of Eastern Peru (*Tschudi*); Ypanema, Brazil (*Mus. Berol.*).

Remarkable for the elongation forwards of the loreal plumes, somewhat as in *Ægotheles*.

Sect. B. Speculo alari albo.

8. ANTROSTOMUS NIGRESCENS.

Caprimulgus nigrescens, Cab. in Schomb. Guian. iii. p. 710.

C. semitorquatus, Gray & Mitch. Gen. Birds, i. pl. 17.

Stenopsis nigrescens, Cass. Cat. Capr.

Antrostomus nigrescens, Cab. et Hein. Mus. Hein. iii. p. 91.

♂. *Nigricans rufo maculatus: subtus niger, albido-rufescente regulariter transvittatus: vitta gulari, macula in remigum ii^{di}, iiiⁱ, et ivⁱ pogoniis internis et rectricum lateralium apicibus albis: long. tota 7·5, alæ 5·5, caudæ 3·7.*

♀. *Mari similis, sed maculis remigum et rectricum nullis.*

Hab. British Guiana (*Schomb.*); Para and Rio Negro (*Natt.* sp. no. 880); New Granada (*Mus. P. L. S.*).

9. ANTROSTOMUS PARVULUS. (Pl. XIII.)

Caprimulgus parvulus, Gould, P. Z. S. 1837, p. 22, et Zool. Voy. Beagle, iii. p. 37.

“*Caprimulgus mixtus*, Licht.” *Natt.* no. 357.

♂. *Nigro rufoque variegatus, pileo summo nigro, maculis in rectricum alarium apicibus albis: subtus fulvus, nigro transradiatus: remigum ii^{di}, iiiⁱ, et ivⁱ vitta et rectricum lateralium apicibus albis: long. tota 7·5, alæ 5·3, caudæ 4.*

♀. *Mari similis, sed maculis remigum et rectricum albis nullis.*

Hab. Banks of the Paraná near Santa Fe, La Plata (*Darwin*); South Brazil, Villa Maria, Sept. 1825 (*Natt.*).

I doubt much whether Peale's *C. æquicaudatus* (*Zool. Expl. Exp. Birds*, p. 168) can be identical with this species, as supposed by Mr. Cassin (*Mamm. & Orn. Expl. Exp.* p. 188, *Atlas*, pl. 13. f. 1). It is from Callao, Peru, a very different locality.

The female specimen of my pair (collected by Natterer) agrees perfectly with Mr. Gould's type now in the British Museum, and I have seen another example in Sir William Jardine's collection.

Genus 5. STENOPSIS.

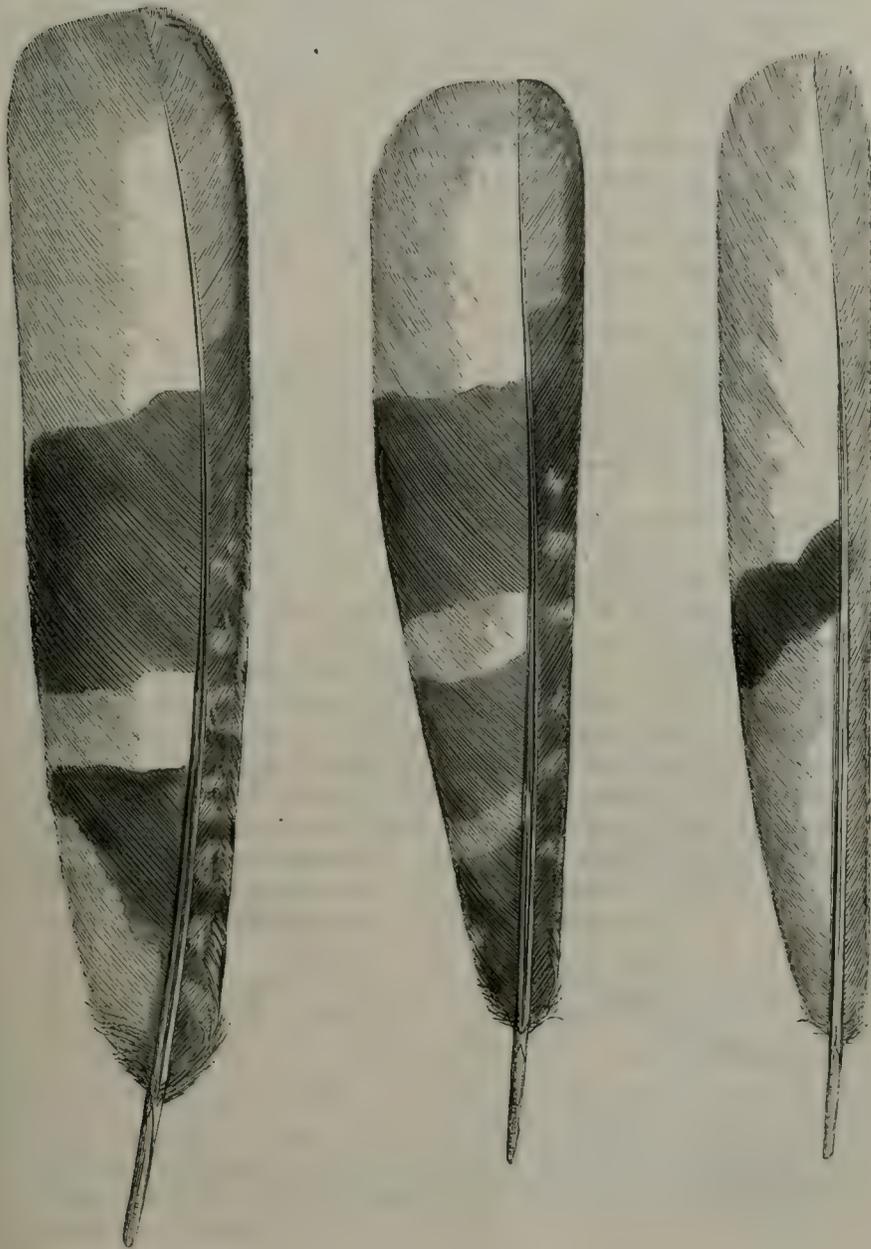
The three species which I refer to this genus all have a broad and distinct white bar across the first four primaries. They may be diagnosed as follows:—

- a. Inner webs of outer pair of rectrices of male white, with a single narrow black cross bar (fig. 9)..... *S. cayanensis*.
 b. Inner webs of outer pair of rectrices of male black, with a broad terminal and narrow medial bar white.
 a'. Larger; collar above fulvous; no white basal bar on inner web of outer rectrix (fig. ~~9~~)⁽¹¹⁾)..... *S. bifasciata*.
 b'. Smaller; collar above rufous; a narrow white basal bar on inner web of outer rectrix (fig. ~~10~~)⁽¹⁰⁾)..... *S. ruficervix*.

Fig. 11.

Fig. 10.

Fig. 9.



1. STENOPSIS CAYANENSIS.

Caprimulgus cayanensis, Gm. S. N. i. p. 1031 (ex Buff. Pl. Enl. 760); Cab. in Schomb. Guian. iii. p. 710.

C. cayanus, Lath. Ind. Orn. ii. p. 587.

C. leopetes, Jard. & Selb. Ill. Orn. ser. 1. pl. 87.

Stenopsis cayanensis, Cassin, Proc. Ac. Phil. v. p. 179.

Hab. Cayenne (*Buff.*); Tobago (*Kirk*).

This species is very easily recognizable by its white outer tail-feathers. The four outer pair are for the greater part white, crossed by a narrow black band on the inner web about halfway down, the outer webs being also broadly edged and tipped with black. My specimens were kindly presented to me by Sir William Jardine, having been procured by his correspondent Mr. Kirk in Tobago, and are therefore typical of his *C. leopetes*.

Azara's "*Ibiyau alas y cola blancas*," Apunt. no. 314 (unde *Capr. leucurus*, Vieill.), is commonly referred to this species, which, if this be correct, goes as far south as Paraguay. But I have never met with examples from that country, nor from any part of Brazil.

2. STENOPSIS BIFASCIATA.

Caprimulgus longirostris, Bp. Journ. Acad. Phil. iv. p. 384 (?).

C. bifasciatus, Gould, P. Z. S. 1837, p. 22; Zool. Voy. Beagle, iii. p. 36; Gay, Fauna Chilena, i. p. 261 (certé).

C. decussatus, Tschudi, Consp. Av., et Faun. Per. p. 126, t. 5. f. 1.

C. conterminus, Peale, Zool. Expl. Birds, p. 169.

Stenopsis longirostris, Cassin, Cat. Capr. et Mamm. & Orn. Expl. Exp. p. 188; Atl. pl. 13. f. 1.

Antrostomus longirostris, Burm. Syst. Ueb. ii. p. 387 (?).

Hab. Mountains of Central Chile (*Darwin*); vicinity of Valparaiso (*Peale*); vicinity of Santiago (*Leybold*); Peru (*Tsch.*).

It appears to me very doubtful whether *Caprimulgus longirostris* of Bonaparte really belongs to this Chilian species; and I have therefore adopted as its specific designation the next given name, *bifasciatus* of Gould. I have seen Mr. Gould's typical specimen of this species in the British Museum, and find that it agrees with my examples, which were transmitted by Leybold from the vicinity of Santiago.

Dr. Burmeister gives his *Antrostomus longirostris* as inhabiting "middle Brazil and Amazonia;" but I have never seen the Chilian bird from those countries, and should almost doubt its occurrence there.

Messrs. Philippi and Landbeck have lately described a *Capr. andinus*, from Chili (Wieg. Arch. f. Nat. 1860, p. 279), which seems to be a female bird, perhaps of this species.

3. STENOPSIS RUFICERVIX, sp. nov. (Pl. XIV.)

♂. *Supra nigra, rufo variegata, torque collari postico læte rufo; alis nigris, secundariis et tectricibus rufo maculatis, primariis quatuor externis albo vittatis: subtus nigra, vitta lata gulari alba; ventre fulvo, nigro transradiato: caudæ rectricibus*

lateralibus vitta lata apicali, altera mediali, et tertia minore basali, in pogoniis internis, albis; reatricibus duabus mediis dorso concoloribus: long. tota 9, alæ 6, caudæ 4.7.

♀. *Vitta gutturali fulva, speculo alari rufescente, et caudæ fasciis albis vix apparentibus.*

Hab. in Nov. Granada int. et rep. Æquatoriali.

Obs. Similis *S. bifasciata*, sed minor, et torque collari rufocastaneo, caudæ pictura et pileo rufo punctato differt.

I have several examples of this very distinct new species of *Ste-nopsis*, all received from Bogota collections. Two examples of the same bird in Mr. Gould's possession are from the vicinity of Quito. The bird is probably the representative of the last species in the Andes of Ecuador and New Granada, but is quite distinct.

Genus 6. HYDROPSALIS.

The species of this genus may be divided into three easily distinguishable sections, as follows:—

- Subgen. 1. Primaries crossed by a broad white wing-band; tail doubly forked; outer pair of rectrices of male of the same length as the medial pair..... *Diplopsalis*.
- Subgen. 2. No white band on primaries; tail doubly forked; outer pair of rectrices of male much longer than the medial pair, which are also prolonged..... *Hydropsalis*.
- Subgen. 3. No white band on primaries; tail singly forked; outer pair of rectrices of male more than double the length of medial pair, which are the shortest *Macropsalis*.

Subgen. 1. *Diplopsalis*.

1. HYDROPSALIS TRIFURCATA.

Hydropsalis climacocercus, Tsch. F. P. p. 128, pl. 6. f. 1; Cassin, l. c. p. 118 (?).

H. trifurcatus, Natt. MS. no. 779; Tsch. l. c. p. 128.

♂. *Supra fulvescenti-fusca, nigro reticulata et variegata; tectricibus alarum et scapularibus maculis magnis pure fulvis ornatis; alarum primariis nigris, vitta lata in quinque externis alba; caudæ reatricibus lateralibus utrinque duabus ad basin nigris, unius utrinque exterioris basi nigra albo vittata, inde vitta lata longitudinali alba, apicibus ipsis fuscis; duabus utrinque sequentibus albis, ad apicem fusco-nigris; duabus mediis dorso concoloribus: subtus alba, pectore fulvo, nigro vermiculato: long. tota 10.2, alæ 6, caudæ 6.*

♀. *Supra magis fusca, subtus omnino obscurior et nigro magis variegata: cauda quoad formam mari simili, sed brevior, et vitta longitudinali alba fere evanescente.*

Hab. Maynas, Eastern Peru (*Poeppig*); Lower Ucayali (*Bartlett*); Rio Guaporé and Forte do Principe, interior of Brazil (*Natt.*).

As far as I can make out from Tschudi's description and wretched figure, his *H. climacocerca* is not different from Natterer's *H. trifurcata*. I cannot find any specific difference between a typical specimen of *H. trifurcata*, Natterer, and a series of skins obtained

by Mr. E. Bartlett on the Ucayali, which must in all probability be the same as Tschudi's bird. However, as this is not quite certain, I prefer to retain Natterer's MS. name for the species, particularly as it was published by Tschudi at the same time as his own. Tschudi gives no locality for his *H. climocerca*, but states that *H. trifurcatus* was obtained by Prof. Poeppig in the province of Maynas.

The specimens of this bird collected by Schomburgk in British Guiana, and referred to this species by Mr. G. R. Gray in his 'Catalogue of Nocturnal Fissorostres,' are perhaps of a different species, and may be separated as follows:—

2. HYDROPSALIS SCHOMBURGKI.

Hydropsalis schomburgki, G. R. Gray in Mus. Brit.

Similis H. trifurcato, sed minor et obscurior; caudæ rectricibus duabus mediis latius et magis distincte nigro fasciatis; ventre toto nigro maculato, crisso solum albo.

Hab. British Guiana (*Schomb.*).

Mus. Brit.

Subgen. 2. *Hydropsalis*.

3. HYDROPSALIS TORQUATA.

Caprimulgus torquatus, Gm. S. N. i. p. 1032.

C. psalurus, Temm. Pl. Col. 157, 158.

Hydropsalis azaræ, Wagl. Isis, 1833, p. 1222 (?).

Psalurus macropterus, Sw. Cab. Cycl. Birds, ii. p. 339.

Hydropsalis torquatus, Cassin, Journ. Ac. Phil. ii. p. 114.

H. psalurus, Burm. Syst. Ueb. ii. p. 381.

♂. *Fusco et ochraceo variegata, torque collari postico rufo; rectricibus externis proximas dimidio excedentibus; vexillo interno nigro, intus albo limbato, ad basin ochraceo transfasciato; rectr. mediis proximum par plus quam pollice superantibus; long. tota 14·5, alæ 6·5, caudæ rectr. ext. 11, med. 6·5.*

♀. *Subtus fere omnino fulva, nigro transradiata; cauda brevior et magis quadrata.*

Hab. South-eastern Brazil, Lagoa Santa (*Burm.*).

4. HYDROPSALIS PALLESCENS.

Hydropsalis pallescens, Von Pelz. Verh. Z.-b. Gesellsch. in Wien, Nov. 8th, 1865, p. 986.

Similis H. torquatæ, sed major et coloribus pallidioribus.

Hab. Brazil, Matto Grosso and Forte do Principe (*Natt.* no. 1048).

I have as yet only seen the female of this species, which has been most kindly sent to me by Herr von Pelzel out of the duplicates in the Vienna collection.

I think it very probable that Azara's *Ibiyau cola de tixera* (no. 309) may belong to this species, and not, as generally referred, to *H. torquata*. If this be so, the species will be entitled to be called *H. furcifera*, the *Capr. furcifer*, Vieillot (Nouv. Dict. x. p. 242, et Enc. Méth. p. 542), being founded upon Azara's description.

Subgen. 3. *Macropsalis*.

The species of this group may be differentiated as follows by their two external elongated tail-feathers:—

- | | |
|---|--|
| a. Rectrice externa elongata nigra, intus usque ad finem late albo limbata | } <i>H. forcipata</i> .
<i>H. ypanemæ</i> . |
| b. Rectrice externa elongata nigra, apice albida, intus ad basin anguste rufo limbata | |
| c. Rectrice externa elongata nigra, rachide alba, extus rufo vittata | <i>H. lyra</i> .
<i>H. segmentata</i> . |

Mr. Cassin has given excellent descriptions of three of them, and illustrations of their tail-feathers in the ‘Journal of the Philadelphia Academy.’ Herr von Pelzeln has lately described a fourth species allied to *H. forcipata*.

5. HYDROPSALIS FORCIPATA.

Caprimulgus forcipatus, Nitzsch, Pterylographie, p. 125.

Hydropsalis limbatus, Cassin, Journ. Ac. Phil. ii. p. 115.

Caprimulgus megalurus, Licht. MS.

Hydropsalis forcipatus, Burm. Syst. Ueb. ii. p. 380.

Hab. S.E. Brazil, Organ-mountains (*Burm.*).

6. HYDROPSALIS YPANEMÆ.

Hydropsalis ypanemæ, Von Pelz. Verh. Z.-b. Gesellsch. in Wien, Nov. 8th, 1865, p. 985.

Similis H. forcipatæ, sed minor, et in mare remige secundo primum fere æquante, et reatricibus duabus mediis brunneo transverse fasciatis, secundam et tertiam longitudine superantibus diversa.

Hab. Ypanema, Brazil (*Natt.* no. 1049).

7. HYDROPSALIS LYRA.

Hydropsalis lyra, Bp. Consp. p. 59; Cassin, Proc. Acad. Philad. 1849, p. 238, et Journ. Acad. Phil. ser. 2. ii. p. 116.

Hab. Interior of New Granada, received in collections from Bogota.

8. HYDROPSALIS SEGMENTATA.

Hydropsalis segmentata, Cassin, Proc. Acad. Philad. 1849, et Journ. Acad. Philad. ser. 2. ii. p. 116; Sclater, Am. Cat. p. 281.

Antrostomus, sp.?, Sclater, Am. Cat. p. 280, sp. 1683 (♀).

Hab. Interior of New Granada, and Ecuador, Matos (*Fraser*).

Genus 7. HELEOTHREPTUS.

HELEOTHREPTUS ANOMALUS.

Amblypterus anomalus, Gould, P. Z. S. 1837, p. 105; Ic. Av. pt. i. pl. 1.

Eleothreptus anomalus, G. R. Gray, List of Gen. p. 7 (1840); Burm. Syst. Ueb. ii. 383; Von Pelzeln, Zool. d. Novara-Reise, Vögel, p. 36 (note).

♂. *Remigibus prim. falciformibus nigris, omnibus intus ad basin et quinque externis item ad apicem fulvis; prim. sex externis*

fere pari longitudine, sept. oct. et nono longissimis, decimo fere dimidio brevior.

♀. *Remigibus fuscis, rufo fasciatis; quatuor externis fere æqualibus et longissimis.*

Hab. Interior of Brazil; Mattogrosso, Goyaz, Ypanema, Cimiterio, Curytiba, Ytararé, and Irisanga (*Natt.*).

Herr von Pelzeln has lately shown (*l. c.*) that the very abnormal form of the wing in this bird is peculiar to the *male* sex.

Mr. Gould's original specimen of this bird is now in the British Museum. Besides the examples of this scarce bird mentioned by Herr von Pelzeln, I have seen it in the private collections of Mr. Eyton and of the late Baron de la Fresnaye.

Subsect. B. *Terricolæ*: tarsi elongatis, implumibus; rostro dilatato.

Genus 8. NYCTIDROMUS.

NYCTIDROMUS ALBICOLLIS.

Caprimulgus albicollis et *C. guianensis*, Gm. S. N. i. p. 1030.

Nyctidromus americanus, Cassin, Pr. Ac. Phil. 1851, p. 179; Cab. & Hein. Mus. Hein. iii. p. 92; Scl. & Salv. Ibis, 1859, p. 125 (nec *C. americanus*, Gm.).

Nyctidromus guianensis, *N. albicollis*, *N. derbyanus*, *N. grallarius*, et *N. affinis*, auctt. var.

♂. *Rectricum pari tertio et quarto (a medio) fere omnino albis.*

♀. *Rectricum pari tertio et quarto nigris, fulvo transvittatis, apicibus albescentibus.*

Hab. Whole of Central and Southern America west of the Andes, from Southern Mexico (Xalapa, *Sallé*) to Southern Brazil; very common in British Guiana (*Schomb.*); Vera Paz, common (*Salvin*); Upper Ucayali (*Bartlett*); common in collections from Bogota.

Messrs. Cabanis and Heine have given a long list of the many synonyms of this species (*l. s. c.*), which I believe to be quite correct (with the exception of *Capr. americanus*, Gm., which belongs to *Siphonorhis*) and need not now repeat. I agree with these gentlemen in considering that all the specimens met with from the various localities mentioned above are referable to one species. The South-Brazilian specimens (*N. derbyanus*) are generally larger; but in Mr. Salvin's extensive series of skins of this bird from the Vera Paz some of the males are quite as large. Bogota skins, on the other hand (*N. grallarius*), are usually rather small.

Genus 9. SIPHONORHIS.

1. SIPHONORHIS AMERICANA.

Caprimulgus jamaicensis, Briss. Orn. ii. p. 480.

C. americanus, Linn. S. N. i. p. 346.

Siphonorhis americanus, Sclater, P. Z. S. 1861, p. 77, et Am. Cat. p. 282.

Hab. Jamaica (*Osburn*).

I have nothing to add to the account I have already given of this singular form.

It appears therefore that about forty-two species of American *Caprimulgidæ* may be regarded as well established. The subjoined table gives their geographical distribution:—

	North America.	Mexico and Central America.	West Indies.	New Granada and Ecuador.	Guiana.	Amazonia.	S. E. Brazil.	La Plata.	Chili.
1. <i>Nyctibius grandis</i>	*	*	*		
2. — <i>æthereus</i>		
3. — <i>longicaudatus</i>		
4. — <i>jamaicensis</i>	*	*	*	*	*	*		
5. — <i>leucopterus</i>	*	*		
6. — <i>bracteatus</i>		
7. — <i>rufus</i>	*		
8. <i>Steatornis caripensis</i>	*		
9. <i>Podager nacunda</i>	*	*	*	*	
10. <i>Lurocalis semitorquatus</i>	*		
11. — <i>nattereri</i>		
12. <i>Chordeiles virginianus</i>	*	*	*	*	*	*	*		
13. — <i>henryi</i>	*		
14. — <i>minor</i>	*		
15. — <i>texensis</i>	*		
16. — <i>acutipennis</i>	*	*	*	*		
17. — <i>pusillus</i>	*		
18. — <i>rupestris</i>	*	..		
19. — <i>leucopygus</i>	*		
20. <i>Antrostomus carolinensis</i>	*	*		
21. — <i>rufus</i>	*	..	*		
22. — <i>sericeo-caudatus</i>	*?		
23. — <i>vociferus</i>	*	*		
24. — <i>macromystax</i>	*		
25. — <i>nuttalli</i>	*		
26. — <i>ocellatus</i>	*		
27. — <i>nigrescens</i>	*	*	*	..		
28. — <i>parvulus</i>	*	*	
29. <i>Stenopsis cayanensis</i>	*	*		
30. — <i>ruficervix</i>	*		
31. — <i>bifasciata</i>	*	*
32. <i>Hydropsalis trifurcata</i>	*	..		
33. — <i>schomburgki</i>	*		
34. — <i>torquata</i>	*	*	
35. — <i>pallescens</i>	*	..		
36. — <i>forcipata</i>	*		
37. — <i>ypanemæ</i>	*		
38. — <i>lyra</i>	*	*		
39. — <i>segmentata</i>	*		
40. <i>Heleothreptus anomalus</i>	*	*	*		
41. <i>Nyctidromus albicollis</i>	*	*	..	*	*	*	*		
42. <i>Siphonorhis americana</i>	*		

March 13, 1866.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

Mr. Fraser read the following list of species of Mollusks recently collected by Robert Swinhoe, Esq., H.B.M. Vice-Consul, C.M.Z.S., in Formosa, stating that the list had been furnished him by Henry Adams, Esq., F.L.S., and that it was a continuation of the list published in the Society's 'Proceedings' for 1865, p. 196.

Conus chaldæus, Bolt.

— *lignarius*, Reeve.

Fusus colosseus, Lam.

Murex microphyllus, Lam.

Eburna spirata, Linn., var.

Phos senticosus, Linn.

Nassa thersites, Brug.

— *gemmulata*, Lam.

— *marginulata*, Lam.

— *olivacea*, Brug.

— *tænia*, Gmel.

Cuma carinifera, Lam.

Mitra coccinea, Reeve.

Fulgoraria rupestris, Gmel.

Semicassis decussata, Linn.

— *areola*, Linn.

Dolium fasciatum, Brug.

Lagena wiegmanni, Ant.

Bursa rana, Linn.

Sycotypus ficus, Linn.

Dactylus mustelinus, Lam.

— *maurus*, Lam.

Harpa major, Mart.

Natica maroccana, Chem.

— *lineata*, Chem.

Ruma sebæ, Sow.

Architectonica maxima, Phil.

Niso brunnea, Sow.

Volva volva, Linn.

Cypræa miliaris, Gmel.

— *tigris*, Linn.

— *arabica*, Linn.

Littorina melanostoma, Gray.

— *newcombia*, Reeve.

— *pintado*, Wood.

— *obesa*, Sow.

Melania pyramis, V. d. Busch.

— *lateritia*, Lea.

Melania fasciolata, Oliv.

— *crenulata*, Chem.

Telescopium fuscum, Chem.

Lampania zonalis, Brug.

Pyrazus semistriatus, Bolt.

Cerithium variegatum, Quoy.

— *nitæformis*, Sow.

Vivipara angularis, Müll.

Galerus extincorum, Lam.

Gladius fusus, Linn.

Nerita guillouana, Récl.

— *costata*, Gmel.

— *yoldii*, Récl.

— *squammulata*, Guill.

— *plicata*, Linn.

Neritella subpunctata, Récl.

Senectus radiata, Gmel.

Lunella reclusa, Chem.

Turbo marmoratus, Linn.

Chondrula cantori, Phil.

Cyclophorus indicus, Desh.

Macha strigillata, Lam.

Hiatula diphos, Linn.

Trigonella luzonica, Desh.

Macoma truncata, Jonas.

Cryptogramma flexuosa, Linn.

Circe undatina, Lam.

— *gibbia*, Lam.

Callista citrina, Lam.

Chione dysera, Linn.

Trapezium, ? n. s.

Crassatella sulcata, Lam.

Lithophaga fusca, Gmel.

Scapharca disparilis, Reeve.

Anomalocardia trapezina, Desh.

Limopsis japonica, A. Ad.

Amussium pleuronectes, Linn.

Lingula ovalis, Reeve.

Mr. A. Murray, F.L.S., read a communication on the minor cha-

acters by which the species of Mammals may be distinguished, and called particular attention to the structure of the hair as shown under the microscope, and the form of the dung, as likely to lead to results available in classification.

Mr. H. B. Tristram, C.M.Z.S., gave a notice of the recent capture of *Gymnetrus banksii*, the Great Ribbonfish, off the coast of Durham. The specimen was about 16 feet long, and was the ninth instance on record of this fish having occurred on the British coasts since the year 1700.

The following papers were read :—

1. Notice of the Examination of the Type Specimen of *Aëлло cuvieri* of Leach. By DR. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S., &c.

Dr. Leach, in the thirteenth volume of the 'Transactions of the Linnean Society,' has described several genera of Leafless Bats, especially one under the name of *Aëлло*, from a specimen in the Museum of Joshua Brookes, of Blenheim Street, Oxford Street. This specimen was sold at his sale, and purchased by Professor Dr. Edmund Grant of University College, London. I have more than once sought for it in that collection without having been able to discover it, and I believe that Mr. Tomes was equally unsuccessful.

The genus has not been recognized by the characters given by Dr. Leach, though they are full and particular, and consequently has been one of the puzzles to the students of these animals. It has been conjectured to have been described from a specimen of a Bat in which the tail had been partially withdrawn.

Wishing to verify the previous determination that Leach's genus *Celæno* was only a synonym of *Noctilio*, I requested Dr. Grant to allow me to see the specimens under his care; and he most kindly acceded to my request, and said he would put the Bats out on a table that I might examine them whenever I called. I availed myself of his kindness accordingly, and went directly to see them. I was much pleased, not only to find *Celæno brookesii* (which is certainly *Noctilio americanus*), but also the long lost *Aëлло cuvieri*; and there could not be a doubt for a moment that the latter was a species of my genus *Chilonycteris*, which Gundlach has also described under the name of *Lobostoma*; so that these generic names must give way to the more ancient one of *Aëлло* of my earlier teacher and friend.

The specimen is in a moderately good state, considering that it has been preserved dry, as it was expanded when it was taken out of spirits. The crest over the nostrils, and the end of the nose and chin, are contracted. The skin in front of the chin and on one side of the face have been cut off in order to examine the teeth. This explains why the ridges of the chin and the peculiar form of the nose, so characteristic of the genus, were not described by Dr. Leach.

It is this imperfection of the description that has left the genus so long unrecognized, and, indeed, made it impossible to determine what it was without the examination of the type specimen. The hair is of a very bright uniform red-brown colour, much redder than in any specimen of *Chilonycteris* in the British Museum; but it is a question whether this is the proper colour of the fur, or whether it arises from the partial bleaching of the specimen, which was probably taken from spirits when it was prepared. The hair is of one uniform colour to the base, wherein it agrees with the description of *Lobostoma cinnamomeum* of Gundlach from Cuba, which I believe to be only a variety of *Chilonycteris macleayii*. In the proportions of the arm-bone and the fingers, &c., it also agrees with *Chilonycteris macleayii*.

The generic characters of *Aëllo*, as given by Dr. Leach, occupy nearly a page of a quarto book, and yet no one has been able to discover the genus. One could not have a more convincing proof that it is not mere length of character that is required to define a genus.

It is remarkable that Dr. Leach described two genera, *Mormops* and *Aëllo*, so nearly allied to each other, without seeing their relation, and placed one in his group of Bats with leaves on the nose, and the other in that without a nose-leaf. Yet he was a person who had a quick eye for natural affinities; and zoologists ought never to forget that it is to him we owe our acquaintance with the work of Cuvier and Latreille. It was the desire to present the latter to the English reader that induced him to devote the greater part of his nights to its translation. He made it a rule to translate a certain number of pages every morning before he had his breakfast and began his daily official duties; and this hard work, I believe, caused the breaking down of his health and early death.

2. Additional Notes on the *Anatidæ* of the Genera *Dendrocygna* and *Tadorna*. By P. L. SCLATER, M.A., Ph.D., F.R.S., &c., Secretary to the Society.

I have a few additional remarks to offer on the species of Ducks of the genera *Dendrocygna* and *Tadorna*, concerning which I have previously communicated some notes to the Society*.

Sp. 6. DENDROCYGNA MAJOR.

The occurrence of *Dendrocygna major* in Madagascar has been confirmed by the receipt of a skin of this species recently collected in that island by Mr. Gerrard, which has been kindly submitted to my examination by Mr. A. Newton†. This species is at once distinguishable from *D. arcuata* by its larger size and the white band across the upper tail-coverts.

* "Note on the species of *Tadorna* living in the Society's Menagerie" (P. Z. S. 1864, p. 189), and "Note on the Geographical Distribution of the Ducks of the genus *Dendrocygna*" (*ibid.* p. 299).

† See Mr. Newton's account of this collection, P. Z. S. 1865, p. 837.

Sp. 7. *DENDROCYGNA VAGANS.*

I was not aware when I wrote my previous notes that this species had been described and figured in Fraser's 'Zoologia Typica' (pl. 68) under the MS. name bestowed upon it by Mr. Eyton. There can be no doubt, therefore, that this name should be adopted as its first given and very appropriate designation. Mr. Gould has apparently altogether overlooked my notes on this species, as in his recently published 'Handbook to the Birds of Australia' (vol. ii. p. 374) he calls it *Dendrocygna gouldi*. But, as I have already shown (P. Z. S. 1864, p. 300), the Australian bird to which the late Prince Charles Bonaparte gave this MS. name is not separable from the Moluccan and Philippine-Island *Dendrocygna vagans*.

I am indebted to my friend Dr. G. Bennett for a notice of the occurrence of this species in a more southern locality than has hitherto been recorded. In a letter from him, dated Sydney, May 19th, 1865, the following passage occurs:—

"A curious occurrence took place on March 17th (Easter Monday), being a holiday. When several thousand persons were about the aviary in the Botanic Gardens, three wild Whistling Ducks (*Dendrocygna arcuata*, Gould) flew down to the tame pair of these birds we have had for some time in a pond in the Gardens. They remained some time swimming about in the pond with them (and could have been easily shot), and then took their departure, and have not been seen since. What renders this more singular is that the Whistling Duck is very rarely or never seen nearer to Sydney than Port Macquarie, and principally inhabits the northern districts."

Mr. G. R. Gray, in his list of Pacific Island Birds*, has also noted the occurrence of this species in the Fiji Islands.

Since I wrote the article above referred to on *Dendrocygna*, the British Museum has acquired a specimen of *Dendrocygna fulva* (Gm.) from Mexico, which I have thus had an opportunity of examining for the first time. This species is very like *D. major* in form and plumage, and is, in fact, hardly to be distinguished from it except by its smaller size and shorter bill. If, as I believe is the case, though I have not yet had an opportunity of comparing specimens from South America, *Dendrocygna virgata* (Max.) is identical with *D. fulva*, we have three very closely allied species presenting us with the following distribution in the Tropics:—

1. *D. vagans*, from the Philippines, through the Moluccas, to N.E. Australia and Fiji Islands.
2. *D. major*, peninsula of India and Madagascar.
3. *D. fulva*, Central and Southern America.

The pair of Variegated Sheldrakes (*Tadorna variegata*), which I have spoken of in my notes on the birds of that group (P. Z. S. 1864, p. 190) as having been received from Mr. Sharpley in 1863, bred in the Society's Gardens for the first time in the spring of last year, in

* 'Cat. of Birds of the Tropical Islands of the Pacific Ocean in the Collection of the British Museum' (London, 1860), p. 54.

one of the small ponds near the Small Mammals' House. Five eggs were laid by the female in one of the breeding-boxes about the second week in April, and five young birds were hatched on the 15th of May. One of the five died in the first downy plumage, which in this species very nearly resembles that of the young Ruddy Sheldrake (*Tadorna rutila*). When about three months old the remaining four moulted into the first feather-dress, in which stage they were all four alike, and nearly resembled the *adult male*, having the head and neck black. In the autumnal moult three of them threw off the black hood, and assumed the characteristic white head of the female.

This curious change of plumage appears to me of considerable importance, as I am not aware that any previous instance has been recorded in which, the sexes being differently coloured, the dress of the immature bird resembles that of the *adult male*.

3. Descriptions of a New Genus and a New Species of Mollusks. By HENRY ADAMS, F.L.S.

GENUS BROTTIA, H. Adams.

Testa fusiformis; spira elevata, anfractibus ad angulum spinis armatis, ultimo antice subrostrato; apertura subovata, antrorsum producta. Operculum corneum, tenue, rotundatum, multi-spirale.

BROTTIA PAGODULA, H. Ad.

Melania pagodula, Gould, Proc. Bost. Soc. Nat. Hist. ii. p. 218.

Io pagodula, Gould, Otia Conchi. p. 252.

This singular shell, which was first described by Dr. Gould as a *Melania*, has much the appearance of an *Io*, to which genus he subsequently referred it in his 'Otia Conchologica.' The operculum, however, which I have recently had an opportunity of examining, not only separates it from that genus, but shows its position to be in the *Cerithiidae*, and not in the *Melaniidae*. It forms, in my opinion, the type of a new group in the former family. It is from the river Thoungyin, Tavoy, Siam:

COLINA GRACILIS, H. Adams.

C. testa elongato-turrita, in medio tumida, tenui, pallide fulva; spira truncata, anfractibus ad 10, convexiusculis, longitudinaliter plicatis et transverse concinne striatis, plicis in anfractu ultimo obsoletis; sutura cingulo moniliformi ornata; anfractu ultimo valde contracto, et in medio angulato; apertura semi-ovali, canali brevi, recurvo; columella obliqua, vix arcuata; labro valde expanso, incrassato, subreflexo.

Long. 10, lat. $1\frac{1}{2}$ mill.

Hab. Eastern Seas (Coll. H. A.).





J Smit lith .

M & N Hanhart sc

MICRORHYNCHUS LANIGER

This species is most nearly allied to *C. macrostoma*, Hinds, but is smaller and more attenuated; the last whorl is angulated in the middle and more contracted, and the sculpture, although of the same character, is more sharply defined; it is also without any of the coloured markings which distinguish *C. macrostoma*.

4. On the Structure and Affinities of *Microrhynchus laniger*.

By ST. GEORGE MIVART, F.L.S., F.Z.S.

(Plate XV.)

MICRORHYNCHUS LANIGER (Linn.). (Pl. XV.)

Lemur laniger, Linn. Syst. Nat. ed. Gmelin, i. p. 44. no. 10; Shaw, Gen. Zool. i. p. 99, pl. 34; G. Cuvier, Règne An. t. 1. p. 29; Blainville, Ostéogr. Lemur, pls. 8 & 11.

L. lanatus, Schreber, Säug. pl. 42 A.

Lichanotus laniger, Illiger, Prodrumus, p. 72.

L. avahi, Van der Hoeven, Tijdschr. v. nat. Gesch. xi. p. 44.

Indris longicaudatus, Geoffroy St.-Hilaire, Ann. du Mus. xix. p. 158; Mémoires sur les Makis (1796), et Tabl. des Quad. (1812); Desmarest, Mammalogie, p. 97.

Indris laniger, Smith, S. Afr. Journ. (1835) ii. p. 27.

Indri laniger, Fischer, Syn. p. 73, et Anat. der Maki (1804), p. 16.

Semnocebus avahi, Lesson, Species (1840), p. 210.

S. laniger, Vrolik in Todd's Cyclop. of Anat. & Phys. iv. p. 215. f. 136.

Habrocebus lanatus, Wagner, Schreber, Suppl. i. p. 258; v. p. 140.

Avahis laniger, Isid. G. St.-Hilaire, Leçons des Mamm. et Cat. Primates, p. 69; Paul Gervais, Mammifères, pt. i. p. 164, pl. 7.

Avahi, Jourdan, L'Institut, t. ii. p. 231, 1834; Chenu, Encyclop. d'Hist. Nat. Quadrumanes, p. 256, pl. 32.

Microrhynchus laniger, Jourdan, Thèse inaug. à la Fac. des Sc. de Grenoble, 1834; J. E. Gray, P. Z. S. 1863, p. 141; St. George Mivart, P. Z. S. 1864, p. 638.

Maquis a bourres, Sonnerat, Voy. aux Indes Orient. t. ii. p. 142, pl. 89, 1782.

Autre espèce de maki, Buffon, Suppl. vii. p. 123, pl. 35.

This species was first described and figured by Sonnerat in his 'Voyage aux Indes Orientales'*; but the muzzle is drawn much too long and pointed. The animal is moderately well represented in plate 35 of the seventh supplementary volume of Buffon's 'Histoire Naturelle,' published in the ever memorable year 1789.

In 1839 an excellent representation of the skull and dentition appeared in De Blainville's 'Ostéographie,' Lemur, pls. 8 and 11.

* Vol. iv. p. 92, and pl. 87, in the octavo edition in the library of the British Museum.

In 1844 Professor Van der Hoeven published a representation of the external form and of the skull*.

A woodcut of a skull in the Museum of Leyden (probably the same as that figured by Professor Van der Hoeven) appeared in Professor Vrolik's article on the "Quadrumanæ" in Todd's 'Cyclopædia of Anatomy and Physiology' in 1852.

M. Paul Gervais, in his 'Histoire Naturelle des Mammifères,' 1854, pl. 7, has given a representation of the external form; and another somewhat better one has appeared in Dr. Chenu's volume on Quadrumanæ in the Encyclopédie d'Histoire Naturelle, pl. 32.

None of these, however, represent the animal quite satisfactorily, though by far the best is the figure given by Prof. Van der Hoeven.

This very rare mammal is at present represented in the British Museum only by the skin of a young individual. In the Museum at Paris, according to M. Isid. G. St.-Hilaire†, there were two adult males and one young male in 1851.

In the Museum of Leyden there is a skin and a skull which afforded Prof. Van der Hoeven the opportunity of giving the description in the 'Tijdschrift voor Natuurlijke geschiedenis,' above referred to, where, at page 27, he says‡, "The woolly *Maki*, or, as it has often been called, the long-tailed *Indri*, had not been again seen since the voyage of Sonnerat, who discovered it. Gmelin had given it a place in the 'Systema Naturæ' under the name of *Lemur laniger*; but the actual state of science required a more precise knowledge of the denotation in order to determine in which of the groups, into which zoologists had divided the genus *Lemur*, the animal should be placed. M. Jourdan, Director of the Museum of Natural History at Lyons, received, in 1833, a skin and a skull of this animal, of which he gave a description, which was read at a Séance of the Académie Royale des Sciences at Paris, but which was only made public by extracts published in the scientific journals. He believes it should constitute a new genus of the family of Lemurs, to which he gives the designation *Avahi*, that being the name given to the animal by the natives inhabiting the eastern part of Madagascar.

"For a few years past there has been a skin and a skull in the Royal Museum of Leyden.

"As regards the skull our figure§ shows that it is short, and that the lower jaw is remarkable for its height. The form of this lower jaw recalls to mind, in certain respects, what one meets with in certain South-American Monkeys (of the genus *Stentor*); and the skull in general has some resemblance to that of the Daman, that anomalous genus of the Pachydermata to which Hermann has given the name *Hyrax*.

"The animal has the hair curly or woolly, greyish brown on the back, greyish yellow near the tail; the belly is grey; the posterior

* 'Tijdschrift voor Natuurlijke geschiedenis,' pl. 1. fig. 6, and pl. 3.

† See Catalogue des Primates, p. 69.

‡ I am indebted to the kindness of Mr. Smit for a French translation of the Dutch text.

§ Plate I. fig. 6.

part of the thighs and around the anus whitish; the tail and the paws are of a reddish brown. The hairs of the back are grey at the base, then reddish, rather darker in the nape of the neck. The ears are round, short, and covered with hair. The length of the head and trunk measures 0·3; the tail to its end, without the hair, 0·25; the posterior limbs, to the heel, measure 0·21; the anterior limbs to the end of the fourth finger measure 0·16. The fourth finger is longest, both in the anterior and posterior extremities.

“The barbarous name *Avahi* will probably meet with little acceptance. On that account we believe that we ought to accept the name *Habrocebus*, proposed by Wagner, and which alludes to the soft and woolly hair. At the same time it is uncertain whether it is more than a subdivision of the genus *Lichanotus*, and it is also uncertain whether *Propithecus diadema* should be placed in the same genus with it.”

So far Prof. Van der Hoeven.

Dr. Ch. Coquerel* informs us that the Indri is called by the natives *Batakoton*, the former name merely signifying behold! or, to use Dr. Coquerel's words, “*tiens! voici! regarde! le voila!*”

With regard to *Microrhynchus* he says that (unlike the Indri, which appears confined to the mainland of Madagascar) it is found in the great forest of Tsasifoutt, in the Island of St. Mary, and that it is known to the natives by the name *Ampongui*. He adds that it is more decidedly nocturnal than the true *Lemurs*, and that in comparison with them it is a stupid animal.

A fine skin of an adult individual (containing a nearly perfect skull and most of the bones of the limbs) was obtained in Madagascar by Mr. Gerrard†, and has been kindly placed in my hands for description by Dr. Sclater.

This skin answers to the description, above quoted, of Prof. Van der Hoeven; but it has (what he does not mention or represent in his figure) a very distinct transverse whitish band across the forehead, which is the more marked because the hair immediately in front of and behind this band is darker than on the rest of the body. The general coloration is brighter and darker than in the young skin in the British Museum, and the transverse light frontal streak, with its dark margins, better defined. The hands and feet are of a rusty brown, and the tail rufous; but the fur of these parts is dark grey at the base, as indeed it is all over the body, except at the white patches on the backs of the thighs, where most of the hairs are light-coloured for their whole length. The face is almost entirely covered with short hairs of nearly the same tint as the fur of the arms.

The ears are short and rounded, nor do they appear to be at all tufted. The fourth digit is the longest in both the anterior and the posterior extremities.

In form *M. laniger* is remarkable for its very long hinder limbs, which it shares with the other *Indrisinæ*, and for its long tail, in which it agrees with *Propithecus*. Perhaps, however, its most pecu-

* See *Revue et Magasin de Zoologie*, 2^e série, xi. 1859, p. 461.

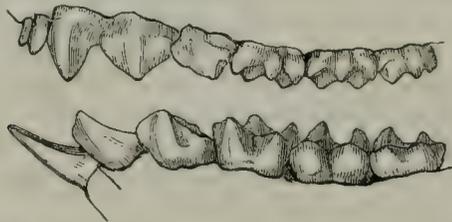
† See *P. Z. S.* 1865, p. 833.

liar feature is its small head and exceedingly short muzzle, in which it differs remarkably from the other *Indrisinæ*, and from the true Lemurs. Fully the proximal third of the sole of the hind extremity is hairy, and the four outer digits of both the anterior and the posterior extremities are united together by integument as far as the distal ends of the proximal phalanges of the respective digits. The index finger is very short, and the pollex slender and placed far back.

The dimensions of the skin are:—

	inches.
Length from muzzle to root of tail	12·7
——— of tail	13·0
——— from shoulder to extremity of fourth digit of hand	7·5
——— from groin to extremity of fourth digit of foot ..	12·0
——— from shoulder to root of tail	8·0
——— of hand (palm and fourth digit).....	2·8
——— of foot (sole and fourth digit)	3·5

Fig. 1.



Left dental series of both jaws. Scale, twice nat. size.

As regards the dentition, there are two pairs of upper incisors, which are widely separated from each other. Though the præmaxilla is very short, yet all the incisors are in front of the canines (thus differing from *Hapalemur*), and, the inner one of each pair being in front of the outer one, two incisors are visible when the skull is viewed in profile. The posterior one of each pair is *very considerably* larger than the more anterior one—a condition which obtains in no other genus of the order, and which presents a marked contrast to the proportions existing in *Indris* and *Propithecus* *.

The upper canine is very peculiar, and much resembles the tooth immediately behind it. It is the most vertically extended tooth in the upper jaw, yet but very slightly exceeds the most anterior premolar in that or in any dimension †.

* In De Blainville's figures (pls. 4 & 8) of *Indris*, the posterior incisor is represented as the larger, but not so in pl. 11. Of the specimens in the British Museum, in one the posterior incisors are decidedly the smaller; in the other they all appear subequal, as they are in the specimen in the College of Surgeons' Museum. In both specimens of *Propithecus* in the British Museum the anterior incisors are the larger.

† Such is the case in the specimen described, and in the skull figured, by De Blainville (*Ostéographie, Lemur*, pl. 8); but in the skull at Leyden the canine is more produced, judging from Prof. Van der Hoeven's figure (*loc. cit.* pl. 1. fig. 6) and from the woodcut (of the same skull?) in Todd's *Cyclopædia*, art. *Quadrumana*, vol. iv. p. 215. fig. 136.

Externally there is a mere rudiment of a cingulum ; but internally it is exceedingly developed both in front and behind, but especially the latter, where it constitutes a distinct, though small, basilar process, or talon, almost as marked, indeed, as in the two premolars behind it.

Fig. 2.



Inside of left upper canine and premolars. Scale, twice nat. size.

From the middle of the internal surface a strong vertical prominence is developed, which extends from the cingulum down to the apex of the tooth ; in front of this is the small anterior process, which projects forwards from the middle of the anterior margin of the tooth, greatly increasing its antero-posterior diameter, and presenting a character absolutely peculiar to this species of the *Lemuroidea*.

In *Hapalemur* it is rather longer relatively, and considerably exceeds the most anterior premolar in size. In *Indris* the canine is even slightly more prolonged as compared to the premolar than in *Hapalemur*, and decidedly so in *Propithecus*.

In *M. laniger* the canine and most anterior premolar are more equal than in any other Lemuroid*, or indeed than in any other Primate except Man.

This canine is exceedingly like the first premolar of *Lemur*.

The anterior upper premolar is unicuspidate, and resembles the canine, except that it is less vertically extended ; while the process from its anterior margin is much larger. The cingulum also is rather more marked externally. This tooth differs from the corresponding one of every other species of the suborder ; but most resembles the homologous one of *Indris*, which, however, has the anterior process rudimentary. It slightly resembles the second premolar of *Lemur* and *Hapalemur*, but is more antero-posteriorly and less transversely extended.

The posterior upper premolar is like the preceding, except that it is smaller in all dimensions except width from within outwards, and that the posterior basilar process is shorter, while the internal cingulum is much more marked. This tooth has the same resemblances and differences to its homologue in *Indris* as that last described has to its representative in that genus. It resembles the second premolar of *Lemur* and *Hapalemur* more than the anterior premolar does ; and it much more resembles the second than it does the third premolar of any Lemuroid.

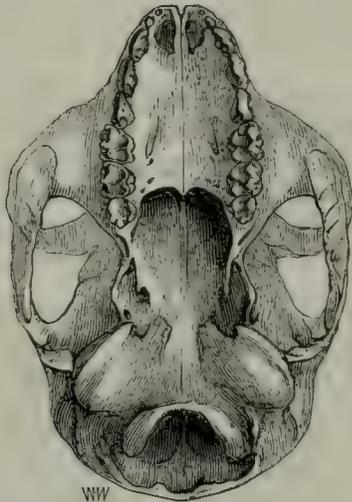
The first upper molar is very different from the premolars, and is the largest grinding-tooth in the upper jaw. There is more difference in size between it and the posterior premolar than there is between any other contiguous grinding-teeth of the upper jaw, as also is the case in *Indris*.

* *I. e.* any other species of the suborder *Lemuroidea*.

It may be said to have eight cusps, as, beside the four large normal prominences, there are three small ones developed from the very strongly marked external eingulum, also one very small one between the two anterior large cusps. The three small external cusps are placed one in front of, one between, and one behind the external pair of the four large normal cusps. These last-mentioned cusps are not connected together by transverse ridges, as in *Indris*; but a slightly marked ridge runs from the postero-external to the antero-internal one. The two external normal cusps are longer and larger than are the two inner ones. There is no internal cingulum.

This tooth differs widely from its homologue in all the other Lemuroids except *Indris*, with which it entirely corresponds, except as regards the oblique ridge.

Fig. 3.



Basis cranii. Scale, nat. size.

The second upper molar is in all respects like the first one, except only that it is slightly smaller in all dimensions except vertical extent, that the minute cusp between the anterior large ones has disappeared, and that the oblique ridge from the postero-external to the antero-internal cusp is rather more marked.

This tooth has the same resemblance to its representative in *Indris*, and exhibits the same differences from the corresponding molar of all other genera, as in the case of the first upper molar.

The third molar has two anterior cusps—one external, and the other internal—like the other true upper molars. Behind these the margin of the tooth develops three subequal and minute cusps, which are arranged in a semicircle, and appear to be developed from the cingulum, which is elsewhere rudimentary. No other Lemuroid, except *Indris*, has a third upper molar so formed.

The two inferior incisors have the narrow elongated form so com-

mon in the *Lemuroidea*. Externally their crowns are convex from above downwards, but concave from side to side at their upper halves, which are longitudinally grooved. Internally their crowns are slightly concave from above downwards, and strongly convex transversely, there being, in fact, a median longitudinal prominence extending from the base to the apex of each tooth. The lateral margins of each incisor (on each side of the median prominence) are probably prolongations upwards of the rudimentary basal cingulum*.

The lower incisors of *Indris* and *Propithecus* are quite similarly formed; but the marked external longitudinal grooves are quite peculiar to the *Indrisinæ* amongst Lemuroids.

The lower canines are like the incisors, except that they are rather broader, that the external grooves are less marked, and that the lateral prolongations upwards of the basal talon are more so.

In *Indris* the same conformation exists, save only that the inner surface has a more marked and wider groove, owing to the greater development of the lateral prolongations of the talon.

The anterior lower premolar shows a tendency to assume the elongated and anteriorly produced form of the incisors and canines, yet it is the most vertically extended tooth in the lower jaw. In shape it is like the anterior upper premolar, only more extended forwards. It is unicuspidate, the cusp being the extremity of a strongly marked median longitudinal prominence. There is a slight basilar posterior process, and a strongly marked anterior one developed from the middle of the anterior margin. Both these appear to be productions of the cingulum, which exists within, but is scarcely traceable externally. This tooth differs from the corresponding one of all other Lemuroids except *Indris* and *Propithecus*.

Fig. 4.



Inside of left lower premolars. Scale, twice nat. size.

The posterior lower premolar is like the tooth just described, except that the anterior process is relatively more marked, the apex less produced, and that the median longitudinal ridge is so prominent as to project upwards above the external margin of the tooth, the grinding-surface presenting a marked antero-posteriorly directed groove at its hinder half.

This tooth closely resembles its homologue in *Indris*; it has a certain resemblance to the second lower premolars of *Galago*, especially of *G. sennaarensis*.

The first lower molar is the longest of the inferior grinders, from before backwards; and there is more difference in size between it and the second premolar than there is between any other two contiguous

* As described by Prof. Huxley in *Arctocebus* (see P. Z. S. 1864, p. 322).

	inch.
Extreme antero-posterior diameter of anterior upper premolar. .	·19
Vertical extent of anterior upper premolar	·13
Breadth from within outwards	·09
Antero-posterior diameter of posterior upper premolar at its base	·12
Extreme antero-posterior diameter of posterior upper premolar .	·16
Vertical extent of posterior upper premolar	·12
Breadth from within outwards	·10
Antero-posterior diameter of first upper molar at its base	·15
Extreme antero-posterior diameter of first upper molar	·18
Vertical extent of first upper molar	·10
Breadth from within outwards	·15
Antero-posterior diameter of second upper molar at its base . .	·14
Extreme antero-posterior diameter of second upper molar	·17
Vertical extent of second upper molar	·10
Breadth from within outwards	·14
Antero-posterior diameter of third upper molar	·13
Vertical extent of third upper molar	·08
Breadth from within outwards	·11
Length of inferior incisor	·22
Transverse diameter	·04
Antero-posterior diameter	·05
Length of inferior canine	·22
Transverse diameter	·05
Antero-posterior diameter	·05
Antero-posterior diameter of anterior lower premolar at its base	·11
Extreme antero-posterior diameter of anterior lower premolar. .	·17
Vertical extent of anterior lower premolar.	·16
Breadth from within outwards	·07
Antero-posterior diameter of posterior lower premolar at its base	·13
Extreme antero-posterior diameter of posterior lower premolar. .	·19
Vertical extent of posterior lower premolar	·11
Breadth from within outwards	·07
Antero-posterior diameter of first lower molar at its base.	·15
Extreme antero-posterior diameter of first lower molar	·20
Vertical extent of first lower molar	·10
Breadth from within outwards	·10
Antero-posterior diameter of second lower molar	·14
Vertical extent of second lower molar	·10
Breadth from within outwards	·10
Antero-posterior diameter of third lower molar	·15
Vertical extent of third lower molar	·08
Breadth from within outwards	·10

The skull.—All that De Blainville* says of the skull of this species is “La tête osseuse”—“au premier aspect semble différer beaucoup de celle de l'*Indri* ordinaire pour se rapprocher de celle des *Loris paresseux*, parce que les mâchoires sont excessivement courtes; mais en y regardant attentivement, ou y retrouve absolument toutes

* *Loc. cit.* p. 22.

les mêmes particularités; seulement le canal lacrymal est moins avancé dans la face et presque marginal; les orbites sont plus grandes, l'incisif est encore plus petit, et la mâchoire inférieure a son angle plus large, plus arrondi, et sa symphyse plus longue et plus oblique."

Fig. 6.



Front view of skull. Scale, nat. size.

One of the most striking characters of the skull of *M. laniger* is the exceeding shortness of its facial part, which distinguishes it from all other *Lemuroidea*, with the exception perhaps of *Tarsius* and *Cheiromys*. As in *Tarsius* and some Galagos, the antero-posterior extent of the anterior opening of the orbit greatly exceeds the length of the muzzle in front of it.

When viewed from above, the entire skull is seen to be broadest between the outer margins of the orbits; but the greatest width of the cranium proper is in a line drawn just behind the posterior ends of the zygomatic arches. As in *Indris* the mastoidal region of the periotic is not inflated, but there is a prominence at, and above, the posterior root of each zygoma just above the aperture of the external auditory meatus. This peculiar enlargement is absent in *Indris* and in all the other genera of *Lemuroidea*; but when compared with some of the smaller species of the suborder (as the *Nycticebinæ* and *Galagoninæ*) it seems to answer to their mastoidal swelling, only placed further forwards.

The surface of the cranium presents a strongly marked depression (concave both antero-posteriorly and transversely) between the orbits; behind this the roof of the skull is smoothly and evenly convex, except a slight concavity just in front of the most anterior point of the supraoccipital.

There appears to be no interparietal. The two temporal ridges are slightly but distinctly marked. As in *Indris*, they do not unite to form a sagittal ridge, which is the case in *Hapalemur*, and sometimes in *Galago*.

The nasals are rather strongly convex, and are broader at each end than in the middle, instead of narrowing gradually upwards as in *Indris*. They are shut out from the lachrymal by a narrow process of the maxilla which ascends to join the frontal, the short fronto-

maxillary suture being almost on a line with the posterior margin of the nasals, instead of considerably below it, as in a specimen of the genus *Indris* in the British Museum*. *Microrhynchus*, however, agrees with that genus in having no large malar foramen, as also in having the lachrymal foramen rather nearer the margin of the orbit than in the *Lemuridae*, though it still opens upon the cheek. The suture between the maxilla and the præmaxilla is so far obliterated in the specimen described that it is impossible to determine whether the latter sends up a small process to join the nasal as it certainly does in *Indris*; sometimes, though, judging from De Blainville's figure, it does not quite reach the nasal.

The floor of the orbit is very large, with many perforations, and is placed so low down as to be but little above the alveolar margin of the upper jaw. The malar is very wide, and its lower part is irregular, forming a vertically ridged and grooved surface for the attachment of the masseter, which surface is bounded above by an antero-posteriorly directed ridge. The malar also develops, from its posterior border, an obtuse process† (which projects backwards over, but some distance above, the anterior extremity of the zygomatic process of the squamosal), and extends back to very near the anterior margin of the glenoid surface.

The masseteric space, on the malar, is larger and more ridged than in any other Lemuroid. In *Indris* the same thing exists, but in a less degree, and the surface is more posteriorly situated. A similar wide masseteric space is also present in the larger Galagos; but it is not ridged, and it approaches close to the upper alveolar margin; whereas in *M. laniger* it is kept at a distance from that margin by the wide maxillary floor of the orbit, a structure which causes the *basis cranii* of this Lemuroid to differ strikingly in aspect from that of any other member of the suborder.

The glenoid surface for the lower jaw is strongly concave from within outwards and faintly convex from behind forwards at its anterior part, the outer end of this convexity forming a slight process, which depends from the lower border of the zygoma at a point just in front of, and without, the spot which receives the condyle of the mandible. This process is similarly developed in *Indris*; but I have not seen it elsewhere, except in *Galago pallidus*, where there is a trace of such a structure. The glenoid surface is limited posteriorly by a very large and wide postglenoid process, behind which opens a conspicuous postglenoid foramen. This process is very different in form from that which exists in *Lemur*; but it is quite like that of *Indris*, and it also resembles that of *Hapalemur* and some Galagos.

There are one or two small suborbital foramina, as in *Indris*, and the posterior palatine foramina are also small; but the two genera are distinguished by these latter; for in *Indris* there is one large posterior palatine foramen behind the last molar, and a small one a

* In De Blainville's figure of the skull of *Indris* the suture is nearly on a line with the upper margin of the nasals (see *Ostéographie*, Lemur, pl. 8).

† This process is not represented in De Blainville's figure, but it is in that of Prof. Van der Hoeven.

little in advance of the posterior margin of the palate. On the other hand, in *Microrhynchus* there is a very minute one behind the last molar; but the one near the posterior margin of the palate is of fair size, and there is another, as large, more anteriorly placed. The anterior palatine foramina are very large, relatively larger than in *Indris*, and both absolutely and relatively larger than in any other Lemuroid. The palate is well ossified and entire, as in *Indris*, and is of nearly equal width throughout, having somewhat the appearance of that of *Galeopithecus*.

Its posterior border is not thickened as it is in *Indris*; but a process is prolonged backwards from its middle, as also seems to be the case, sometimes, in the last-mentioned genus*.

The most anterior point of this posterior margin is on a line with the anterior end of the hindmost third of the second true molar.

There is a small, but distinct, paroccipital process.

The foramen rotundum is united with the sphenoidal fissure, and there is a distinct Vidian foramen, thus agreeing with *Indris* in both these respects.

There is no conspicuous carotid foramen on the basis cranii.

The pterygoid fossa is large; and the ectopterygoid plate sends back a process to the periotic, arching over the foramen ovale.

The bulla is rather compressed, with an obscure ridge running forwards and inwards along the outer part of its inferior surface.

A marked ridge runs forward (as in *Indris* and *Lemur*) from the anterior root of the posterior origin of the zygoma, across the alisphenoid; but this last sends out no process towards the malar.

The cribriform plate is wide, and is not situated in a narrow depression; but there is no *crista galli*. The periotic has a large and deep cerebellar fossa. The mandible is remarkable for the size and the downward and backward prolongation of its angle, for the enormous elongation of the symphysis, which is nearly three times the length of the lower incisors, and also for the deep fossa for the insertion of the digastric.

The condyle is not transversely extended, as in *Lemur*, but is small; and its articular surface is prolonged downwards behind in a peculiar manner, and is vertically grooved. There is a strongly marked prominence running backwards above the mylohyoid foramen, and another running downwards and backwards beneath and in front of it; this latter prominence corresponds to part of the inferior margin of the mandible of *Indris*, and thus in it that margin appears much more strongly concave and the angle to be more suddenly bent downwards than in *Microrhynchus*.

In the digastric fossa and non-transversely extended condyle the *Indrisinæ* differ from all the *Lemuridæ*, and, as regards the latter character, approach *Cheiromys*, and closely resemble *Tarsius*, which has the articular surface likewise prolonged downwards behind. The digastric fossa, however, does not exist in those two genera. *Indris* shares with *Microrhynchus* the continuation downwards and back-

* It is so represented by De Blainville (see *loc. cit.*); but in two skulls in the British Museum there is no such median process.

wards of the articular surface of the condyle; but the vertical groove and *very deep* digastric fossa are absolutely peculiar to the latter genus.

<i>Dimensions.</i>	inch.
Length from anterior end of the præmaxilla to anterior margin of foramen magnum	1·75
Length from anterior end of the præmaxilla to most anterior point of orbital margin	0·40
Length between lines traversing most anterior and most posterior points of orbital margin	0·60
Length from last to posterior end of skull	1·03
Extreme width between outer margins of orbits	1·53
Extreme width behind posterior roots of zygomata	1·13
Width between nearest points of orbits	0·43
Width between temporal ridges just behind orbits	0·90
Width between temporal ridges at junction with lambdoidal	0·35
Length of palate	0·81
Breadth of palate between first premolars	0·40
Breadth of palate at posterior end	0·40
Length of nasals	0·35
Breadth of nasals	0·25
Length of lower alveolar margin from front of first premolar to behind last molar	0·73
Length of symphysis	0·64
Height of condyle above alveolar margin	0·32
Height of coronoid process above alveolar margin	0·48

After speaking of the skull, De Blainville says* :—“ Quant au reste du squelette, je n'en ai vu qu'une partie des membres, et ils conservent toutes les particularités de ceux des Indris; l'humerus, percé d'un trou au condyle interne, et égalant à peine la moitié de la longueur du fémur; le radius et le cubitus longs et grêles; le carpe sans os intermédiaire; l'unciforme très-grand; mais ici le métacarpien de l'annulaire est notablement plus gros et plus long que celui du doigt médian. Le fémur et les os de la jambe, à peu près égaux, sont long et grêles, surtout le peroné, et les os du tarse sont dans la proportion ordinaire.”

The few bones I have been able to examine are the following :—

Humerus.—Not being able to ascertain the length of the spine I cannot compare the humerus with it; but it is doubtless of a similar proportion to that of *Indris*, as it agrees with the humerus of the latter animal in being so much shorter than the forearm.

It has a strong sigmoid curve, stronger than in either *Lemur* or *Indris*, and the supinator ridge is more developed than in either.

As in *Indris*, the internal condyle does not descend so nearly down to the free margin of the ulnar ridge of the trochlea as it does in *Lemur*.

As in both, the bony canal is distinct, but not so large as in either;

* Ostéographie, Lemur, p. 23.

the inner surface of the ulnar ridge of trochlea (again like *Indris* and unlike *Lemur*) is entirely behind the internal condyle.

The capitellum has a concavity outside the rounded head. The radial ridge of the trochlea is remarkably prominent.

Radius.—This is much longer in proportion than is the humerus. Taking the latter at 100, the radius is 114·7 long, nearly equalling the proportion of *Indris* (viz. 116·5), and greatly exceeding that of *Lemur* (91·6), or of any of the *Lemuridæ*, *Loris* approaching nearest, however, and being 110·2.

It is slightly more slender than in *Lemur*, though not so much so as in *Indris*; but it rather agrees with the latter, and differs from *Lemur* in the rounded shape of the bone towards the ulna, and, indeed, of its radial side also. It agrees with *Indris* also, and differs from *Lemur*, in that the inferior (distal) border of the anterior (flexor) surface is not prominent and produced; on the other hand, there is a distinct prominence (from almost the distal extremity of the radial margin), as if for the supinator longus; but it may be for the pronator quadratus. As in *Indris* the anterior surface is rounded, and not grooved from the flexor longus pollicis as in *Lemur*.

Ulna.—This bone, although not so distant from the radius as in *Indris*, is nevertheless more so than in *Lemur*; hence perhaps the less grooved condition of the bones, the interosseous membrane thus affording a wider space for muscular attachment.

The ulna has a similar excess over the humerus to the radius, namely as 127·6 to 100. In *Indris* it is 132, but in *Lemur* only 113·5.

As in *Indris*, it is a much more slender bone than in *Lemur*; indeed it is *very* slender.

It is remarkable for the very small size of the olecranon, differing from *Lemur* in this even more than *Indris* does.

As in *Indris*, the only fossa for the origin of the flexor profundus digitorum is situated beneath the sigmoid cavity; nor is there any groove extending down the shaft of the bone for the extensor pollicis as in *Lemur*—thus again agreeing with *Indris*, as also in the fact that there is scarcely any trace of a ridge for the pronator quadratus, which, on the contrary, attains its maximum in *Lemur*.

The carpus presents a most remarkable character, noticed by De Blainville, inasmuch as it agrees with that of *Indris*, and differs from that of all the other Primates, except Man and *Troglodytes*, in the fact of possessing no os intermedium, and having only eight carpal bones. It agrees with that of *Indris*, except that the pisiforme is smaller.

In my specimen the third metacarpal is slightly the longest, thus differing from De Blainville's* specimen. It is to the radius (taking the latter at 100) as 31·8, which is almost its proportion in *Indris*, where it is 31·1. In *Lemur* it is only 26·4.

The metacarpal of the index is not so curved as in *Indris*; but it preponderates more over that of the pollex, which is here very short, the proportion of the metacarpal of the index to that of the pollex being as 183·3 to 100, while in *Indris* it is only 151·8 to 100. The

* *Loc. cit.* p. 23.

proportion of the same bone to the radius is only 14·2 to 100, while in *Indris* it is 18·3.

The femur is wanting in the specimen described; but De Blainville says* it about equals the length of the tibia, which last is, as compared to the radius, as 149·1 to 100, and is very much compressed laterally, and strongly concave on its peroneal side.

The fibula is relatively, as well as absolutely, rather more slender than in *Indris*, and still more so than in *Lemur*.

The tarsus differs from that of the last-named genus in its rather longer astragalus, in its relatively shorter cuboid, which, compared to the *os calcis*, is only 37·6 to 100, instead of 46·0 as in *Lemur*. *Indris* closely resembles *Microrhynchus* in this respect, as its cuboid is to its calcaneum as 38·6 to 100.

The cuboid of *M. laniger* is also less deeply grooved for the tendon of the peronæus longus than is that of *Lemur*.

The metatarsals are absolutely and relatively longer than in that genus, that of the hallux greatly exceeding the *os calcis* in length, while in *Lemur* it does so very slightly.

When, in the autumn of 1864†, I endeavoured to clear up some of the confusion existing with regard to certain kinds of *Lemuridæ*, I regretted being able to say so little regarding the *Indrisinæ*, no extracted skull of either *Propithecus* or *Microrhynchus* then existing in this country.

From a consideration of the figures extant of the cranium of the last-named genus I ventured on a decided opinion that those had rightly decided who associated it with *Indris*, and that it could by no means be separated from that form and approximated to *Galago*.

The examination of the specimen now described fully confirms this view; indeed so numerous and striking are the points of resemblance between it and *Indris* that it is a matter of some difficulty to find distinctive characters sufficient to justify even their generic separation.

Unfortunately I have had no opportunity of examining any extracted cranium of *Propithecus*; but I strongly suspect that when obtained it will be found closely to resemble the two other genera of *Indrisinæ*, as the dentition, as far as can be seen in the mounted specimens in the British Museum, so closely agrees with that of *Indris*. That subfamily may, I think, be characterized as follows:—

INDRISINÆ.

Characters †.—I. $\frac{2-2}{2}$. C. $\frac{1-1}{1-1}$. P.M. $\frac{2-2}{2-2}$ §. M. $\frac{3-3}{3-3}$ = 30.

Ears short; muzzle long, moderate or short; hind legs much longer than the fore limbs; index very short, much shorter than

* *Loc. cit.*

† See Notes on the Crania and Dentition of the *Lemuridæ*, P. Z. S. 1864, p. 611.

‡ The cranial, most of the dental, and some other characters are, of course, drawn from *Indris* and *Microrhynchus* only, and may have to be curtailed or modified when the structure of *Propithecus* is better known.

§ The immature condition of the teeth of *Propithecus* represented in M. de Blainville's plate led me, in 1864, to the conclusion that there are, as stated, two premolars and three molars on each side of each jaw. (See P. Z. S. 1864, p. 634.)

fifth digit; pollex short and placed far back; hallux very long and covered with hair; tail long, or very short and rudimentary; internal condyle of the humerus perforated; carpus destitute of an os intermedium; tarsus short; first upper molar with four large and four small prominences, no internal cingulum; last upper molar with two large anterior cusps and three very small posterior prominences; each lower incisor with its outer surface longitudinally grooved; lower premolar much antero-posteriorly extended; first lower molar with four or five cusps; last lower molar quinqucuspid; a paramastoid process; no malar foramen; lachrymal foramen very near margin of the orbit; masseteric surface of malar wide and ridged; a process depending from zygoma just in front of, and external to, the glenoid surface; a postglenoidal foramen; anterior palatine foramina very large; mandibular symphysis very long; condyle rounded, not transversely extended; articular surface prolonged somewhat down the back of ascending ramus; digastric fossa deep.

Hab. Madagascar exclusively.

MICRORHYNCHUS.

Characters.—Muzzle very short; ears very small and hidden in the fur; tail very long; fur woolly; supinator ridge of humerus very large; posterior pair of upper incisors considerably larger than the anterior pair; canine scarcely exceeding first premolar in vertical extent, and closely resembling it in form; two first upper molars with slight oblique ridges; skull strongly concave between the orbits; antero-posterior extent of the anterior opening of the orbit exceeding the length of the muzzle in front of that opening; a protuberance just above the external auditory meatus; an obtuse process projecting from the malar over the anterior end of the zygomatic process of the squamosal; floor of orbit very little above the upper alveolar margin; no large palatine foramen behind the third molar; palate with its posterior margin not thickened; anterior palatine foramina very large; mandibular symphysis nearly three times the length of the lower incisors; fossa for digastric very deep; a vertical groove on posterior part of articular surface of condyle; inferior margin of mandible only slightly concave.

Hab. Madagascar and St. Mary's Island.

INDRIS.

Characters.—Ears exerted; muzzle elongated; tail short; posterior pair of upper incisors generally a little smaller than the anterior pair; canine considerably exceeding first premolar in vertical extent; upper molars destitute of oblique ridges; skull not concave between the orbits; antero-posterior extent of the anterior opening of the orbit less than the length of the muzzle in front of that opening; no protuberance above the external auditory meatus; no process of the malar projecting over the anterior end of the zygomatic process of the squamosal; floor of orbit considerably above the upper alveolar margin; a large palatine foramen behind the third molar; palate

with its posterior margin thickened; mandibular symphysis much less than three times the length of the lower incisors; fossa for digastric not very deep; no vertical groove on posterior part of articular surface of condyle; inferior margin of mandible strongly and suddenly concave.

Hab. Madagascar, but not St. Mary's Island.

PROFITHECUS.

Characters.—Median upper incisors very decidedly larger than the outer pair; upper canine much more vertically extended than the first premolar; ears short, in the fur; muzzle moderately produced; tail long.

Hab. Madagascar.

March 27, 1866.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

The following extract was read from a letter addressed to the Secretary by Dr. George Bennett, F.Z.S., dated Sydney, January 20th:—

“There is now a living Lyre-bird (*Menura novæ-hollandiæ*) at Mr. J. S. Palmer's, at New Town near Sydney, which he informs me is two years and four months old, and has been in his possession in captivity for full two years. He had it first when it was so young that it could only just feed itself. At that time he fed it with great care and regularity on worms and grubs, German paste, and beef chopped very fine. It now eats the same, together with hemp-seed, bread, &c. As regards its habits of feeding and the mode of rearing it, he compares it to the Thrush and Blackbird. Since he has had this specimen, he has purchased Lyre-birds of all ages, brought from the Illawara district; but this is the only one that has survived in confinement; the others only lived for a short time. Those that died were heard to whistle at dusk in the evening, apparently healthy and well, but were found dead in the morning. This we also observed with those we had in the Gardens here, the longest period we got one to survive in captivity in our aviary being six months—from August 1864 to January 1865. I rode out on the 4th of January to see Mr. Palmer's bird; it was apparently a full-grown female, or male in immature plumage. I have this day been informed by Mr. Palmer that it is now developing two of the peculiar tail-feathers of the male; so that there is now no doubt as to the sex. On the occasion of my visit I found it, as is usual with these birds, in a constant state of restless activity, running with greater or less rapidity about the spacious aviary in which it is confined, scratching about the ground, and leaping upon and over the stones and branches placed in the inclosure. It would stop and feed rather more frequently than is usually the case with this bird in the presence of strangers.

Moreover this individual, when called by those with whom it was acquainted, would follow them about quite tamely, and take food from their hands, proving that this wild, restless, and very shy bird is capable of being tamed and reared in captivity. Mr. Palmer's bird mocks with great accuracy the Piping Crow, Wonga Wonga Pigeon, Parrots, and various other birds in the same aviary and in the vicinity, and about the dusk in evening is often heard to utter its own peculiar whistle. I offered Mr. Palmer a liberal price for the bird, so that I might send it home by the ship 'La Hogue,' which sails for England this day, but I did not succeed in obtaining it."

Mr. P. L. Sclater read an extract from a letter addressed to him by Dr. Schlegel, For. Memb., stating that the Musée des Pays-Bas had recently received seven specimens of a Cassowary collected by the late traveller Bernstein in Salawatty and on the coast of New Guinea, opposite to Salawatty, in the same locality where Rosenberg obtained his *Casuarus kaupi*. The species had turned out to be *C. uniappendiculatus*, Blyth, the same as that of the fine specimen alive in the Amsterdam Gardens, the single caruncle not being developed in the younger bird. It appeared, therefore, that *C. kaupi* of Rosenberg (Journ. f. Orn. 1861, p. 44) must be regarded as identical with *C. uniappendiculatus*, Blyth. Dr. Schlegel was also expecting specimens of the Cassowary from the Aroo Islands, which he suspected would turn out to be *C. bicarunculatus*. If this supposition were to be verified, Mr. Sclater remarked that we should have the following distribution of the known species of *Casuarus*:—

1. *C. galcatus*, ex Ceram.
2. *C. uniappendiculatus*, ex Salawatty et Nov. Guinea.
3. *C. bicarunculatus*, ex ins. Aroensisibus.
4. *C. bennettii*, ex Nov. Britann.
5. *C. australis*, ex Austr. bor. Cap. York.

Dr. J. Murie and Mr. St. George J. Mivart communicated a joint memoir on the anatomy of the *Lemuroidea*, principally relating to the myology of these animals. This paper will be published entire in the Society's 'Transactions.'

The following papers were read:—

1. Notice of a New West-African Monkey living in the Gardens of the Society. By Dr. J. E. GRAY, F.R.S., V.P.Z.S., &c.

(Plate XVI.)

Mr. Bartlett a few days ago brought to the British Museum a Monkey which he believed to be new; and, as I am engaged on the examination of these animals, I have herewith sent a short description of it, that it may be inserted in the scientific catalogue. Mr. Bartlett informs me that it was obtained from Liverpool, having been imported by the lately arrived West African Mail.



PL. 1.

M. N. Harhart. 1846

CERCOPITHECUS ERYTHROGASTER







J. Smith lith

W. B. Woodcut

NASUA DORSALIS

CERCOPITHECUS ERYTHROGASTER. (Pl. XVI.)

Fur blackish, minutely punctated with yellow; the yellow dots on the crown of the head more abundant, and nearly absent on the hands and wrist; outside of the hind legs and thigh grey, punctured with blackish; face, moustache, and the frontal band, which is continued across the temple to the ears, black; round spot on each cheek pale yellow; whiskers, beard, throat, and sides of neck white; front of thighs and under surface of the tail greyish white; chest and belly red brown.

Hab. West Africa.

There is a young female of the species in the Gardens of the Society.

The red belly and chest, the white beard and whiskers, and the black frontal band at once distinguish this species. The yellow crown is very peculiar; it is rather extended backward towards the nape, and separated from the fur of the back by an undefined blackish crescentiform band.

2. Notice of a New Species of *Nasua*.

By DR. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S., &c.

(Plate XVII.)

Mr. Whiteley, of Woolwich, has lately brought to the British Museum the skin of a *Nasua*, which differs considerably from any skin of the genus that I have hitherto seen, in having a distinct broad black streak along the hinder part of the back to the base of the tail. I believe that it may belong to a distinct species; at any rate it presents a variation in colouring of this variable genus that I have not seen described. The fur is reddish brown. There are two specimens which agree with it in general colouring and kind of fur in the British Museum collection, but they are without the dorsal streak.

NASUA DORSALIS. (Pl. XVII.)

Fur red brown; underfur dull brown, longer hairs thin, pale, with thick red-brown tips; chin, throat, and chest whitish; face pale, blackish-grizzled; feet and broad streak on hinder half of the back black; tail blackish, with irregular interrupted grey rings.

The skull is imperfect, the face with the teeth only having been preserved. The face resembles that of the skull of *Nasua narica* in the Museum Collection, no. 225 *a* (the measurement of which is given in my paper on *Ursidae*, P. Z. S. 1864, p. 703), in having a long narrow compressed nose and elongated canine teeth. It differs from the skull of *N. narica* in the upper jaw being rather shorter from the middle of the cutting-teeth to the end of the last molar, and rather wide at the hinder part at the sides of the hinder molars, and rather narrower at the end of the nose. The upper cutting-teeth are narrower; that is to say, the space occupied by the series

is considerably narrower than the space they occupy in the skull of *N. narica* above referred to. These may all be mere individual peculiarities, since the skulls of the different specimens of *Nasua* in the Museum, as I observed in the article on *Ursidæ* above quoted, are very variable.

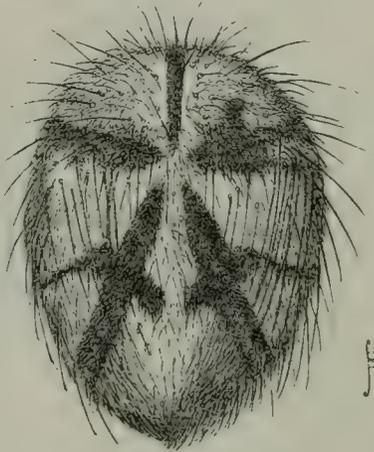
Hab. South America.

3. Note on a New Species of *Spatangus*.

By DR. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S., &c.

Mr. Moore has kindly sent me some marine animals in spirits, which have been collected by Capt. Berry, of the ship 'Richard Cobden,' at Pulo Taya, in the China seas, and presented to the British Museum and to the Free Museum in Liverpool by the collector.

Among other interesting animals is a new and beautiful species of *Spatangus*, peculiar in being marked with distinct regularly placed symmetrical black stripes or spots. It belongs to the subgenus *Maretia*.



Spatangus variegatus.

SPATANGUS (MARETIA) VARIEGATUS, n. sp.

Body depressed, ovate, pale-coloured. Ambulacra of the upper surface, four oblong spots on each side of the middle of the upper interambulacral spaces, the greater part of the anal spines and narrow rings around the elongated spines black. Back with numerous very slender elongated spines, which are more or less arched and directed backwards. The oral surface nearly flat; sternal disk with very few spines; sides with numerous close-set elongated spines, with enlarged bases, and placed on perforated tubercles. The groups of short crowded spines on the margins of the oral ambulacra dark brown.

Hab. Pulo Taya.

B.M.

The two specimens vary in shape, one being more oblong than

the other. The one with the ovate outline has only small oblong dark spots on the interambulacral spaces. The more oblong one has the dark spots on the back of the interambulacral spaces large, triangular, and confluent with the dark ambulacra on the sides of which they are placed; there are also two narrow dark bands on the middle of the upper part of the side margin.

4. Supplement to a Monograph of the Genus *Danais*, founded on Specimens in the Collection of Mr. Osbert Salvin. By ARTHUR G. BUTLER, F.Z.S., Assistant, Zoological Department, British Museum.

I have been enabled, through the kindness of Mr. Salvin, to make the following additions and corrections to my Monograph, read at the Meeting of this Society held the 23rd of January in the present year (see P. Z. S. 1866, p. 43).

Section 2.

1. *DANAIS CHIONIPPE*.

Euplœa chionippe, Hübner, Samml. exot. Schmett. (1806-27) ii. pl. ? f. 1-4.

Hab. — ?

This species has been considered a synonym of *D. affinis*, but it is evidently very distinct; it is much smaller, the submarginal spots larger and more regular, the white patch in the front wings bordered with reddish, the central band of hind wings occupying nearly the entire wing.

2. *DANAIS HERMIPPUS*, sp. n.

D. hermippus, Felder, MS.

Simillima *D. cleotheræ*, *qua pallidior est*.

Hab. Bogota.

I do not feel at liberty to describe this insect in full, as the specimens were presented by Dr. Felder.

3. *DANAIS NUBILA*, sp. n.

D. philene, var., Butler, P. Z. S. 1866, p. 47.

Alæ supra ferruginæ: anticæ venis fuscis; area apicali fusca, maculis albis fasciata et submarginata, velut in D. conspicua; costa convexa: posticæ, excipe ad cellæ finem venis fuscis; margine lato fusco, punctis albis marginato: corpus fuscum albo præpunctatum, abdomine lutescente. Alæ anticæ subtus velut supra: posticæ fuscescentes, lineis punctorum duabus: corpus nigrum, albo maculatum, abdomine pallido. Alar. exp. unc. 3.

Hab. Gilolo.

In coll. Salvini et Brit. Mus.

Intermediate between *D. artemice* and *D. philene*.

My species *D. ismareola* turns out to be the female of *D. ismare* (Cramer). I rather hesitated to describe this species as new, on account of its similarity in pattern and coloration to *D. ismare*; but the great differences in form and expanse of wing, and also in neuuration, combined with the fact that our specimens were from different localities, decided me. I have now, however, seen a most interesting hermaphrodite (see fig. 1, p. 173), having the wings of *ismare* on one side, and of *ismareola* on the other, but with the male sexual spot on both of the hind wings; in the hind wing of the female there is a curious malformation of the nervures, two of them originating from a single foot-stalk; the two sides of this insect vary in size as follows:—Front wings, costa $1\frac{4}{8}$ and $1\frac{5}{8}$ inch; hind wings, length $1\frac{3}{16}$ and $1\frac{5}{8}$ inch.

Section 3.

4. DANAIS SALVINI, sp. n. (Fig. 2, p. 173.)

D. chloris, Felder?

♂. *Alæ apice elongato: anticæ supra fulvæ, margine antico, cella venisque fuscis; margine postico fusco, inter venas hastato, punctisque septem albis submarginato: posticæ macula magna subapicali irregulari venisque fuscis; margine postico fusco, inter venas hastato: corpus fuscum, fulvo præmaculatum. Alæ subtus pallidiores, nitentes, margine postico serie macularum albarum integra: anticæ punctis nonnullis marginalibus: corpus fuscum, thorace albo maculato. Alar. exp. unc. $3\frac{7}{16}$.*

♀. *Alæ apice rotundato: anticæ supra serie macularum trium fulvarum sub costa ad cellæ finem; margine postico macula infima submarginali geminata serieque punctorum alborum marginali: posticæ serie macularum albarum integra: corpus fuscum, albo præmaculatum. Alæ subtus velut supra: corpus thorace nigro, albo maculato; abdomine pallido. Alar. exp. unc. 4.*

Hab. Gilolo and Batchian.

Allied to *D. inuncta* (Butler), from which it differs in being yellow instead of white; the wings of a slightly different form, the inner edge of hind margin forming long hastate projections between the nervures; front wings with cell entirely brown, and apical submarginal spots very small.

5. DANAIS LUTESCENS, sp. n. (Fig. 3, p. 173.)

Alæ supra albæ viridescentes, fascia subapicali magna nec in macula distincta, anticæ breves, posticæ rotundatæ: aliter ut in D. cleona (Cramer). ♂. Alar. exp. unc. 3. ♀. Alar. exp. unc. $3\frac{5}{16}$.

Hab. Ceram; Bouru.

This species is closely allied to *D. cleona* of Cramer, from which it differs chiefly in its pale colouring, more rounded and shorter wings, and larger spots.



Fig. 1. *Danais ismare* (Cramer), hermaphrodite.
2. — *salvini*.
3. — *lutescens*.

The genus will now stand as follows :—

Section 1.

Africanæ : alis nigris albo fasciatis et maculatis.

- | | |
|--------------------------|---------------------------|
| 1. <i>Danais phædon.</i> | 5. <i>Danais *hecate.</i> |
| 2. — <i>echeria.</i> | 6. — <i>ochlea.</i> |
| 3. — <i>egialea.</i> | 7. — <i>niavius.</i> |
| 4. — <i>damocles.</i> | |

Section 2.

Alæ opacæ, anticæ macula apicali alba.

- | | |
|----------------------------|----------------------------|
| 8. <i>Danais berenice.</i> | 20. <i>Danais philene.</i> |
| 9. — <i>cleothera.</i> | 21. — <i>*nubila.</i> |
| 10. — <i>hermippus.</i> | 22. — <i>artenice.</i> |
| 11. — <i>eresimus.</i> | 23. — <i>*pullata.</i> |
| 12. — <i>gilippus.</i> | 24. — <i>affinis.</i> |
| 13. — <i>erippus.</i> | 25. — <i>chionippe.</i> |
| 14. — <i>cleophile.</i> | 26. — <i>*fulgurata.</i> |
| 15. — <i>chrysippus.</i> | 27. — <i>*conspicua.</i> |
| 16. — <i>alcippus.</i> | 28. — <i>melanippus.</i> |
| 17. — <i>petilia.</i> | 29. — <i>lotis.</i> |
| 18. — <i>plexaure.</i> | 30. — <i>ismare.</i> |
| 19. — <i>plexippus.</i> | |

Section 3.

Alæ hyalinæ aut subhyalinæ, fasciis strigisque opacis fuscis : raro fusca strigis hyalinis.

- | | |
|----------------------------|------------------------------|
| 31. <i>Danais sobrina.</i> | 45. <i>Danais agleoides.</i> |
| 32. — <i>similis.</i> | 46. — <i>grammica.</i> |
| 33. — <i>meganira.</i> | 47. — <i>phyle.</i> |
| 34. — <i>melissa.</i> | 48. — <i>luzonensis.</i> |
| 35. — <i>xanthippus.</i> | 49. — <i>melaneus.</i> |
| 36. — <i>limniacæ.</i> | 50. — <i>tytia.</i> |
| 37. — <i>*leonora.</i> | 51. — <i>albata.</i> |
| 38. — <i>*leopardus.</i> | 52. — <i>*ænone.</i> |
| 39. — <i>australis.</i> | 53. — <i>vitrina.</i> |
| 40. — <i>*choaspes.</i> | 54. — <i>*gloriola.</i> |
| 41. — <i>*purpurata.</i> | 55. — <i>*crocea.</i> |
| 42. — <i>*fumata.</i> | 56. — <i>cleona.</i> |
| 43. — <i>*erebus.</i> | 57. — <i>*lutescens.</i> |
| 44. — <i>aglea.</i> | 58. — <i>*mariana.</i> |

Section 3 a.

Alæ subhyalinæ, magnæ, venis fuscis : posticæ plerumque fascia lata submarginali fusca : margine postico fusco, intus dentato.

- | | |
|-----------------------------|----------------------------|
| 59. <i>Danais *inuncta.</i> | 62. <i>Danais chloris.</i> |
| 60. — <i>*salvini.</i> | 63. — <i>anapis.</i> |
| 61. — <i>vitrea.</i> | |





METOPOTHRIX AURANTIACUS.

Section 4.

Alæ hyalinæ, maculis ovatis nigris variæ.

64. *Danaïs gaura.*

| 65. *Danaïs daos.*

My species are marked with an asterisk.

The great similarity of pattern and coloration that exists in this genus renders the determination of the species, without the aid of figures, next to impossible, especially as some of the species (?) are founded upon the absence or presence of a single spot; I may therefore have unwittingly redescribed some of the recently acquired forms from absolute inability to make them agree with the descriptions given.

5. Catalogue of Birds collected by Mr. E. Bartlett on the River Ucayali, Eastern Peru, with Notes and Descriptions of New Species. By P. L. SCLATER, M.A., Ph.D., F.R.S., and OSBERT SALVIN, M.A., F.Z.S., &c.

(Plate XVIII.)

The collection of birds which we have the pleasure of bringing before the Society this evening is part of the firstfruits of the expedition of Mr. Edward Bartlett, son of the Superintendent of the Society's Gardens, to the Peruvian Amazon.

Mr. E. Bartlett left Liverpool on the 17th of January 1865, in a small schooner, and arrived at Para towards the close of the following month. Thence he proceeded by the line of steamers which now navigate the Amazons to Nauta, in Eastern Peru, situated on the left bank of the main stream a little above the junction with it of its large southern tributary the Ucayali. Mr. Bartlett did not reach Nauta until the first week in April, having been somewhat delayed by changing steamers at Barra, Tabatinga, and Yquitos. After about a month's stay at this place he started on a five months' excursion up the Ucayali in boats, leaving Nauta early in May, and not returning there until the end of September or beginning of October. The highest point attained during this excursion was Cashaboya, three days' journey above Sarayacu. At these two localities and along the banks of the Ucayali, between its confluence with the Amazons and Cashaboya, the greater part of the present collection of birds was formed, some few only being from Nauta, and perhaps one or two, to which no locality is attached, from other places on the main stream. The total number of the skins contained in the present collection is about 700, representing 252 species. But before we say more about them it may be proper to state shortly what has previously been done towards working out the ornithology of the country traversed by Mr. Bartlett.

The only work that professes to give any connected account of the ornithology of the Peruvian republic generally is Tschudi's 'Fauna

Peruana.' That the series of birds given by Tschudi as met with within the limits of Peru is not very complete, is sufficiently manifest from the fact that the whole number of species enumerated by him is only 265; and herein are included a considerable number of purely Andean species, besides species peculiar to the western coast-fauna which are not met with in the eastern wood-region. Now Mr. Bartlett's present collection already gives us materials for determining upwards of 250 different species; and the probability is, the whole avifauna of this rich region does not contain less than from 600 to 700 species.

Several other zoological travellers have likewise made extensive collections of bird-skins in various parts of the same district into which Mr. Bartlett has recently penetrated; but, unfortunately, no complete account of the results of their labours has ever been given to the public. The specimens obtained by Professor Poeppig in the province of Maynas remain, we believe, still unworked at in the Leipsic Museum. About the year 1846 the French travellers, MM. Castelnau and Deville, descended the river Ucayali during their journey from Lima to Para. A considerable series of birds was collected on this occasion by the late M. Deville at Sarayacu and at other localities in Eastern Peru visited by the expedition, but, probably owing to the latter naturalist's untimely death after his return to Paris, it was never perfectly worked out. The "Partie Ornithologique" of the Voyage of M. Castelnau, published by M. Des Murs in 1855, contains only notices of some of the principal species, and is in fact, as is stated by the author in his preface, mainly a compilation of papers published by M. Deville, Prince Charles Bonaparte, and Mr. Sclater on the same subject.

In 1854, or thereabouts, Mr. Hawxwell, who has for many years been a resident trader at various stations on the Upper Amazons, transmitted to Mr. Gould a very fine and extensive collection of the birds of this district. A portion of these were exhibited by Mr. Gould to this Society at one of their Meetings in 1855*, and some of the new species contained in it were described by Mr. Gould in our 'Proceedings'†. It is much to be regretted that in this case, again, the collection was dispersed without any complete account being given of it. Mr. Hawxwell's specimens were obtained partly on the Ucayali, and partly at Chamicurros, an Indian village situated on a small tributary of the Huallaga.

In 1857 Mr. Sclater published in our 'Proceedings'‡ a list of a small collection of birds (embracing seventy-nine species) transmitted by our well-known Amazonian traveller, Mr. H. W. Bates, from Ega. Part of these were from Ega itself, but others had been obtained for Mr. Bates by an assistant collector on the Rio Javarri. Amongst them were a considerable number of species, which we recognize again in the present collection. Other species obtained by Mr. Bartlett

* See P. Z. S. 1855, p. 77.

† Descriptions of eight new species of birds from South America (P. Z. S. 1855, p. 67).

‡ P. Z. S. 1857, p. 261.

have been already recorded as met with in the series from the Rio Napo, of which Mr. Selater has given an account in the Society's 'Proceedings' for 1858* ; and others are to be referred to the species described by D'Orbigny from the lower woodlands of the adjoining republic of Bolivia.

Although, therefore, as has been already stated, no complete account has yet been published of the birds of Eastern Peru, it will be seen, by the subjoined catalogue, that by far the greater portion of Mr. Bartlett's collection consists of species already made known to science by one or other of these authorities. Comparatively few of them are new, and these are mainly species belonging to the more obscure and difficult groups, which are likely to escape notice. Of the 252 species collected by Mr. Bartlett we consider eleven only to be certainly undescribed, namely :—

- | | |
|----------------------------------|--------------------------------------|
| 1. <i>Spermophila ocellata.</i> | 7. <i>Muscisaxicola fluviatilis.</i> |
| 2. <i>Furnarius torridus.</i> | 8. <i>Serpophaga hypoleuca.</i> |
| 3. <i>Synallaxis terricolor.</i> | 9. <i>Metopothrix aurantiacus.</i> |
| 4. — <i>vulpecula.</i> | 10. <i>Leucippus chlorocercus.</i> |
| 5. <i>Hypocnemis melanura.</i> | 11. <i>Thaumantias bartletti.</i> |
| 6. — <i>hemileuca.</i> | |

On these species and the rest of the collection we now proceed to give our remarks, reserving our notes on the general aspects of the ornithology of this interesting region until the arrival of further collections from our energetic and enterprising traveller shall enable us to found them upon a wider basis.

The nomenclature followed in the present paper is that of Sclater's 'American Catalogue.' We have to record our thanks to Mr. Gould for determining the *Trochilidæ*, two of which prove to be new to science.

Order 1. PASSERES.

Fam. TURDIDÆ.

1. TURDUS AMAUROCHALINUS; Cab. Mus. Hein. p. 5.

A single specimen of this Thrush agrees nearly with a typical example of this species received from the Berlin Museum. Sclater's *Turdus ignobilis* is very closely allied, but has the lores brown like the head.

Hab. Lower Ucayalí.

2. TURDUS FUMIGATUS, Licht.

Hab. Nauta.

Fam. SYLVIIDÆ.

3. POLIOPTILA BUFFONI, Sclater.

Hab. Upper Ucayali.

The males have rather less white on the outer rectrices than the type specimen, but still considerably more than the Brazilian *P. leucogastra*, Max.

* P. Z. S. 1858, p. 59.

Fam. TROGLODYTIDÆ.

4. DONACOBIVS ATRICAPILLUS (Linn.).

Hab. Nauta.

5. CAMPYLORHYNCHUS HYPOSTICTUS, Gould, P. Z. S. 1855, p. 68.

Hab. Upper Ucayali.

6. THRYOTHORUS ALBIPECTUS, Cab.

Hab. Upper and Lower Ucayali.

7. THRYOTHORUS CORAYA (Gm.).

Hab. Sarayacu and Nauta.

The Sarayacu specimens are rather larger and greyer beneath.

8. TROGLODYTES FURVUS (Gm.).

Hab. Lower Ucayali.

Fam. HIRUNDINIDÆ.

9. PROGNE TAPERA (Linn.).

Hab. Upper Ucayali.

Two examples. Mr. Bartlett has sent the eggs of this species. They are white and similar in shape to those of the common *P. purpurea*. The eggs were deposited in holes in the ground, which in some instances were 2 feet deep.

10. ATTICORA CYANOLEUCA (Vieill.).

Hab. Nauta.

Several young specimens.

11. ATTICORA FASCIATA (Gm.).

Hab. Upper Ucayali.

A young male, with the white chest-band broader than in the adult.

12. PETROCHELIDON ALBIVENTRIS (Bodd.).

Hab. Lower Ucayali.

The egg of this species is white, and of about the size of that of the common *Hirundo urbica*.

13. STELGIDOPTERYX RUFICOLLIS (Vieill.); Baird, Rev. A. B. i. p. 312.

Hab. Upper and Lower Ucayali.

Several specimens. These all have the uropygium slightly greyer than Cayenne and Rio specimens, but not nearly so much as in *S. uropygialis* of Ecuador and Panama. This Swallow lays a white egg, similar to that of *S. serripennis*.

Fam. VIREONIDÆ.

14. VIREOSYLVA AGILIS (Licht.).

Hab. Upper Ucayali.

15. CYCLORHIS GUIANENSIS (Gm.).

Hab. Upper Ucayali.

Fam. CÆREBIDÆ.

16. DACNIS CAYANA (Linn.).

Hab. Lower Ucayali.

17. DACNIS MELANOTIS, Strickl.

Hab. Upper and Lower Ucayali.

18. DACNIS FLAVIVENTRIS, Lafr. et D'Orb.

Hab. Upper and Lower Ucayali; Sarayacu.

Specimens of both sexes of this lovely species. The female has not been previously obtained, as far as we know.

19. DACNIS ANALIS, Lafr. et D'Orb.

Hab. Upper Ucayali.

These skins agree with a skin from British Guiana in Sclater's collection, and must be referred to *D. analis*, while the Brazilian representative, *D. speciosa* (united with it in Sclater's catalogue and elsewhere), is probably distinct, being altogether paler in coloration, especially below.

20. CHLOROPHANES ATRICAPILLA (Vieill.).

Hab. Upper Ucayali.

21. CÆREBA CYANEA (Linn.).

Hab. Sarayacu.

22. CERTHIOLA LUTEOLA (Licht.).

Hab. Upper and Lower Ucayali.

Fam. TANAGRIDÆ.

23. EUPHONIA XANTHOGASTRA, Sund.

Hab. Sarayacu.

24. EUPHONIA MINUTA, Cab.

Hab. Nauta and Upper Ucayali.

25. EUPHONIA MELANURA, Sclater.

Hab. Upper and Lower Ucayali.

A male specimen agrees best with Sclater's Bogotan skin, which differs somewhat from the typical *E. melanura* from Barra, as noted in his American Catalogue, p. 59.

26. EUPHONIA, sp. ?

Hab. Lower Ucayali.

Several specimens, females of one of the yellow-throated species allied to *E. violacea*.

27. CALLISTE YENI, Lafr. et D'Orb.

Hab. Upper Ucayali.

28. CALLISTE SCHRANKI (Spix).

Hab. Upper Ucayali.

29. CALLISTE XANTHOGASTRA, Sclater.

Hab. Upper Ucayali.

30. CALLISTE BOLIVIANA, Bp.

Hab. Upper Ucayali.

31. TANAGRA CÆLESTIS, Spix.

Hab. Nauta and Upper Ucayali.

32. TANAGRA MELANOPTERA, Hartl.

Hab. Upper Ucayali.

33. RAMPHOCÆLUS NIGRIGULARIS (Spix).

Hab. Upper Ucayali.

34. RAMPHOCÆLUS JACAPA (Linn.).

Nauta and Upper Ucayali.

35. EUCOMETIS PËNICILLATA (Spix).

Hab. Upper Ucayali.

36. TACHYPHONUS RUFIVENTRIS (Spix).

Hab. Sarayacu.

37. NEMOSIA PILEATA (Bodd.).

Hab. Sarayacu.

38. NEMOSIA GUIRA (Linn.).

Hab. Sarayacu.

39. NEMOSIA SORDIDA, Lafr. et D'Orb.

Hab. Lower Ucayali.

We have hitherto considered this species identical with the Brazilian *N. fulvescens*, Strickl. (= *N. fulviceps*, Burm.). But Mr. Bartlett's specimens appear to be separable from the Brazilian skins in Sclater's collection, having the head more yellowish rufous, passing into a greenish tinge on the nape, and being greyish below, with the middle of the belly passing into pure white. In the Brazilian bird the whole abdomen is pale ochraceous. It is probable that the

Amazonian bird should bear D'Orbigny's name, although it does not agree very well with his description and figure.

40. *CISSOPIS LEVERIANA* (Gm.).

No locality is affixed to Mr. Bartlett's single specimen of this species; but it was probably obtained on the Lower Amazons, as the Ucayali species is *C. media*, of which Sclater has a specimen obtained on that river by Hawxwell.

41. *SALTATOR AZARÆ*, D'Orb.

Hab. Upper Ucayali.

Agrees with Sclater's specimen from the Rio Napo.

Fam. FRINGILLIDÆ.

42. *ORYZOBORUS*, sp.?

Hab. Nauta.

Female of a species near *O. crassirostris*.

43. *ORYZOBORUS TORRIDUS* (Gm.).

No locality given.

44. *SPERMOPHILA OCELLATA*, sp. nov.

Supra nigra, fascia uropygiali et speculo alari parva albis: subtus alba, gutture medio (utrinque albo limbato) cum pectore nigris, hujus et laterum plumis albo ocellatis: rostro plumbeo, pedibus fuscis: long. tota 4.5, alæ 2.3, caudæ 2.8 poll. Angl.

♀. *Olivaceo-brunnea, alis caudaque fuscis, subtus dilutior, magis flavicans, abdomine medio albescente: rostro et pedibus pallide fuscis.*

Hab. Nauta.

Obs. Aff. *S. bouvronidi*, Less., sed pectore ocellato distinguenda.

Mr. Bartlett has sent home many males and a single female of this apparently new species of *Spermophila*. It belongs to the black-throated division of the black-and-white section, which contains *S. lineola*, *S. nigricollis*, *S. cerulescens*, *S. semicollaris*, and *S. bouvronides*, but is distinct from all of these, though most nearly allied to the last-named. In some of the males a few of the feathers on the head are spotted with white at the base, forming a small indistinct white medial line.

45. *SPERMOPHILA CASTANEIVENTRIS*, Cab.

Hab. Nauta.

Examples of both sexes of this species.

46. *VOLATINIA JACARINA* (Linn.).

Hab. Sarayacu.

47. *PAROARIA GULARIS* (Linn.).

Hab. Nauta.

48. *COTURNICULUS PERUANUS*, Bp.

Hab. Nauta, and Upper and Lower Ucayali.
Many specimens.

Fam. ICTERIDÆ.

49. *OCYALUS LATIROSTRIS* (Sw.).

Hab. Upper Ucayali, near Cashaboya.

Examples of both sexes of this fine species. The males measure about 12 inches in length, wing 9, tail 4·7; the females 9·5, wing 6·1, tail 3·7, and are duller in colouring.

50. *OSTINOPS CRISTATUS* (Gm.).

Hab. Lower Ucayali.

51. *OSTINOPS YURACARIUM* (Lafr. et D'Orb.).

Locality not marked; but Selater has specimens from the Upper Amazons.

52. *OSTINOPS ATROVIRENS* (Lafr. et D'Orb.).

Hab. Upper Ucayali.

53. *OSTINOPS ANGUSTIFRONS* (Spix).

Hab. Upper and Lower Ucayali.

54. *CASSICUS PERSICUS* (Linn.).

Hab. Upper and Lower Ucayali.

55. *CASSICULUS SOLITARIUS* (Vieill.).

Hab. Nauta.

There is little doubt that *C. nigerrimus*, Spix, is the same bird. The synonym is given with a quære in Selater's American Catalogue.

56. *ICTERUS CHRYSOCEPHALUS* (Linn.).

Hab. Sarayacu.

57. *XANTHOSOMUS ICTEROCEPHALUS* (Linn.).

Hab. Lower Ucayali.

58. *GYMNOMYSTAX MELANICTERUS* (Vieill.).

Hab. Upper and Lower Ucayali.

59. *QUISCALUS*, sp. ?

Hab. Upper Ucayali.

One example, not in good condition, of a small species allied to *Q. æquatorialis*.

Fam. CORVIDÆ.

60. *CYANOCORAX VIOLACEUS*, Du Bus.

Hab. Upper Ucayali.

Fam. DENDROCOLAPTIDÆ.

61. FURNARIUS TORRIDUS, sp. nov.

Rubiginosus, alis caudaque paulo saturatioribus, primariis fusconigrificantibus, omnium (nisi extimi) basibus in pogonio interiore pallide cinnamomeis: pileo toto et capitis lateribus sordide brunneis, loris et superciliis indistincte albidis: subtus pallide rufus, gula, ventre medio et subalaribus pure albis: rostro rufo, basi albicante; pedibus pallide carneis: long. tota 7 poll., alæ 3·7, caudæ 2·2, tarsi 1·2; rostri a rictu lin. dir. 1·1.

Hab. in ripis fl. Ucayali sup. et inf.

Obs. Sp. quoad formam typicam, ab omnibus aliis colore dorsi saturate rubiginoso distinguenda.

Mr. Bartlett has sent two similar examples of this bird (labelled male and female) from the Ucayali. It is a well-marked species, easily known by its dark rusty-rufous back and clearly defined white throat, the breast being light rufous. The head above is earthy brown, rather darker than in *F. cinnamomeus*. The first primary is unspotted. In the second a large rounded pale cinnamomeous spot appears in the inner web about halfway up. This increases in size in the third and next following primaries, and ultimately descends to the base of the web. The seventh and succeeding primaries have a large terminal spot of dark rufous in the inner web. There is also an oblique band of dark rufous across the primaries, beginning with the third, which corresponds with the markings on the inner web.

The wings are short, the third, fourth, fifth, and sixth primaries being nearly equal and longest.

62. FURNARIUS MINOR, Von Pelzeln, Sitz. Ak. Wien, xxxi. p. 321, et xxxiv. p. 115.

Hab. Nauta.

Agrees with one of Natterer's typical specimens in Selater's collection.

63. SYNALLAXIS ALBIGULARIS, Selater.

Hab. Nauta and Upper Ucayali.

64. SYNALLAXIS TERRICOLOR, sp. nov.

Supra sordide cinereo-brunnea, fere unicolor, uropygio vix brunnescentiore: loris albidis: alarum tectricibus omnibus extus rufis: cauda pallidius rufo; rectricibus decem, pari externo brevissimo, ceteris graduatis: subtus cinerea, gulæ plumis albo terminatis; ventre medio pure albo: lateribus fusciscentibus: rostro saturate fusco, mandibulæ inferioris basi albicante: pedibus saturate corylinis: long. tota 6·3, alæ 2·2, caudæ rectr. med. 2·8; tarsi 0·9, rostri a rictu lin. dir. 0·8.

Hab. in ripis fl. Ucayali sup. et inf.

Obs. Species corpore supra unicolori et rostro longo, caudæ quoque rectricibus decem valde graduatis ad apices acuminatis insignis.

Four specimens of this apparently undescribed *Synallaxis* were

obtained by Mr. Bartlett. It is not very like any species that we are acquainted with.

65. *SYNALLAXIS VULPECULA*, sp. nov.

Supra læte cinnamomeo-rufa, unicolor, loris et superciliis indistincte albidis: subtus alba, ventrem versus sensim fuscescente: lateribus sordidis: ventre medio punctis minutis obsolete sordidis irrorato: cauda unicolori rufa, rectricibus duodecim, pari externo medio dimidio brevior, ceteris graduatis: long. tota 5.6, alæ 2.6, caudæ 2.3, tarsi 0.85, rostri a rictu lin. dir. 0.75.

Hab. in ripis fl. Ucayali sup. et inf.

Obs. Affinis *S. vulpinæ*, sed rostro longiore, corpore supra omnino unicolore, et ventris punctis obsolete distinguenda.

Three examples of this species, belonging to the division of *Synallaxis* with twelve rectrices, are in Mr. Bartlett's collection. It appears to come nearest to *S. vulpina* of Von Pelzeln, of which a single example is in Sclater's collection.

66. *LEPTOXYURA CINNAMOMEA* (Gm.).

Hab. Upper Ucayali.

67. *PHILYDOR TURDINUS*.

"*Anabates turdinus*, Natt. MS.;" Von Pelz. Sitz. Ak. Wien, xxxiv. p. 110.

Hab. Upper Ucayali.

A single specimen, agreeing nearly enough with a typical example of Von Pelzeln's species in Sclater's collection. Natterer's examples were collected at Barra and Borba.

68. *XENOPS APPROXIMANS*, Von Pelzeln, Sitz. Ak. Wien, xxxiv. p. 113.

Hab. Nauta and Upper Ucayali.

Two examples.

69. *SITTASOMUS AMAZONUS*, Lafr.

Hab. Upper Ucayali.

70. *DENDROCOLAPTES VALIDUS*.

Dendrocolaptes validus, Tsch. F. P. p. 242, pl. 21. f. 2.

Dendrocops validus, Lafr. R. Z. 1851, p. 324.

Hab. Upper Ucayali.

A single example of this species, which we have not seen before. It appears to answer well to Tschudi's description, though the wretched figure of the 'Fauna Peruana' is barely recognizable.

71. *DENDRORNIS PALLIATA*, Des Murs.

Hab. Lower Ucayali.

72. *DENDRORNIS ROSTRIPALLENS*, Des Murs.

Hab. Sarayacu.

Fam. FORMICARIIDÆ.

73. *THAMNOPHILUS MELANURUS*, Gould, P. Z. S. 1855, p. 69, pl. LXXXIII., et Ann. N. H. ser. 2. xv. p. 345.

Hab. Nauta and Upper and Lower Ucayali.

74. *THAMNOPHILUS CORVINUS*, Gould.

Thamnophilus corvinus, Gould, P. Z. S. 1855, p. 69, et Ann. N. H. ser. 2. xv. p. 345 (♂).

T. melanoceps, Spix, Av. Bras. ii. p. 28, pl. 39. f. 1 (♀).

Diallactes melanocephalus, Cab. & Heine, Mus. Hein. ii. p. 18 (♀).

Thamnophilus melanocephalus, Sclater, Cat. Am. B. p. 172 (♀).

Hab. Upper Ucayali, near Cashaboya.

There can, we think, be no longer any doubt that Spix's *T. melanoceps* is the female of *Th. corvinus*. Mr. Bartlett has obtained examples of each of them in the same locality, and marks all *T. corvinus* as males, and all *T. melanoceps* as females. Sclater has already suggested that this would turn out to be the case (P. Z. S. 1858, p. 210).

75. *THAMNOPHILUS HYPERYTHRUS*, Gould, P. Z. S. 1855, p. 70.

Only one example of this species from the Lower Ucayali.

76. *THAMNOPHILUS NÆVIUS* (Gm.).

Hab. Upper Ucayali.

77. *THAMNOPHILUS AMAZONICUS*, Sclater.

Hab. Upper Ucayali.

78. *THAMNOPHILUS ATRICAPILLUS* (Gm.).

Hab. Upper Ucayali.

79. *THAMNOPHILUS RADIATUS*, Vieill.

Hab. Sarayacu and Nauta.

80. *PYGOPTILA MACULIPENNIS*, Sclater.

Hab. Upper Ucayali and Sarayacu.

Specimens of both sexes of this species.

81. *MYRMOTHERULA PYGMEA* (Gm.).

Hab. Upper Ucayali.

82. *MYRMOTHERULA SURINAMENSIS* (Gm.).

Hab. Upper Ucayali.

83. *MYRMOTHERULA MULTOSTRIATA*, Sclater.

Hab. Upper Ucayali.

84. *MYRMOTHERULA HÆMATONOTA*, Sclater, P. Z. S. 1858, p. 235.

Hab. Upper Ucayali.

A single female of this species, which is certainly distinct from *M.*
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ornata. In Sclater's collection is an adult male collected by Natterer at Marabitanas, in May 1831.

85. MYRMOTHERULA AXILLARIS (Vieill.).

Hab. Upper Ucayali.

86. MYRMOTHERULA MELÆNA, Sclater.

Hab. Lower Ucayali.

87. MYRMOTHERULA HAWXWELLI, Sclater.

Hab. Upper Ucayali and Nauta.

88. CERCOMACRA CINERASCENS, Sclater, P. Z. S. 1857, p. 131.

Two examples from Sarayacu. Sclater's skin from the Napo, referred to this species in his American Catalogue (p. 184), is, no doubt, different, and will require a new name.

89. PYRIGLENA SERVA, Sclater.

Hab. Upper and Lower Ucayali.

90. PERCNOSTOLA FUNEBRIS (Licht.).

Hab. Nauta.

91. HYPOCNEMIS CANTATOR (Bodd.).

Hab. Upper Ucayali.

92. HYPOCNEMIS PÆCILONOTA, Cab.

Hab. Sarayacu.

A single female of this species—the first example of this sex we have seen.

93. HYPOCNEMIS MELANOPOGON, Sclater.

Hab. Cashaboya.

94. HYPOCNEMIS MELANURA, sp. nov.

♂. *Schistacea*, capite cum gutture colloque toto, alis et cauda nigris: alarum tectricibus albo limbatis; campterio et tectricibus subalaribus albis: rostro nigro, pedibus plumbeis: long. tota 4·5, alæ 2·5, caudæ 1·5, tarsi 0·9.

♀. *Brunnea*, alarum tectricibus nigricantibus, albo marginatis: subtus fulva, gutture medio et ventre medio pure albis: rostro inferiore albicante.

Hab. in ripis fl. Ucayali sup.

Obs. Affinis sp. præc. sed tarsis longioribus et capite caudaque omnino nigris distinguenda: differt a *H. schistacea*, Scl., pileo nigro et tectricibus alarum albo marginatis nec punctatis.

Mr. Bartlett's collection contains a single pair of this species—the male from Cashaboya, the female from the Upper Ucayali.

95. HYPOCNEMIS HEMILEUCA, sp. nov.

♂. *Supra atra*, macula dorsi celata alba: dorsi postici plumis

elongatis cinerascentibus: alis caudaque nigris; scapularium basibus, tectricum alarium maculis apicalibus et rectricum omnium apicibus cum toto corpore subtus albis: rostro et pedibus nigris: long. tota 4·5, alæ 2·0, caudæ 1·5, tarsi 0·8.

Hab. in ripis fl. Ucayali inf.

Obs. Affinis *H. melanopogoni*, sed ab omnibus affinibus corpore supra nigro subtus albo distinguenda.

Mr. Bartlett has only sent a single example of this apparently undescribed species.

96. *HYPOCNEMIS THERESÆ*, Des Murs, Voy. Casteln. Ois. p. 51, pl. 16. f. 2 ♀.

Hab. Uppér Ucayali.

Fam. TYRANNIDÆ.

97. *ATTILA THAMNOPHILOIDES* (Spix).

Hab. Sarayacu.

98. *FLUVICOLA PICA* (Bodd.).

Hab. Uppér Ucayali.

A single skin, apparently referable to this species.

99. *MUSCISAXICOLA FLUVIATILIS*, sp. nov.

Murino-fusca, alis nigricantibus, rufo bifasciatis: caudæ tectricibus superioribus atris, rectricis extimæ pogonio externo albicante: subtus valde dilutior, ventre et crisso pure albis; pectore et lateribus fulvido perfusis: rostro nigro, mandibulæ inferioris basi tota albida: pedibus nigris: long. tota 5·3, alæ 3, caudæ 2, tarsi 0·8.

Hab. in ripis fl. Ucayali inf.

Obs. Affinis *M. maculirostri*, sed rostro brevior et magis crasso, tarsis brevioribus, alarum fasciis distinctis, et ventre albo insignis.

Mr. Bartlett's collection contains several examples of this new *Muscisaxicola* from the Lower Ucayali. It must be placed next to *M. maculirostris*. See Selater's synopsis of the genus in 'Ibis,' 1866, p. 56.

100. *TODIROSTRUM MACULATUM*, Desm.

Hab. Nauta and Uppér Ucayali.

101. *TODIROSTRUM CHRYSOCROTAPHUM*, Strickl. Contr. Orn. 1850, pl. 49.

Hab. Uppér Ucayali.

Two examples of this scarce species.

102. *EUSCARTHMUS SPICIFER*.

Todirostrum spiciferum, Lafr. Rev. Zool. 1846, p. 363; Selater, P. Z. S. 1855, p. 67, pl. LXXXIV. f. 2.

Hab. Lower Ucayali.

As Selater has already pointed out, this species is quite different

from *Colopterus galeatus* (Bodd.), with which he had previously united it.

103. SERPOPHAGA HYPOLEUCA, sp. nov.

Murino-cinerea; *crista parva verticali nigricante*: *alis caudaque saturatioribus*: *subtus alba*: *rostro et pedibus nigris*: *long. tota 4, alæ 1·8, caudæ 1·8, tarsi 0·7.*

Hab. in ripis fl. Ucayali inf.

Obs. Affinis *S. subcristatæ*, quoad formam, colore *S. nigricanti* magis propinqua.

104. STIGMATURA BUDYTOIDES.

Culicivora budytoides, Lafr. et D'Orb. Syn. Av. in Mag. de Zool. p. 56.

Setophaga budytoides, D'Orb. Voy. p. 330, pl. 36. f. 2.

Two examples of this singular bird, one from the Upper, the other from the Lower Ucayali. The most nearly allied species is Sclater's *Euscarthmus agilis*, afterwards transferred by him into the genus *Anæretes*. But the present bird must certainly be generically separated from *Anæretes*; and perhaps the species last referred to ought likewise to stand alone as a link between the two genera.

The characters of the genus *Stigmatura*, as we propose to call this form, consist (1) in the very short wings, the longest primaries (third and fourth) hardly exceeding the longest secondaries; (2) in the very long tail, formed by graduated feathers (much as in *Anæretes agilis*); and (3) in the long strong tarsi and short hind claw. *Anæretes agilis* has similar tarsi, but the hind claw is much stronger and longer. *Stigmatura* is further remarkable for the black and white banded tail, which is unlike anything in the whole group of *Tyrannidæ*; it is very different in style of coloration to *Anæretes*, and in this respect comes nearer to *Hapalocercus*.

105. MIONECTES OLEAGINEUS (Licht.).

Hab. Upper Ucayali.

106. TYRANNULUS ELATUS (Lath.).

Hab. Upper Ucayali.

107. CAMPTOSTOMA FLAVIVENTRE, Scl. et Salv. P. Z. S. 1854, p. 358.

Hab. Upper Ucayali.

Agrees with Fraser's Ecuador specimen of this species spoken of *l. c.*

108. ELAINEA PAGANA (Licht.).

Hab. Nauta.

109. ELAINEA, sp.?

Hab. Nauta and Lower Ucayali.

Two examples of a species allied to *E. mesoleuca*, Cab. & Hein., not in sufficiently good condition to distinguish therefrom.

110. ELAINEA, sp. ?

Hab. Upper Ucayali.

One example of a species belonging to the golden-crested group containing *E. placens* and its allies.

111. MYIOZETETES, sp. ?

Hab. Sarayacu.

One example of a young bird of this genus.

112. MYIOZETETES CAYENNENSIS (Linn.).

Hab. Nauta.

113. RHYNCHOCYCLUS MEGACEPHALUS (Sw.).

Hab. Upper Ucayali.

114. PITANGUS SULPHURATUS (L.).

Hab. Nauta.

115. MYIOBIUS NÆVIUS (Bodd.).

Hab. Lower Ucayali.

116. MYIOBIUS, sp.

Hab. Upper Ucayali.

One specimen in bad condition, which we are unable to determine.

117. MYIOBIUS XANTHOPYGIUS (Spix).

Hab. Upper Ucayali.

118. PYROCEPHALUS RUBINEUS (Bodd.).

Upper and Lower Ucayali.

119. MYIARCHUS, sp. ?

Hab. Upper Ucayali.

Two examples of an undetermined species in Sclater's collection.

120. EMPIDONOMUS VARIUS (Vieill.).

Hab. Upper Ucayali.

121. TYRANNUS MELANCHOLICUS, Vieill.

Hab. Nauta and Sarayacu.

Many specimens of this widely distributed species.

122. TYRANNUS PIPIRI, Vieill.

Hab. Nauta.

Two specimens. In our opinion indistinguishable from North-American specimens. D'Orbigny (Voy. p. 313) has noticed this species as far south as Santa Cruz de la Sierra in Bolivia.

123. TYRANNUS, sp.

One skin, from the Upper Ucayali, apparently referable to a new

species allied to *T. pipiri*, but not in a sufficiently perfect state for description.

124. *TYRANNUS AURANTIO-ATRO-CRISTATUS*, Lafr. et D'Orb. Syn. p. 45; D'Orb. Voy. p. 312.

Tyrannus inca, Sclater, ex Licht. MS., P. Z. S. 1861, p. 383.

Fam. COTINGIDÆ.

125. *HADROSTOMUS MINOR* (Less.).

A single skin from the Upper Ucayali, apparently a female of this species.

126. *PACHYRHAMPHUS CINEREUS* (Bodd.).

Hab. Sarayacu.

127. *PACHYRHAMPHUS NIGER*, Spix.

Hab. Upper Ucayali.

128. *PACHYRHAMPHUS*, sp.?

A skin of a female of this difficult group from the Upper Ucayali.

129. *LIPAUGUS SIMPLEX* (Licht.).

Hab. Lower Ucayali.

130. *SCHIFFORNIS MAJOR*, Bp.; Des Murs, Voy. Casteln. Zool. i. p. 66, pl. 18. f. 2.

A single imperfect skin from Nauta, which may probably be referable to this species, but requires comparison with the type, as it is a form little known and not sufficiently described.

131. *PIPRITES CHLORION* (Cab.).

Hab. Upper Ucayali.

132. *PIPRA FILICAUDA*, Spix.

Hab. Sarayacu and Upper Ucayali.

133. *PIPRA LEUCOCILLA*, Linn.

Hab. Sarayacu.

134. *PIPRA CYANEOCAPILLA*, Hahn.

Hab. Upper Ucayali.

135. *METOPOTHRIX AURANTIACUS*, gen. et sp. nov. (Pl. XVIII.)

Metopothrix genus novum Piprinum: *rostrò elongato, valde compresso, paulum incurvo, dente marginali nullo: plumis in fronte brevibus, erectis, setosis: rictu glabro: alæ modicæ, dimidium caudæ vix attingentes; remigibus ii^{do}, iii^{io}, et iv^{to} fere æqualibus et longissimis, primo sextum æquante: cauda elongata, rectri-*

cibus valde graduatis: tarsi modicis, digito medio paulo longioribus; digitis anticis ad basin concretis.

Typ. et sp. unica *M. aurantiacus*.

Supra olivacea, alis fuscis, olivaceo limbatis: plumis frontis erectis, aurantiacis: subtus valde pallidior gula et pectore flavis, hoc ventrem versus dilutiore: rostro nigricanti-fusco: pedibus flavis: long. tota 4.75, alæ 2.3, caudæ rectr. med. 2, lat. 1.25; tarsi 0.6, rostri a rictu lin. dir. 0.5.

Hab. Sarayacu.

Two skins of this curious bird are in the collection. They may probably be females of a more brilliantly coloured male; but the form, which appears to belong to the *Piprinae*, is quite new to us.

136. *COTINGA CAYANA* (Linn.).

Locality not recorded.

137. *COTINGA PORPHRYOLEMA*, Sclat. et Dev. Rev. Zool. 1852, p. 226, et Contr. Orn. 1852, p. 136, pl. 96; Des Murs, Zool. Voy. Casteln. Ois. p. 65.

Hab. Sarayacu.

A pair of this beautiful *Cotinga*, which was, we believe, first discovered by Poeppig in the province of Maynas, although his specimens remained unnamed in the Leipsic collection until after it had been described by Sclater and Deville from the specimens obtained during Castelnau's expedition. Hawxwell also obtained specimens of this *Cotinga* on the Ucayali, some of which are now in the British Museum.

138. *QUERULA CRUENTA* (Bodd.).

Several specimens, all from the Upper Ucayali.

139. *CEPHALOPTERUS ORNATUS*, Geoffr.

Order II. PICARIÆ.

Fam. MOMOTIDÆ.

140. *MOMOTUS BRASILIENSIS*, Lath.

Upper Ucayali.

More rufous below than Sclater's specimens; but these birds appear to vary much with every slight change of area. It will probably be necessary to reduce the number of species allied to *M. brasiliensis* when we have a better series of examples.

141. *MOMOTUS MARTII*, Spix.

Hab. Upper Ucayali.

Fam. ALCEDINIDÆ.

142. *CERYLE TORQUATA* (Linn.).

Hab. Lower Ucayali.

Mr. Bartlett has also sent the eggs of this Kingfisher, which are glossy white, like those of other members of this family.

143. *CERYLE AMAZONIA* (Lath.).

Hab. Lower Ucayali.

144. *CERYLE AMERICANA* (Gm.).

Hab. Lower Ucayali.

Fam. GALBULIDÆ.

145. *GALBULA TOMBACEA*, Spix.

Hab. Sarayacu and Lower Ucayali.

146. *GALBULA ALBIROSTRIS*, Lath.

Hab. Sarayacu.

147. *GALBALCYRHYNCHUS LEUCOTIS*, Des Murs.

Four examples of this bird, but without the exact locality. One of them has not the white auricular spot, which is perhaps characteristic of the male bird. The wing is rather strongly spurred in this form.

Fam. BUCCONIDÆ.

148. *BUCCO MACRODACTYLUS*, Spix.

Hab. Upper Ucayali, Sarayacu.

149. *MALACOPTILA RUFÆ* (Spix).

Hab. Sarayacu.

150. *NONNULA FRONTALIS*, Sclater.

Hab. Upper Ucayali.

One example.

151. *NONNULA RUFICAPILLA*, Tschudi.

Hab. Sarayacu and Upper and Lower Ucayali.

Many specimens.

152. *MONASA NIGRIFRONS*, Spix.

Locality not marked. Spix obtained his specimens on the Solimoens.

153. *MONASA PERUANA*, Bp.

Hab. Upper Ucayali.

154. *CHELIDOPTERA TENEBROSA*, Pall.

Hab. Upper Ucayali.

Fam. TROGONIDÆ.

155. *TROGON VIRIDIS*, L.

Trogon melanopterus, Gould, Mon. pl. 10.

Hab. Upper Ucayali.

156. *TROGON RAMONIANUS*, Casteln. et Deville, Voy. p. 34, pl. 11. f. 2.

Aganus ramonianus, Cab. et Hein. Mus. Hein. iv. p. 148.

Hab. Upper and Lower Ucayali.

The original specimens obtained by Castelnau's expedition were from Sarayacu.

157. *TROGON COLLARIS*, Vieill.; Gould, Mon. pl. 5.

Hab. Lower Ucayali.

158. *TROGON VARIEGATUS*, Spix, Av. Bras. i. p. 49, pl. 38 a.

Hab. Upper Ucayali.

159. *TROGON MELANURUS*, Sw.

Hab. Nauta and Upper Ucayali.

Fam. CAPRIMULGIDÆ.

160. *NYCTIBIUS GRANDIS* (Gm.).

Hab. Upper Ucayali.

161. *PODAGER NACUNDA*, Vieill.

Hab. Lower Ucayali.

162. *CHORDEILES RUPESTRIS*, Spix.

Hab. Lower Ucayali.

The eggs of this species, of which Mr. Bartlett has sent specimens, are of a grey stone-colour, blotched all over with three shades of the same colour, more thinly towards the smaller end.

163. *HYDROPSALIS TRIFURCATA* (Natt.); Tsch. F. P. p. 128.

Many examples of both sexes of this species from the Lower Ucayali. See Selater's remarks, *antèa*, p. 141. The egg of this species is similar to that of the last, but has the ground-colour rather lighter, and the markings are more linear.

164. *NYCTIDROMUS ALBICOLLIS* (Gm.).

Hab. Upper Ucayali.

The egg of this species has a pinkish cream-colour ground, spotted and streaked with darker shades of the same colour.

Fam. TROCHILIDÆ.

165. *GLAUCIS MELANURA*, Gould.

Hab. Upper Ucayali.

166. *PHAETHORNIS HISPIDUS*, Gould.

Hab. Upper Ucayali, near Cashaboya.

167. *LAMPORNIS MANGO* (Linn.).

Hab. Sarayacu.

168. *THALURANIA NIGRO-FASCIATA*, Gould.*Hab.* Sarayacu.169. *CLYTOLEMA AURESCENS*, Gould.*Hab.* Upper Ucayali.

A single, not very perfect example of this rare species. M. Verreaux's collection contains a specimen from the Rio Napo.

170. *LEUCIPPUS CHLOROCERCUS*, Gould, MS.

Five examples of this apparently new species, from Nauta and different parts of the Upper and Lower Ucayali. Mr. Gould describes it as follows:—

“Crown of the head, nape, shoulders, back, and upper tail-coverts green; tail-feathers bluish green, with a faint zone of darker green near the end; the extreme tip of all but the two central ones grey, which gradually increases in extent as the feathers recede from the middle, and becomes most conspicuous on the outer ones, where it pervades the whole of the outer web; wings purplish brown; breast greyish white, with an obscure spot of dull green in the centre of each feather, particularly those of the throat; flanks dull green; lower part of the abdomen and under tail-coverts greyish white; bill black; feet dark brown.

“Total length $3\frac{3}{4}$ inches, bill $\frac{7}{8}$, wing $2\frac{1}{4}$, tail $1\frac{1}{2}$, tarsi $\frac{1}{4}$.

“*Hab.* The Upper Ucayali.

“*Remark.*—This species is about the size of *Leucippus chionogaster* (*Trochilus chionogaster*, Tschudi).”

171. *THAUMANTIAS FLUVIATILIS*, Gould, *Intr. to the Troch.* p. 154.*Hab.* Lower Ucayali.172. *THAUMANTIAS BARTLETTI*, Gould, MS.

Seven examples of this rather striking new species from Sarayacu. Mr. Gould proposes to name it after its enterprising discoverer, with the following characters:—

“Crown of the head, nape, and back deep grass-green, changing to bronzy green on the upper tail-coverts; throat and chest rich blue; flanks green; centre of the abdomen greyish white; under tail-coverts bronzy brown, margined with grey; tail bluish black, the upper surface of the two central rectrices washed with green, and the four outer feathers on each side obscurely tipped with grey in those specimens which, according to Mr. Bartlett, are females; wings deep purplish brown; upper mandible brownish black; under mandible flesh-colour; feet dark brown.

“Total length $3\frac{7}{8}$ inches, bill 1, wing $2\frac{1}{4}$, tail $1\frac{1}{4}$, tarsi $\frac{1}{4}$.

“*Hab.* The Upper Ucayali.

“*Remark.*—This species, which I have named in honour of its discoverer, is of the same size as, and closely allied to, my *Thaumantias fluviatilis*, from which it principally differs in having the breast blue instead of shining green.”

173. *EUCEPHALA CÆRULEA* (Vieill.).

Hab. Lower Ucayali.

174. *HYLOCHARIS CYANEA* (Vieill.)?

Hab. Nauta.

A single skin, apparently of this species.

175. *CHLOROSTILBON DAPHNE*, Bourc.

A single specimen from Nauta, probably referable to this species.

Fam. CUCULIDÆ.

176. *CROTOPHAGA MAJOR*, Linn.

Hab. Lower Ucayali.

177. *CROTOPHAGA ANI*, Linn.

Hab. Nauta.

178. *PIAYA NIGRICRISSA*, Sclater.

Hab. Sarayacu.

179. *PIAYA MINUTA*, Vieill.

Hab. Sarayacu.

180. *COCCYZUS MELANOCORYPHUS*, Vieill.

Hab. Upper and Lower Ucayali.

Fam. RAMPHASTIDÆ.

181. *RAMPHASTOS CUVIERI*, Wagl.; Gould, Mon. ed. 2. pl. 8.

Hab. Cashaboya, ♂ et ♀.

182. *RAMPHASTOS CULMINATUS*, Gould, Mon. ed. 2. pl. 11.

Hab. Upper Ucayali, Sarayacu.

183. *PTEROGLOSSUS CASTANOTIS*, Gould, Mon. ed. 2. pl. 19.

Hab. Sarayacu.

184. *PTEROGLOSSUS HUMBOLDTII* (Wagl.); Gould, Mon. ed. 2.
pl. 22.

Hab. Upper Ucayali, Sarayacu.

Specimens of both sexes of this species.

185. *SELENIDERA LANGSDORFI* (Wagl.); Gould, Mon. ed. 2.
pl. 33.

Hab. Cashaboya.

Fam. CAPITONIDÆ.

186. *CAPITO PERUVIANUS* (Cuv.).

Hab. Upper Ucayali.

187. *CAPITO AUROVIRENS* (Cuv.).

Hab. Nauta and Upper Ucayali.

188. *CAPITO AURANTICOLLIS*, Sclater.

Hab. Upper Ucayali.

189. *CAPITO MELANOTIS*, Sclater.

Hab. Upper Ucayali.

Fam. PICIDÆ.

190. *PICUMNUS BUFFONI*, Lafr.

Hab. Sarayacu, Upper Ucayali.

191. *PICUMNUS CASTELNAUDI*, Mall. Pic. ii. p. 281, pl. 117. f. 1, 2.

Hab. Nauta and Upper Ucayali.

A pair of this rare species, which we have not previously met with.

192. *PICUMNUS RUFIVENTRIS*.

Asthenurus rufiventris, Bp. P. Z. S. 1837, p. 120; Consp. p. 141.

Picumnus rufiventris, Mall. Pic. ii. p. 283, et pl. 118. f. 2.

Læte oleagineus; pileo nigro, albo guttulato: subtus saturate cinnamomeus; caudæ rectricum duarum mediarum poyoniis internis et rectricum duarum utrinque externarum vitta obliqua subapicali pallide cinnamomeis: long. tota 4·6, alæ 2·3, caudæ 1·3, rostri a rictu 0·8, tarsi 0·6.

Hab. ad Sarayacu in ripis fl. Ucayali.

Affinis *P. cinnamomeo*, sed fronte non alba, dorsi colore olivaceo, caudæ pictura et rostro longiore diversus.

Of this rare species of *Picumnus*, which seems most nearly allied to *P. cinnamomeus*, Mr. Bartlett has transmitted but a single specimen. There is also a single specimen in the Paris Museum obtained by MM. Castelnau and Deville at Sarayacu. As Bonaparte's description is rather short, we have added its most marked characters.

193. *CAMPEPHILUS ALBIROSTRIS* (Vieill.).

Hab. Sarayacu and Upper and Lower Ucayali.

194. *DRYOCOPUS LINEATUS* (Linn.).

Hab. Upper Ucayali.

195. *CELEUS JUMANA* (Spix).

Hab. Sarayacu.

196. *CELEUS CITRINUS* (Bodd.).

No locality attached.

197. *CELEUS TINNUNCULUS* (Wagl.).

Hab. Upper Ucayali.

198. CELEUS GRAMMICUS (Malh.).

Hab. Sarayacu.

199. CHLORONERPES HÆMATOSTIGMA (Natt.).

Hab. Sarayacu.

A single skin of a female, rather larger in size than Sclater's example from the river Tocantins, which was determined by Malherbe.

200. CHRYSOPTILUS PUNCTIGULARIS (Bodd.).

Hab. Upper Ucayali.

One of the specimens approaches Sclater's *Chrysoptilus speciosus*, and seems to show that the latter species will require to be reunited with the former.

201. MELANERPES CRUENTATUS (Bodd.).

Hab. Sarayacu and Lower Ucayali.

Fam. PSITTACIDÆ.

202. ARA MACAO, Linn.

203. ARA SEVERA (Linn.).

Hab. Upper and Lower Ucayali.

204. CONURUS WEDDELLII, Deville, Rev. Zool. 1851, p. 209.

Maracana weddellii, Des Murs, Voy. Casteln. Ois. p. 13, pl. 2.*Hab.* Lower Ucayali.

205. CONURUS SOUANCÆI, Verreaux.

Hab. Nauta.

206. CONURUS XANTHOPTERUS (Spix).

Hab. Lower Ucayali.

207. BROTOGERYS JUGULARIS (Deville).

Hab. Upper and Lower Ucayali and Nauta.

208. BROTOGERYS TUI (Gm.).

Hab. Nauta.

209. CHRYSOTIS FESTIVA (Linn.).

Hab. Lower Ucayali.

210. CAICA BARRABANDI (Kuhl).

Hab. Upper Ucayali.

211. PSITTACULA SCLATERI, G. R. Gray, List of Psitt. p. 86.

Hab. Sarayacu.

A single female of this species, the type specimen of which was procured through Mr. Bates from the Rio Javarri.

Order 3. ACCIPITRES.

212. *IBYCTER AMERICANUS* (Bodd.).*Hab.* Upper Ucayali.213. *IBYCTER ATER*, Vieill.*Hab.* Upper Ucayali.214. *MILVAGO CHIMACHIMA* (Vieill.).*Hab.* Upper Ucayali.

Adult and young.

215. *URUBITINGA SCHISTACEA* (Sund.).*Hab.* Upper Ucayali, near Cashaboya.216. *BUTEOGALLUS NIGRICOLLIS* (Lath.).*Hab.* Sarayacu.217. *ASTURINA MAGNIROSTRIS* (Gm.).*Hab.* Upper Ucayali.218. *MICRASTUR GILVICOLLIS* (Vieill.).*Micrastur concentricus*, auct.*Hab.* Sarayacu.219. *CYMINDIS CAYANENSIS* (Gm.).*Hab.* Upper Ucayali.220. *HARPAGUS BIDENTATUS* (Lath.).*Hab.* Upper Ucayali.221. *SCOPS CHOLIBA* (Vieill.).*Strix crucigera*, Spix, Av. Bras. i. pl. 9, p. 22.*Hab.* Upper Ucayali.222. *SCOPS USTA*, Sclater, Trans. Zool. Soc. iv. p. 265, pl. 61.*Hab.* Sarayacu.

Order 4. COLUMBÆ.

223. *COLUMBA RUFINA*, Temm.*Chlorænas rufina*, Bp. Consp. ii. p. 52.

Locality not marked.

224. *COLUMBA VINACEA* (Temm.).*Chlorænas vinacea*, Bp. Consp. p. 53.225. *LEPTOPTILA DUBUSI*, Bp. Consp. ii. p. 74.Locality not marked. Agrees with Mr. Gray's *Peristera brasiliensis* (MS.), and seems to be the species described by Bonaparte.226. *GEOTRYGON MONTANA* (Linn.).

Locality not marked.

Order 5. GRALLÆ.

Fam. CHARADRIIDÆ.

227. HOPLOPTERUS CAYANUS (Lath.).

Hab. Lower Ucayali.

228. ÆGIALITIS COLLARIS (Vieill.).

Hab. Upper and Lower Ucayali.

The egg of this species is of a pale umber, dotted all over with numerous spots of brownish black, amongst which are mingled here and there lines of the same colour.

Fam. SCOLOPACIDÆ.

229. MICROPALAMA HIMANTOPUS (Bp.); Baird, B. N. A. p. 726.
Exact locality not given.230. TRINGA MACULATA, Vieill.; Baird, *l. c.* p. 720.*Hab.* Upper Ucayali.231. RHYACOPHILUS SOLITARIUS (Wils.); Baird, *l. c.* p. 733.*Hab.* Nauta.

232. TRYNGITES RUFESCENS (Vieill.).

Hab. Upper Ucayali.

Fam. ARDEIDÆ.

233. ARDEA COCOI, Linn.

Hab. Upper and Lower Ucayali.234. HERODIAS EGRETTE (Gm.); Baird, *l. c.* p. 666.*Hab.* Upper and Lower Ucayali.235. GARZETTA CANDIDISSIMA (Gm.); Baird, *l. c.* p. 665.*Hab.* Ucayali.

236. TIGRISOMA BRASILIENSE (Linn.).

Hab. Upper Ucayali.

Adult and young. The northern form of this species, *T. cabanisi*, has the throat quite bare.

237. BUTORIDES SCAPULARIS (Licht.).

Hab. Ucayali.

238. NYCTICORAX GARDENI.

Hab. Upper and Lower Ucayali.

239. EURYPYGA HELIAS (Gm.).

Hab. Upper Ucayali.

Fam. CICONIIDÆ.

240. TANTALUS LOCULATOR, Linn.

Hab. Upper Ucayali.

241. PLATALEA AGAJA, Linn.

Lower Ucayali.

Fam. RALLIDÆ.

242. ARAMIDES, sp.?

Hab. Lower Ucayali.

243. CORETHRURA, sp.?

Hab. Sarayacu.

244. PARRA JACANA, Linn.

Hab. Nauta.

Fam. PALAMEDEIDÆ.

245. PALAMADEA CORNUTA, Linn.

Hab. Upper Ucayali.

Fam. HELIORNITHIDÆ.

246. HELIORNIS FULICA.

Hab. Upper Ucayali.

Order 6. ANSERES.

Fam. ANATIDÆ.

247. CHENALOPEX JUBATUS (Spix).

Hab. Lower Ucayali.

248. DENDROCYGNA AUTUMNALIS (Linn.).

Hab. Ucayali.

The egg of this bird transmitted by Mr. Bartlett is of a pure white. We are not aware that the egg of any other member of the *Anatidæ* is of this colour. The texture is glossy.

249. DENDROCYGNA VIDUATA (Linn.).

Hab. Lower Ucayali.

250. CAIRINA MOSCHATA (Linn.).

Hab. Upper Ucayali.

Fam. LARIDÆ.

251. STERNA SUPERCILIARIS, Vieill. ; Coues, Ibis, 1864, p. 390.

Hab. Ucayali.

The egg of this Tern is similar to that of the well-known *S. minuta*, and of about the same dimensions.

252. THALASSEUS MAGNIROSTRIS, Spix.

Hab. Lower Ucayali.

Eggs of this Tern are pale yellowish-brown ground, blotched all

over with umber spots, amongst which others of a bluish tinge are mixed.

253. *RHYNCHOPS MELANURA*, Sw. An. in Men. p. 340; Schomb. Guian. iii. p. 761.

Hab. Lower Ucayali.

Egg somewhat similar to the last, but paler, and the spots richer in colour, and larger and fewer in number.

April 10, 1866.

John Gould, Esq., F.R.S., V.P., in the Chair.

Mr. P. L. Sclater, Secretary to the Society, called the attention of the Meeting to a pair of one of the most beautiful of all the Australian Parrakeets (*Psephotus pulcherrimus*; Gould), recently added to the Aviaries for the first time. These birds had been brought over by Mr. N. Timmermann, Steward of the ship 'Nineveh,' on the 20th of March, and purchased of him for the collection. Another Australian species recently received for the first time was an Australian Bustard, *Eupodotis australasiana* (Gould).

Mr. P. L. Sclater stated that the Society's active and obliging Corresponding Member, Mr. G. W. Latimer of Porto Rico, had forwarded a living Manatee (*Manatus americanus*) to the Society by the mail-steamer leaving St. John's on the 12th of March last. The animal had been transported to St. Thomas's, and the tank containing it safely transhipped into the 'Tasmanian' (Capt. Sawyer), but it had unfortunately died before reaching England. The Society were greatly indebted to Mr. Edward Greey, F.Z.S., of the same vessel, for the care he had taken in preserving the body of this animal, which, owing to the precautions adopted by Mr. Greey, had reached England in a very perfect state. The Society's Prosector was now engaged upon its anatomy, and the results of his investigations would shortly be brought before the Society.

Mr. Tegetmeier exhibited and made some remarks upon a supposed original drawing of the Dodo (*Didus ineptus*), in which the colour of that extinct bird was represented as being nearly white.

Mr. J. Gould exhibited specimens of the trachea of an Insessorial Bird from Cape York, Northern Australia (*Manucodia gouldi*, G. R. Gray), which was of very remarkable form and structure.

The following paper was read:—

PROC. ZOOL. SOC.—1866, No. XIV.

Notice of an Ape (*Macacus inornatus*) and a Bushbock
(*Cephalophus breviceps*) in the Gardens of the Society.
By Dr. JOHN EDWARD GRAY, F.R.S., V.P.Z.S., F.L.S.

(Plates XIX., XX.)

When I was at the Gardens the other day I observed an Ape and a Bushbock that I had not before seen, I have therefore sent a short note on them that they may be inserted in the Systematic Catalogue.

The Ape is a species of *Macacus*, which was purchased of the wife of a sailor, who had brought it from Borneo; so we may conclude that it is probably a native of that country. It differs from all the other species of this genus in the dark uniform colour of the fur, the very short rudimentary tail, and the large naked space that surrounds the callosities on the buttocks. This naked part is bright red in the living animal, and is shown when the animal sits on its haunches. The naked space is divided above into two parts by a narrow streak of fur that commences from the back and is continued to the base of the tail.

The animal is so peculiar that it may be formed into a section of the genus under the name of *Gymnopyga*.

MACACUS INORNATUS. (Pl. XIX.)

The tail rudimentary, scarcely to be distinguished. Buttocks callous, surrounded by a large naked red space, which is interrupted above by a narrow hairy streak to the base of the tail. Face and ears naked, black; nose flat. Head covered with hair regularly directed backwards; the hair of the hinder part of the head rather elongate, not forming any crest. Fur blackish brown, nearly uniform. Hair soft, one-coloured; forehead, frontal band, and hands black; the hinder part of the thigh greyish white.

Hab. Borneo? A female, not full-grown.

This species is distinct from *Macacus arctoides* of Isidore Geoffroy, as that species has a red face, and comes from Cochin China. It agrees in some respects with the description of *Macacus maurus* of M. F. Cuvier; but M. Isidore Geoffroy (Cat. Mamm. p. 31) observes that M. F. Cuvier's figure is only derived from a drawing, and is a very doubtful species.

The Bushbock was obtained from the west coast of Africa. It belongs to the section of the genus which have short, nearly erect, horns situated on the hinder part of the forehead. It is peculiar for the short broad form of the head. The cheek-groove is well developed. The animal is not full-grown, and the usual frontal tuft is scarcely developed.

CEPHALOPHUS BREVICEPS. (Pl. XX.)

The head short, broad, thick; the horns short, thick, conical,



1871

1871

MACACUS INORNATUS.



M & N Harper 1891

CEPHALOPHUS BREVICEPS

J Wolf Del.



erect, on the hinder part of the forehead, near the front base of the ears; the upper hinder part of the eyebrows with a roundish naked prominence. Tail short, with long hairs on the underside and tip, which is bent up and curled over the upper surface. Fur dark brown, the hairs with an indistinct pale ring; beneath rather paler; the upper part of the tail, the forehead, nape, feet, and the middle of the back black, gradually shading into the brown of the sides; the sides of the head, neck, and hinder sides of the haunches pale brown; lips, chin, a narrow streak over each eyebrow, and the underside and tip of the tail white.

Hab. West Africa?

April 24, 1866.

St. George Mivart, Esq., F.L.S., F.Z.S., in the Chair.

Mr. P. L. Sclater, Secretary to the Society, made some remarks on some of the recent additions to the Society's Menagerie, amongst which were particularly noticed—

1. A pair of Straw-necked Ibises (*Ibis spinicollis*, Jameson), from New South Wales, being the first examples of this beautiful species received alive in this country. The male bird had been presented to the Society by the Acclimatization Society of New South Wales; the female had been acquired by purchase at the same time,—both birds having been brought over to this country under the experienced care of Mr. Broughton of the 'La Hogue.'

2. An example of the Little Whimbrel (*Numenius minor*, Müll.), from New South Wales, acquired by purchase, and believed to be the first living example of this species introduced into England.

3. An example of the Wattled Plover of Australia (*Lobivanellus lobatus*), likewise believed to be exhibited for the first time.

4. A second example of the rare Feejeean Parrot (*Platyercus (Pyrrhulopsis) splendens*), presented to the collection by Mr. C. Moore, of the Botanic Gardens, Sydney, N. S. W.

5. Three Trumpeter Swans (*Cygnus buccinator*, Richardson), received in exchange from the Superintendent of the Spring-Grove Cemetery, Cincinnati, U. S. A., and believed to be the first examples of this fine bird ever received alive in this country.

6. A second example of the Australian Bustard (*Otis australis*), presented by the Acclimatization Society of New South Wales.

The following papers were read:—

1. Note on the Genus *Geobates* of Swainson. By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to the Society

(Plate XXI.)

In 1838, in the third part of the volume of Lardner's 'Cabinet Encyclopædia' called "Animals in Menageries," the late Mr. Swainson described (p. 322) a new genus and species of Passerine birds under the name "*Geobates brevicauda*," with the following characters:—

"Ferruginous above, paler beneath; breast with darker shades and obsolete brown stripes; wings rufous; primary quills with the base, tips, and band in the middle black; secondaries brighter rufous, with a broad black band before the tips; inner wing-covers bright rufous; tail with a black band.

"Inhabits Southern Brazil. Very rare. Mus. nostr.

"Small. Resembling an *Anthus* or *Furnarius*. Tertiary quills blackish brown, paler on the margins; crown and ears dark; chin, lores, and eye-stripe whitish; legs pale. Total length $4\frac{3}{10}$ inches, bill from the gape $\frac{8}{10}$, wings 3, as long as the tail, tail from the base $1\frac{8}{10}$, tarsus $\frac{7}{10}$, hind toe and claw $\frac{4}{10}$, middle ditto almost $\frac{7}{10}$."

Although I have had large opportunities of examining American birds in most of the principal collections of Europe and America during these last ten or twelve years, the form thus noticed has not come under my observation until recently, when, among some duplicate skins received in exchange from the Vienna collection, I met with a bird which is undoubtedly the same as that described by Swainson. Upon communicating with Herr von Pelzeln, the distinguished naturalist who has the care of the birds of the Imperial collection, I was most obligingly furnished with the following extracts from Natterer's MSS., relating to this species:—

"*Anthus pæcilopterus*, P. Neuwied. Fœm. adult. Bivouac four leagues from S. Paul, on the road to Sorocaba, 27th January, 1819. Iris dark brown; bill black; base of the upper and half of the under mandible brown yellow, passing into flesh-colour; feet brownish yellow. Length 6", extent 9"; the tail reaches $\frac{3}{4}$ " beyond the wing-tip.

"Mas adult, in moult, Ypanema, April 6, 1819. Iris dark brown; upper mandible dark brown, as likewise apical half of lower mandible; basal half of lower mandible and base of upper ditto beneath the nostrils dark flesh-colour; feet dark flesh-colour; joints and claws brownish. Length 6", extent 7" 2''; the tail reaches 6''' beyond the wing-ends.

"This bird is seen in small flocks of four or five, also singly in the meadows, at times in the neighbourhood of the cattle. It flies high into the air to sing, but the song is monotonous and not melodious"*.

* Herr von Pelzeln informs me that other specimens of this bird were obtained by Natterer at Ytararé, Pannapitanga, Registro Velho, and Sao Domingos.



mit lith.

M & N Hanhart imp.

GEOBATES PŒCILOPTERUS



Upon reference to Prince Maximilian of Neuwied's well-known 'Beiträge zur Naturgeschichte von Brasilien,' it is at once evident that Natterer has done rightly in referring his species to that author's *Anthus pæcilopterus*, the bird in question being described with the usual accuracy of that excellent work, although referred to a genus with which it has nothing more than an analogical relationship. But it is even possible we may have to go still further back for the earliest name of this little bird. Burmeister* considers Prince Maximilian's *Anthus pæcilopterus* identical with the "*Alondra parda*" of Azara (Apunt. vol. ii. p. 11. no. 147), upon which Vieillot founded his *Anthus fuscus* (Nouv. Dict. xvi. p. 490, et Enc. Méth. p. 325). However, upon referring to Azara's original description, I do not think it sufficiently precise to warrant us in rejecting the Prince of Neuwied's name in favour of this somewhat doubtful synonym. So, until some modern naturalist shall have visited Paraguay and more clearly identified Azara's *Alondra parda* than it is possible to do from the old Spaniard's description, I propose to call the present species

GEOBATES PÆCILOPTERUS. (Pl. XXI.)

Anthus pæcilopterus, Max. Beitr. iii. p. 633 (1830).

Geobates brevicauda, Sw. An. in Men. p. 322 (1838); Cab. Mus. Hein. ii. p. 22; Reichenb. Handb. p. 215; Bp. Consp. p. 215.

Geositta brevicauda, Gray, Gen. B. i. p. 134.

Anthus fuscus, Burm. Syst. Ueb. iii. p. 120.

Supra fuscus, uropygio rufescente; superciliis fulvis: alis cinnamomeo-rufis, nigro-fasciatis, primariorum quatuor externorum apicibus nigris: cauda quoque cinnamomeo-rufa, vitta subapicali nigra: subtus pallide fulvus, gutture albo, pectore fusco variegato: rostro corneo, mandibulæ inferioris basi et pedibus flavis: long. tota 4·5 poll. Angl., alæ 2·9, caudæ 1·5, rostri a rictu 0·7, tarsi 0·7.

Hab. in Brasil. int. Minas Geraës (Max.); S. Paolo et Ypanema (Natt., sp. no. 336).

The correct position of this little bird in the natural system is evidently that assigned to it by Cabanis and Bonaparte—among the *Furnariinæ* or terrestrial group of the *Dendrocolaptidæ*—close to *Geositta*. Mr. G. R. Gray has united it to *Geositta*; but I think it has full claims to stand by itself, being distinguished from the latter genus by its short and perfectly straight beak, very short primaries and elongated secondaries (which are exactly of the same length as the primaries), short tail, and short and small hind claw.

The bird recently described by Burmeister as *Geobamon rufipennis* (Journ. f. Orn. viii. p. 249, et La Plata Reise, ii. p. 465) seems to be somewhat allied to the present form.

* Syst. Ueb. d. Th. Bras. iii. p. 120.

2. On a New Species of Penelope, lately living in the Society's Gardens. By G. R. GRAY, F.R.S., F.L.S., F.Z.S., &c.

(Plate XXII.)

PENELOPE GREYII, sp. nov. (Plate XXII.)

Entirely shining bronzy æneous, especially on the wings, rump, and middle tail-feathers; the feathers of eyebrows, a line from base of lower mandible, and the margin round the naked part of neck grey, with æneous centres; nape, lower part of neck, and breast æneous, with white margins on the sides of the feathers; upper part of back and wing-coverts slightly margined with grey; abdomen partly obscure rufous, with black vermiculations and partly plain æneous; the feathers of the upper part of abdomen margined, especially on the sides of the feathers, with white; thighs æneous, with rufous margins; under tail-coverts bronzy black; bill and space round the eyes black; legs crimson; throat red, with a few black hair-like feathers.

Total length 25" 6"', wings 11" 6'''.

Hab. Santa Martha, New Granada.

I have taken the opportunity of naming this bird after Mr. Edward Grey, F.Z.S., to whom the Society is indebted for this and other interesting novelties from S^{ta} Martha.

The specimen described was received by the Society on the 14th of July, 1865, but did not live long in the Gardens. It is now in the British Museum.

The species is most nearly allied to *P. nigricapilla* of my Synopsis of this genus, published in the Society's 'Proceedings' for 1860 (p. 269).

3. A Revision of the Genus *Hypna*, with Descriptions of the New Species. By A. G. BUTLER, F.Z.S., Assistant, Zoological Department, British Museum.

(Plate XXIII.)

A short time since, Mr. Salvin pointed out to me several inconsistencies in the various figures of *Hypna clytemnestra* and also in the specimens of *Hypna* in his collection, from which it appeared evident that the species of that genus must be more numerous than had hitherto been supposed.

I subsequently examined the specimens in the National Collection, and easily separated them into four distinct species. One of these has only lately come over from South America; the three other forms, however, are so distinct that I could see no reason why they should have been placed together. On referring to Mr. Doubleday's 'Genera,' I find the following note:—

“The only species of this genus is a native of the tropical parts



RENELOPP GRIBITH





A. C. Butler lith.

M & N Hanhart imp

NEW SPECIES OF HYPNA



of South America. Donovan and Hübner have figured a variety having the apex of the fore wings produced into an acute hook; and our pl. 49. f. 1 represents another variety, distinguished by its small size and the dark red colour with which the inner half of the hind wings is suffused. These varieties, which appear constant, are doubtless to be considered as geographical varieties or subspecies."

The term "subspecies" appears to me to be merely a poor substitute for the true title of "species;" it certainly conveys no more idea of the position which the insect holds with reference to its allies than does the term "subvariety." I think therefore, to prevent confusion, it would be as well to regard distinct and constant forms from different localities as species.

The genus *Hypna* is characterized at full length in 'The Genera;' but the typical figure (Cramer, Pap. Exot. pl. 137. f. 1, 2), if correctly delineated, must be at once rejected as not belonging to the genus: it somewhat resembles a *Cyllo*, and is deficient in the following characters:—"Fore wings more or less hooked at tip; hind wings—third branch of median vein extending into an elongated and spatulated tail, the first branch terminating in a very short obtuse tail; discoidal cell imperfectly closed by a very delicate outer discocellular vein, uniting with the median vein exactly at the origin of the third branch."

This figure may have been taken from a broken specimen, but the description exactly agrees with the representation. Cramer subsequently figures a second insect (pl. 364. f. A, B), which he states to be the female of the former one (of course an utter impossibility, supposing the first drawing to be correct). Fabricius, however, quotes both figures.

I think, under these circumstances, that the species last figured by Cramer should bear the name *clytemnestra*; it is, however, probably quite distinct from the insects figured by Hübner, Lucas, and Donovan.

In separating the species of this genus, the following facts must be observed, viz.:—1. That the acuteness or non-acuteness of the apex of the fore wings is no proof of the non-identity of the species, as this part of the wing (as in the genus *Paphia*) is subject to great variation. 2. That pattern and coloration, with regard to the known species, can only be used as general characters, as they vary considerably in different specimens of the same insect. The pattern of the underside, however, is very similar in all the known species.

HYPNA, Hübner, Westwood.

Hecalene, E. Doubleday.

Nymphalis, Godart.

Section 1.

Alæ costis valde convexis, anticæ apice obtuse producto; posticæ margine apicali ad caudam convexo, cauda anali parva.

1. HYPNA CLYTEMNESTRA, Cramer, sp.

Papilio clytemnestra, Cramer, Pap. Exot. pl. 364. f. A, B; Fabricius, Ent. Syst. iii. pt. 1. p. 123. n. 375.

Alæ supra fuscæ: anticæ fascia lata fulva, ante venam submedianam terminata; macula subapicali fulva: posticæ fuscæ immaculatæ, ciliis albis; cauda media elongata, spathata; cauda anali vix distinguenda. Alæ subtus fasciis maculisque fuscis nigro variis maculisque plurimis argenteis; anticæ fascia sicut supra, sed præargentata. Exp. alar. unc. 3½.

Hab. Surinam.

2. HYPNA GLOBOSA, sp. n. (Pl. XXIII. fig. 1.)

Alæ anticæ fuscæ, basi viridescentes, fascia media venam submedianam attingente, maculis subapicalibus fulvis; posticæ maculis subapicalibus fulvis, cauda media vix spathata, cauda anali parva brevi. Exp. alar. unc. 3⅞.

Hab. Bolivia.

B.M.

Section 2.

Alæ costis paulum convexis, anticæ apice uncato; posticæ margine apicali ante caudam paulum excavato, cauda anali distincta.

3. HYPNA HUEBNERI, sp. n. (Pl. XXIII. figs. 2, 3.)

Hypna clytemnestra, Hübner, Samml. exot. Schmett. Band ii. pl. ? f. 1, 2.

Papilio clytemnestra, Lucas, Léop. Exot. pl. 64. f. 1.

Alæ supra fuscæ; anticæ basi viridescentes, fascia lata fulva venam submedianam attingente, maculis subapicalibus fulvis; posticæ maculis submarginalibus fulvis lineaque nigra de vena mediana prima ad marginem analem currente, caudis valde distinctis. Exp. alar. unc. 3¼.

Hab. Brazil and Panama.

B.M. &c.

Note.—This is the most common of all the species of *Hypna*, and has usually stood in collections as *H. clytemnestra* of Cramer; it is, however, quite different in form, and rather dissimilar in coloration.

H. clytemnestra, var. *negra*, Felder, Wien. entom. Monatsschr. vi. p. 118. n. 128.

Apice minus hamato, caudaque posticarum brevior, ad apicem vix dilatata.

Hab. Rio Negro.

Var. *Iphigenia*, Herrich-Sch. Prodr. Lépid. Exot.

“Not common, only taken near the sea.”—*Herr.-Sch.*

3^a. HYPNA HUEBNERI, var. (Pl. XXIII. fig. 4.)

*Papilio clytemnestra**, Donovan, Nat. Rep. iv. pl. 125.

* Donovan's figure of this insect is so carelessly executed that it might almost pass for a *Cerois*.

Alæ anticæ unco apicali valde producto; posticæ margine apicali ante caudam valde excavato, caudis late spathatis. Exp. alar. unc. $3\frac{3}{8}$.

Hab. Brazil (*B. M.* and *Coll. F. Walker*).

4. HYPNA VELOX, sp. n. (Pl. XXIII. fig. 5.)

Alæ valde elongatæ, costis pene directis; anticæ margine postico valde obliquo; posticæ caudis robustis. Exp. alar. unc. $3\frac{5}{8}$.

Hab. Veragua, Central America (*Coll. O. Salvin*).

This insect differs from the common one figured by Hübner in having the costa of the wings much less arched, the hind margin of the fore wings much more oblique, all the wings $\frac{2}{15}$ of an inch longer in proportion to the breadth (which in both species is nearly $1\frac{1}{8}$ inch from the anal angle to the centre of the costa), and the tails of the hind wings much more robust.

Section 3.

Alæ parvæ; anticæ fascia ante venam submedianam terminata; posticæ rufo-fuscæ, cauda media obtuse spathata, cauda anali obtusa, brevi.

5. HYPNA RUFESCENS, sp. n. (Pl. XXIII. fig. 6.)

Hypna clytemnestra (var.), Westw. Doubl. & Hewits. Gen. Diurn. Lepid. pl. 49. f. 1; Chenu, Enc. d'Hist. Nat. (Papillons), p. 157. f. 272.

Alæ anticæ fuscæ, basi viridescentes, fascia lata fulva maculisque subapicalibus fulvis; apice obtuso, raro uncato: posticæ rufescentes, margine postico fusco; macula subapicali fulva; margine anali punctis tribus inter venas positis, lineaque nigra undata submarginato. Alæ subtus sicut in reliquis speciebus. Exp. alar. unc. $2\frac{6}{8}$.

Hab. Venezuela. B.M.

Var. *Apice anticarum uncato.* B.M.

6. HYPNA ELONGATA, sp. n. (Pl. XXIII. fig. 7.)

Alæ elongatæ; anticæ costa paulo convexa, apice acuto; posticæ margine postico de cauda media utrinque obliquo: alæ subtus pallide viridescents, maculis sicut in reliquis speciebus. Exp. alar. unc. $3\frac{1}{4}$.

Hab. Santa Martha (Bogota). B.M.

Var. *Alæ subtus rufescentes. Exp. alar. unc. 3.*

Hab. Santa Martha (*Coll. O. Salvin*).

Note.—This variety appears to be a dwarfed specimen, the hind wings not being exactly balanced. It may possibly prove to be the other sex of the British Museum specimen, but the latter has, un-

fortunately, lost its abdomen, and the prolegs in both sexes of *Hypna* are exceedingly similar in construction.

DESCRIPTION OF PLATE XXIII.

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|--------------------------------|--|------------------------------|
| Fig. 1. <i>Hypna globosa</i> . | | Fig. 5. <i>Hypna velox</i> . |
| 2, 3. — <i>huebneri</i> . | | 6. — <i>rufescens</i> . |
| 4. — <i>huebneri</i> , var. | | 7. — <i>elongata</i> . |

May 8, 1866.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

Mr. Selater called the attention of the Meeting to several interesting species of Mammals and Birds observed during his recent visit to the Gardens of the Société Zoologique d'Acclimatation of Paris. Amongst these were particularly noticed an example of the *Oryx beisa* of Rüppell, being the only living specimen Mr. Selater had seen of this fine Antelope, and some examples of the new variety of the Scëmmering's Pheasant lately described by Mr. Gould (Ann. N. II. ser. 3. vol. xvii. p. 150) as *Phasianus (Graphophasianus) scintillans*. It appeared that this variety had been received from Yokohama, Japan, while the ordinary *Phasianus scëmmeringii* was stated to be found near Simoda, so that the probability was that these two birds were representative forms inhabiting different islands.

Mr. Alfred Newton exhibited from the collection of William Borrer, Esq., F.L.S., a specimen of the *Sylvia aquatica* of Latham, which had been obtained in England, as certified by the following note from that gentlemen:—

“My specimen was shot on the 19th of October, 1853, in an old brick-pit a little to the west of Hove, near Brighton, and was stuffed by Mr. H. Pratt of that place. I saw it just after it was skinned. It was observed creeping about amongst the old grass and reeds.”

Mr. Newton remarked that, though the species had not hitherto been recorded as occurring in this country, the fact of the marshes near Dieppe being especially mentioned as a locality for it made the probability of its being a voluntary visitor to this side of the Channel much greater.

Mr. Gould exhibited a specimen of the Andalusian Hemipode (*Turnix sylvatica*, Desfont.) from the collection of Mr. Alfred Beaumont. The specimen was stated to have been purchased of two Irishmen (one of whom had caught it alive) for sixpence, by a boy, the son of S. Mosley, a bird-stuffer of Huddersfield. It had been taken near Fartown-bar, April 7, 1865.





J. Smith lith.

SCOTOPHILUS WELWITSCHII

M & N. Eschschart imp

The following papers were read :—

1. Notice of a New Bat (*Scotophilus welwitschii*) from Angola. By Dr. J. E. GRAY.

(Plate XXIV.)

Among an interesting series of Bats from Angola, collected by Dr. Welwitsch, and most kindly presented to the British Museum, is a very interesting and ornamental species of *Scotophilus*, with the wings coloured like *Vespertilio pictus* of Pallas.

This coloration of the wings seems common to several Bats belonging to different genera; but I have not before observed it in a species of *Scotophilus*.

SCOTOPHILUS WELWITSCHII. (Pl. XXIV.)

Brown, paler beneath; hair of the back black, with brown tips, which are longer and paler on the hairs of the under surface. The ears rather elongate, longer than head, tip rather acute; tragus elongate, lanceolate, acute, nearly half as long as the ear. The wings blackish brown, yellow-dotted, and yellow (or red brown perhaps when alive) near the body, and on and near the arms and fingers, and between the shoulders and arm-bone; interfemoral membrane yellow, black-dotted, and with a dark hinder edge, the upper surface near the base of the tail hairy; heel-bone elongate, as long as the shin. Feet pale yellow; toes black at the end; wings to the base of the toes. Thumb—upper joint black, much longer than the lower, which is yellow. The face hairy to the end of the nose, just above the nostrils. Upper cutting-teeth 1.1?, large, blunt; premolars $\frac{2}{1} \frac{2}{1}$, the front upper large, triangular; the hinder small, rudimentary. Forearm-bone 2 inches 1 line long.

Hab. Angola (*Dr. Welwitsch; B.M.*).

2. Notes on the Skulls of Dolphins, or Bottlenose Whales, in the British Museum. By Dr. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S., &c.

Having had occasion to examine and determine a considerable number of skulls of Dolphins since the manuscript of the second edition of the 'Catalogue of Seals and Whales in the British Museum,' which has just been published, was sent to the press, I was induced to reexamine the whole series of them in the British Museum for the purpose of determining what were desiderata. The usual consequence followed, that I observed the importance of some characters that had been before overlooked, and thought that I could improve the manner in which the species were grouped together, so that they could be more easily distinguished from each other.

This has been my universal experience : no sooner has a monograph of a group of animals been put into print, than on the reexamination of the group, you find it might have been improved. I have therefore sent to the Society the result of this reexamination and reconsideration of the subject, and hope that it may facilitate the determination of the species of these little-known animals. I may add that, from the experience I have had, I have no doubt that the skull affords the best means of arranging the species into groups ; but I am by no means sure that what I have considered a single species by the study of the skull may not be found to be a group of several species when we are able to examine the rest of the skeleton and the external coloration of the animals which have a skull of the characters described.

The genera of the Bottlenoses may be arranged according to the skulls thus :—

A. *Beak of the skull elongate, compressed. Nasal triangle short. Symphysis of the lower jaw elongate.*

PONTOFORIA. Beak of the skull high, compressed. Symphysis of the lower jaw very long.

STENO. Beak of the skull compressed, higher than broad. Symphysis of the lower jaw long.

B. *Beak of the skull elongate, depressed, broad, shelving on the sides. Nasal triangle short. Symphysis of the lower jaw short, sloping.*

* *Palate with a deep groove on each side behind.*

DELPHINUS. Beak elongate. Dorsal fin distinct. Teeth small, slender.

** *Palate flat behind, without any lateral grooves.*

CLYMENE. Beak of skull elongate, depressed. Teeth small, slender. Nasal triangle moderate. Dorsal fin distinct.

DELPHINAPTERUS. Beak of skull elongate, depressed. Teeth small, slender. Dorsal fin none.

TURSIO. Beak of the skull only rather longer than the brain-case, conical, convex above, rounded. Teeth large. Skull high.

EUTROPIA. Beak of the skull only rather longer than the brain-case. Skull depressed. Teeth small.

C. *Beak of the skull broad, flat above, edges slightly reflexed and bent up in front of the notch. Nasal triangle elongate. Symphysis of the lower jaw short.*

LAGENORHYNCHUS. Beak as long as or rather shorter than the length of the brain-case.

STENO.

Steno, Gray, Cat. of Seals & Whales, p. 232.

The species may be arranged by their skulls thus. The number refers to the number of the species in the above Catalogue:—

a. *Skull large, solid, the beak compressed, high. Teeth large, conical, about two in an inch of the length of the margin of the jaw.*

3. STENO FRONTATUS. Beak of the skull short; the front part thick, high, and blunt. Teeth 24/24, large, two in an inch.

4. STENO COMPRESSUS. Beak of the skull elongate, compressed, attenuated in front. Teeth 26/26, large, two in an inch (Zool. E. & T. t. 27).

Steno rostratus appears to belong to this section.

b. *Skull small, rather spongy. Teeth small, slender, attenuated, about four or five in an inch of the length of the margin of the jaw.*

* *Beak of the skull elongate, compressed, much attenuated and acute in front. Teeth four in an inch. Sousa.*

4*. STENO CAPENSIS.

4**. STENO LENTIGINOSUS.

The skull of *Steno roseiventris*, according to the figure, appears to belong to this section of the genus.

** *Beak of the skull short, compressed, much attenuated and acute in front. Teeth five in an inch. Tucuxa.*

7. STENO TUCUXI.

*** *Beak of the skull elongate, rather depressed, broad, slightly compressed on the sides. Teeth small, five in an inch. Stenella.*

5. STENO ATTENUATUS. The beak of the skull flattened (Zool. E. & T. t. 28).

This last section is nearly intermediate between *Steno* and *Clymene*.

DELPHINUS.

The species referred to *Delphinus*, Section b, in the 'Catalogue of Seals and Whales,' belong to this genus. The teeth are small and slender, five or six in an inch.

* *Beak of skull twice as long as the brain-case. Teeth $\frac{55}{55}$ or $\frac{56}{56}$.*

2. DELPHINUS LONGIROSTRIS.

** *Beak of skull once and a half the length of the brain-case.*

Teeth $\frac{45}{45}$ *to* $\frac{50}{50}$.

3. DELPHINUS DELPHIS.

3*. DELPHINUS MOOREI.

3**. DELPHINUS MAJOR.

3***. DELPHINUS WALKERI.

5. DELPHINUS JANIRA, Zool. E. & T. t. 23.

CLYMENE.

Skull elongate, slender; brain-case spherical; beak slender, elongate, longer than the brain-case; intermaxillaries convex. Teeth small, slender, five or six in an inch. The symphysis of the lower jaw short. The blowers are moderate. See *Clymene*, Gray, P. Z. S. 1864, p. 237.

* *Beak of the skull twice as long as the brain-case. Teeth five in an inch.*

CLYMENE STENORHYNCHA. *Delphinus stenorhynchus*, Cat. of Seals & Whales, p. 396.

** *Beak of the skull once and three-quarters the length of the brain-cavity. Teeth six in an inch. Euphrosyne.*

1. CLYMENE MICROPS. *D. microps*, Gray, Cat. p. 240; Zool. E. & T. t. 25.

16. CLYMENE ALOPE. *D. alope*, Gray, Cat. p. 252.

18. CLYMENE EUPHROSYNE. *D. euphrosyne*, Gray, Cat. p. 251; Zool. E. & T. t. 22.

*** *Beak of the skull once and one-half or once and one-third the length of the brain-cavity. Teeth five or six in an inch. Clymene.*

CLYMENE NORMALIS. Beak of the skull once and one-half the length of the brain-case, and as long as twice and one-half the width at the notch. Teeth 40, nearly six in an inch. *Delphinus clymene*, Gray, Cat. p. 249.

CLYMENE DORIS. Beak of the skull once and one-half the length of the brain-case, and as long as twice and a half the width at the notch. Teeth five in an inch. *Tursio doris*, Gray, Cat. Seals & Whales, p. 255; Zool. E. & T. t. 20.

CLYMENE DORIDES. Beak of the skull once and one-third the

length of the brain-case, and as long as twice and one-third the width at the notch. Teeth five in an inch. *Tursio dorcides*, Gray, Cat. of Seals & Whales, p. 400.

CLYMENE OBSCURA. Beak of the skull once and one-sixth the length of the brain-case, and as long as twice and one-half the width at the notch. Teeth five or six in an inch. The aperture of the blower large. *Tursio obscurus*, Gray, Cat. Seals & Whales, p. 264; Zool. E. & T. t. 16.

These skulls are somewhat like those of the genus *Tursio*, but the teeth are small.

TURSIO.

The skull large, thick, heavy, with a high swollen brain-cavity. The beak longer than the brain-case, broad, conical, stout, shelving on the sides. Teeth large, $\frac{22}{22}$ or $\frac{25}{25}$. The blower large. Nasal triangle produced considerably before the notch.

3. TURSIO METIS, Zool. E. & T. t. 18.

4. TURSIO CYMODOCE, Zool. E. & T. t. 19.

6. TURSIO TRUNCATUS. North Sea and Mediterranean.

8. TURSIO EURYNOME, Gray, Zool. E. & T. t. 17. South Sea; India?

10. TURSIO CATALANIA. North-west coast of Australia.

These skulls are all so much alike that they may only be varieties.

EUTROPIA.

Skull depressed, thick, with the sides rather bent down behind the notch. The beak depressed, broad, rounded on the sides, rather longer than the length of the brain-case; the intermaxillaries flat, rather broad. Teeth small, slender, five or six in an inch.

Eutropia, Gray, P. Z. S. 1862, p. 145; Cat. Seals & Whales, p. 262.

EUTROPIA DICKIEI. *Tursio eutropia*, Gray, P. Z. S. 1862, p. 145; Cat. Seals & Whales, p. 262. Chili.

EUTROPIA HEAVISIDII. *Tursio heavisidii*, Gray, Cat. Seals & Whales, p. 263. From the Cape Seas.

The *D. cephalorhynchus* of F. Cuvier, judging from the figure of the skull given by Schlegel, appears also to belong to this genus.

The skull bears a considerable affinity to the skulls of *Phocæna*, *Neomeris*, *Beluga*, and *Monodon* in the bending down of the sides.

LAGENORHYNCHUS.

The skulls of the species in the British Museum may be thus arranged:—

I. *The beak of the skull very flat above, with the edges in front of the notches bent up. Teeth-line stopping considerably short of the notch. Electra.*

† *Beak of the skull rather longer (about one-third) than the length of the brain-case. Teeth moderate, four in an inch, those in the lower jaw rather larger.*

1. LAGENORHYNCHUS ELECTRA. Beak rounded in front (Zool. E. & T. t. 13).

3. LAGENORHYNCHUS ASIA. Beak attenuated, acute in front (Zool. E. & T. t. 14).

4. LAGENORHYNCHUS ACUTUS, according to Schlegel's figure of the skull, should be arranged in this section.

†† *Beak of the skull rather shorter than the length of the brain-cavity. Teeth small, five or six in an inch.*

5. LAGENORHYNCHUS CLANCULUS. Beak of the skull broad behind, once and three-fourths the width of the notch in length. Teeth five in an inch.

7. LAGENORHYNCHUS THICOLEA. Beak of the skull narrow behind, twice as long as the width at the notch. Teeth small, six an inch.

II. *Beak of the skull rather flat above and elongate, bent up on the edge in front of the notch. Teeth-line reaching nearly to the notch.*

* *Beak of the skull narrow behind, as long as or slightly longer than the length of the brain-case. Teeth small, five in an inch. First and second cervical vertebræ united by their bodies; third and fourth by the spinous processes. Leucopleurus.*

9. LAGENORHYNCHUS LEUCOPLEURUS. Beak of the skull twice as long as the width at the notch. Teeth small, five in an inch.

** *Beak of the skull broad behind, rather shorter than the length of the brain-case. Teeth large, three in an inch. First and second cervical vertebræ united by their bodies; the third, fourth, fifth, six, and seventh free. Lagenorhynchus.*

8. LAGENORHYNCHUS ALBIROSTRIS. The beak of the skull once and one-half as long as the width at the notch.

3. Additions to the List of the Avifauna of Australia, with Descriptions of Three New Species. By JOHN GOULD, Esq., F.R.S., &c.

The following birds have been lately transmitted to me by my brother-in-law, Mr. Charles Coxen of Brisbane in Queensland, and were, I believe, collected by John Jardine, Esq., late Commissioner of Crown Lands in the Cape York district, a portion of Australia so near to New Guinea and the Aru Islands that we need not be surprised if some of the species prove to be identical with, or offer a close resemblance to, species previously described as inhabitants of those but partially explored islands.

The first species is an additional member of those insect-loving little birds known under the generic title of *Gerygone*, and exhibits such strongly marked distinctive characters that it cannot for a moment be confounded with any of its allies.

GERYGONE PERSONATA.

Crown and all the upper surface olive-green; throat and chest deep olive-brown; behind each nostril a spot of white; a stripe of white also descends from the base of the bill down each side of the neck, and separates the deep olive-brown of the throat from the lighter olive of the ear-coverts; axillæ, all the under surface of the body, and the under tail-coverts delicate jonquil-yellow; wings and tail olive-brown; bill and legs olive-black.

Total length $3\frac{3}{4}$ inches, bill $\frac{1}{2}$, wing $2\frac{3}{8}$, tail $1\frac{3}{4}$, tarsi $\frac{3}{4}$.

Hab. The Cape York district of Queensland.

The second bird has many characters in common with the *Ptilotis chrysolis* of the south-eastern portion of Australia and the *Ptilotis similis*, a bird brought from Dorey by Mr. Wallace; but it differs from both in the greater slenderness of its form, in its diminutive size, and, especially from the former, in the uniform colouring of its throat and abdomen.

PTILOTIS GRACILIS.

Bill deep olive-brown, with a naked yellow fleshy gape, posterior to which is an obscure narrow line of yellow; a well-defined patch of pale yellow on the ear-coverts; crown and all the upper surface olive, the uniformity of which is only broken by a slight edging of wax-yellow on the outer edges of the primaries and tail-feathers; axillæ and the inner webs of the primaries and secondaries pale buffy yellow; primaries and tail-feathers brown; feet dark olive-brown.

Total length $5\frac{1}{2}$ inches, bill $\frac{7}{8}$, wing $2\frac{3}{4}$, tail $2\frac{1}{2}$, tarsi $\frac{3}{4}$.

Hab. The Cape York district of Queensland.

MONARCHA ALBIVENTRIS.

This Cape York bird is very nearly allied to the more southern *M. trivirgata*, but differs not only from that species, but from

another, of which examples are contained in my own and Mr. Wallace's collections from Timor, and a fourth from Batchian. Although these four birds are intimately allied, they possess distinctive characters by which each of them may be readily recognized. As I have here only to deal with the Australian members of the genus, I shall content myself with remarking that this new species is to be distinguished from the southern *M. trivirgata* by the unsullied whiteness of its axillaries, abdomen, and lower part of its flanks, by the black of the forehead and throat being somewhat more extensive, and by the larger size of the white terminal portion of the outer tail-feathers.

Bill and legs olive lead-colour; forehead and a narrow stripe above the eye, upper portion of the ear-coverts, and the throat jet-black; cheeks, lower part of the neck, and the chest bright ferruginous; abdomen, axillaries, and a considerable portion of the under surface of the wing snow-white; crown of the head, back of the neck, and back bluish grey; primaries greyish brown; upper tail-coverts and tail black, the three outer feathers of the latter largely tipped with white.

Total length $5\frac{7}{8}$ inches, bill $\frac{3}{4}$, wing 3, tail $2\frac{7}{8}$, tarsi $\frac{3}{4}$.

Hab. The Cape York district of Queensland.

I am also enabled to add to the list of Australian Birds, published by me in my lately issued 'Handbook to the Birds of Australia,' the following species—

RALLINA TRICOLOR, G. R. Gray, P. Z. S. 1858, p. 188,
a bird brought by Mr. Wallace from the Aru Islands.

Of this species of Water-Rail, which appears to be common in the New Guinea group of islands, an example has been sent to me from the Cape York district, and the bird will doubtless be hereafter found in other parts of northern Australia.

HYDROCHELIDON LEUCOPTERA (Meisn. & Sch.).

Schlegel having, I believe, given Celebes as one of the localities of this species, it will not be a matter of surprise that two examples should occur in the Cape York collection. Of these one is certainly immature, the other in a dress which is probably that of winter.

4. On a New Genus and Species of Birds from Madagascar. By Dr. G. HARTLAUB, F.M.Z.S.

EROESSA, n. g.

Char. Gen.—*Rostr. longiusculum, gracillimum, rectum, acutum, vix emarginatum, apicem versus magis magisque compressum, culmine valde carinato, dimidio apicali parum arcuato; gonyde recta; vibrissis vix ullis; naribus lamella cornea clausis. Alæ quadrato-obtusæ, caudæ medium superantes; remige primo*





M. H. H. H. H.

HALMATURUS COXENII

of the

spurio, secundo multo longiore, 3^o-6^m subæqualibus longissimis, septimo parum brevior. Cauda debilis, mediocris, subrotundata; rectrices angustæ, molles. Pedes pro mole satis robusti; tarsi antice scutellatis; ungues parvi, valde curvati. Ptilosis mollis.



Eroessa tenella, Hartlaub.

EROESSA TENELLA, Hartl., sp. nov.

Supra olivaceo-viridis, remigibus nigris, dorsi colore marginatis; nucha et regione parotica distincte cinereis, virescente lavatis; gutture, plunulis supranasalibus, periophthalmiis et flexura alæ pure flavis; pectore et abdomine, subcaudalibus et subalaribus, albidis, flavo variegatis; rostro brunnescente, mandibula pallidiore; pedibus pallidis. (♀.)

Long. 3'' 3''', rostr. a fr. 8''', al. 1'' 8''', caud. 1'' 3''', tars. 6½''.

Hab. Madagascar (Gerrard).

This specimen was sent to me for examination by Mr. Alfred Newton, having been received by him through his brother from Mr. W. T. Gerrard. The species belongs to the family *Sylviidæ*, and comes generically nearest to *Camaroptera*, the curious structure of the wings being almost the same in these two genera. The proportionately large feet are also peculiar to both. The bill, however, is very different, and reminds one most of the genus *Zosterops*; but this last differs totally in its wings, having no spurious first primary, &c. &c. The generic place of *Eroessa* is decidedly near *Camaroptera*.

5. Notes on some Mammalia from Port Albany (Cape York Peninsula), North Australia, with the Descriptions of some New Species. By Dr. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S., &c.

(Plate XXV.)

The British Museum has received from Mr. Charles Coxen a series of Mammalia from Port Albany (Cape York Peninsula), North Au-

stralia, which are interesting as containing some species which have not before been recorded as natives of Australia.

HIPPOSIDEROS ALBANENSIS.

Black brown; hair white, with minute black tips; beneath greyish black, hair nearly one-coloured. Wings from base of shin. Fore-arm-bone $1\frac{1}{2}$ inch long.

Hab. North Australia, Port Albany.

NYCTOPHILUS GOULDI?

Hab. North Australia, Port Albany.

DACTYLOPSILA TRIVIRGATA, Gray, P. Z. S. 1858, p. 110. f. 1, 5; Gerrard, Cat. Bones B. M. p. 121.

Var. Tip of the tail white.

Hab. Port Albany, North Australia.

This animal was originally described from a specimen collected by Mr. Wallace in the Aru Islands.

CUSCUS MACULATUS, var. *OCHROPUS.*

Male. Grey; hair black, with grey tips; the chin, throat, chest, belly, scrotum, and some spots on the side of the back white; tail yellowish white; feet yellow.

Female. Larger, nearly uniform dark grey; the hairs black, with short grey tips; chin, chest, and the middle of the belly to the vent white, with a well-defined black streak on each side of the belly; tail yellowish white; feet pale yellow.

Hab. North Australia, Port Albany.

A large female in the British Museum, which I described in my paper in the 'Proceedings of the Zoological Society' under the name of *C. maculatus*, agrees in many respects with the female from Port Albany. The white on the abdomen is narrow and straight-edged; the dark colour near the white is well marked, but not so distinctly as in those from Port Albany. It chiefly differs from the latter in the feet not being yellow or reddish, which was common to all the three specimens which I have seen from North Australia.

The specimen of the two-thirds-grown female, described as *Cuscus brevicaudatus*, which was brought by Mr. John Macgillivray from Cape York, has a nearly uniform dark-grey fur, with the chin, chest, and underside of the body white. It differs from the adult female of Mr. Coxen's in the white on the under part of the body being wider; and there is no appearance of the broad black streak which margins the white in the specimen from Port Albany. The fore feet are grey like the back, and not yellow as they were in all the three specimens, which include two males and one female, sent home by Mr. Coxen.

HALMATURUS COXENII, sp. nov. (Pl. XXV.)

Fur brown, minutely grizzled; the nape and back between the

shoulders darker ; side of the head, near base of ears, and body pale reddish ; shoulders outside of fore and hind legs paler bay ; streak on cheek and upper part of thigh white.

Hab. North Australia, Port Albany (*Coxen*).

This species is very like *H. agilis* ; but the tail and hind feet are much shorter. The fur is darker, and especially on the nape and upper part of the middle of the back. The sides of the body and face, and especially the head round the base of the ears, and the legs are bright rufous. The white mark on the thigh is as distinct as in *H. agilis*.

The *Halmaturi* with a well-marked oblique white streak across the thigh may be thus divided :—

* *Tail and feet elongate; the front and hinder cutting-teeth large, the second one moderate.*

1. HALMATURUS DORSALIS.

The back with a narrow well-defined dorsal streak. The second or central cutting-tooth on each side small, smooth. The hind foot $8\frac{3}{4}$ inches long.

2. HALMATURUS AGILIS.

The back on each side darker than the sides. The second or central cutting-tooth on each side with a central ridge. The hind foot $8\frac{3}{4}$ inches long.

** *Tail and feet short, thick; the front and hinder cutting-teeth moderate, the second one small.*

3. HALMATURUS COXENII.

Back darker than the sides. The hind feet $5\frac{1}{2}$ inches long.

I have named this fine species after Mr. Charles Coxen, the brother of the late Mrs. Gould, the discoverer of several very interesting animals in Australia.

MUS MACROPUS.

Yellow grey brown ; middle of the back blackish, from the black tips of the longer hairs ; the mouth, throat, chest, belly, inside of the legs, and the upper surface of the feet white ; whiskers very long, stiff, black ; tail naked, with rings of square scales, yellow, basal third black. The feet nearly naked. The cutting-teeth flat, smooth, yellow in front. Ears nakedish, with short scattered hairs. Length of body and head $10\frac{1}{2}$, tail $10\frac{1}{2}$ inches ; hind feet 2 inches 5 lines.

There are three species of *Mus* in the Museum with the tails more or less varied with yellow, which differ in the size of the cutting-teeth and feet. The one from North Australia differs from the other two in having very much larger feet.

6. Catalogue of Longicorn Coleoptera, collected in the Island of Penang by James Lamb, Esq. By FRANCIS P. PASCOE, F.L.S., F.Z.S., &c., late Pres. Ent. Soc.

(Part I.)

(Plates XXVI., XXVII., XXVIII.)

Penang is a small island about sixteen miles long, in latitude between 5° and 6° N., separated from the mainland of Malacca by a channel two miles in breadth. A narrow strip of the coast opposite the island is known as "Province Wellesley;" and it is within the limits of these two that this collection was formed. The insects are not ticketed; so it is impossible for me to say which came from the mainland and which from the island.

The total number of species in the collection is about 212; but as some of these are single specimens, which are either very obscure or in a poor condition, I have had to content myself with merely indicating their places in the catalogue.

If we consider that the Longicorns in their perfect state are generally short-lived, and that a great majority of the species frequent particular plants or families of plants, so that only where these plants occur can we expect to find the insects, it will be readily understood how this limited range and brief existence must make it almost impossible for any collector to obtain more than a portion of those that inhabit even a moderately extensive district. And thus it is that sometimes perhaps half the species of a large collection are represented each by one or two individuals only. The number of species, therefore, and the many superb novelties which Mr. Lamb has had the good fortune to capture, whilst it excites our admiration, shows us how much more might be expected if all those rich tropical lands were as thoroughly worked by entomologists as Europe has been.

A few years ago all, with the exception of about fourteen, would have been new to science; even now not less than 98 are described for the first time, leaving 26 for further observation, the greater part of which are also probably new. Of these, 19 are types of entirely new genera, out of the total of 110. But to these, three more must be added, previously found by Mr. Wallace, but not yet published—*Ame-sisa*, *Ephies*, and *Cyriopalus*. Two genera are European (*Mesosa* and *Ægosoma*), with species extending to North China; six (*Praonetha*, *Olenecamptus*, *Astathes*, *Philus*, *Dere*, and *Pyrestes*) belong to North China and Northern India, but are not found in Europe (the first is also Australian); four (*Coptops**, *Cerosterna*, *Glenea*, and *Megopis*) have representatives in Africa; *Xystrocera* and *Sybra* are African and Australian; while *Atimura* is the only genus confined to and belonging to both the Australian and Malayan regions. Not less than eight of the exclusively Malayan genera are found in New

* *Coptops abdominalis*, White, from North Australia, is a species of *Ægomomus*, apparently identical, for the specimen is much worn, with *Æ. insularis*, an insect very generally distributed over the Malayan archipelago.

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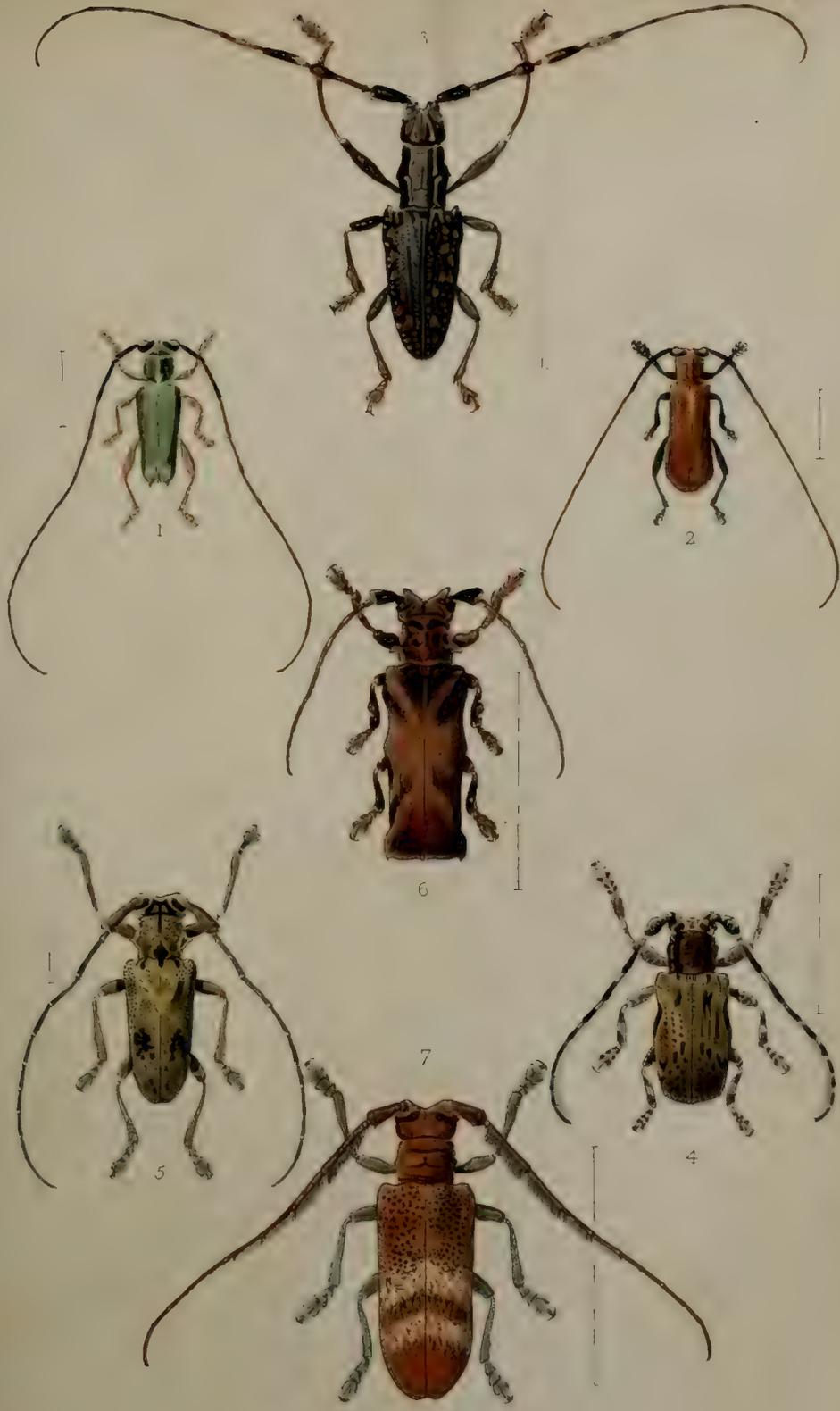
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12







E W Robinson, Delet. Sc



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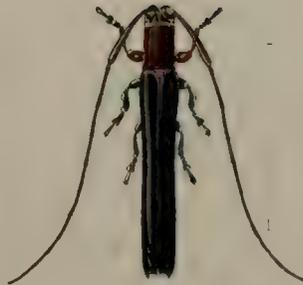
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Guinea, and this without counting many others, such as *Cereopsius*, *Astathes*, *Glenea*, *Ceresium*, &c., which, although almost purely Malayan, dip into the faunas of other regions, but not into the Australian. The eight genera are *Ostedes*, *Eoporis*, *Anancylus*, *Cacia**, *Clyzomedus*, *Seriaia*, *Xyaste*, and *Merionæda*. Of the genera common to almost all parts of the world there are five—*Monochamus*, *Clytus*, *Stromatium*, *Purpuricenys*, and *Cerambyx*. Thus seventy-two genera are exclusively Malayan. But comparing this with the Australian list we find that out of 154 genera, 124 are exclusively Australian†. It is perhaps scarcely necessary to observe that these statements will doubtless, with the progress of discovery, have to be modified. New Zealand is, I think, like Madagascar, to be regarded as a "satellite" region; and therefore I have omitted taking it into consideration in connexion with Australia.

In studying the geographical distribution of the Longicornia, it must not be forgotten that the areas, into which the earth's surface may be divided in relation to its organic productions, will not hold good for all classes, or even in some cases for all orders. Certain it is that, so far as the Coleoptera are concerned, the Malayan region, with its centre in Borneo, finds its south-eastern limit in New Guinea, —Australia constituting a very distinct and remarkable region of its own, and, so far as we know, not even shading off, as might have been expected, into a transition province on one side or the other of Torres Straits. To the north the Philippines, the southernmost part of China, and Burmah would be its northern boundaries; the two latter probably should only be considered transition countries, since their commoner species are largely mixed with European forms. The same may be said of India, which, even so far south as the Neilgherries, has but a comparatively small proportion to remind us of a tropical beetle-fauna. Even in Ceylon, European genera are dominant‡. Regarding, therefore, these also as transition provinces from Malayan to European types, we find the only countries on the mainland of Asia belonging to the Malayan beetle-region are Pegu, Siam, Annam, and the peninsula of Malacca.

As to the classification adopted, we consider the Longicornia a suborder embracing the three families *Lamiidæ*, *Cerambycidæ*, and *Prionidæ*, each of these comprising numerous subfamilies; from the subfamilies we pass at once to the genera. With many naturalists I believe the idea still remains that every genus must have certain definite structural peculiarities, and they appear to expect that broadly dividing lines shall run between them. Any confession that no absolute or primary characters exist, or that they are only secon-

* *Cacia latifascia*, White, from North China, is a very doubtful member of this genus.

† A synonymic list of the Longicorns of Australia will shortly be published by the Linnean Society.

‡ In Sir J. E. Tennent's work on 'Ceylon,' 358 genera of Coleoptera are enumerated; of these 184, or rather more than one-half, are European. With regard to Lepidoptera, to the diurnal at least, India belongs to the Malayan region; while even in the valleys of the Himalayas the Homoptera are of the most decidedly tropical forms.

dary, is taken by them as a fatal proof of the weakness of the position. As neither genus nor species has any absolute existence, and these terms can only be used to express "categories of thought," it cannot be expected that they should be defined with absolute certainty; and as there must necessarily be varying degrees of precision, some of these definitions might be so slight as to leave it doubtful if any distinction at all could be maintained. It is true that, owing to the more or less exceptional isolation of many genera, a very clear and decisive description may be given of them; but then it can never be said how soon the discovery of another form or species may upset the characters we have drawn from our limited number of examples, or whether the new genus or species may not be the other sex of some other species. These are questions which, when they occur, can only be solved by the possession of data suited to each. In the meantime our best efforts can only be tentative. Moreover there are many natural assemblages of species, whether we choose to call them genera or not, for which no *technical* characters can be found, their connexion depending partly on peculiarities which it is scarcely possible to convey an adequate idea of in words, partly on such gradual modifications of characters that no satisfactory line can be drawn between them, but which are, notwithstanding, not less real or striking. Those who only select a few prominent forms for description may demur to this; but anyone who has gone conscientiously through a large collection will acknowledge how difficult it is, in many instances, to say if genera really exist even as a collective term for any *limitable* number of species, and how unsatisfactory is any attempt to combine species into genera, or individuals into species, or to distinguish hybrids* from what we conventionally call "true species." It will therefore be readily understood that many genera can only be vaguely defined, either from the absence of salient characters, or from their gradual modifications; and some of the most natural groups among the Coleoptera might be cited as examples of these classes. To argue that genera ought to be ignored when not strictly defined, would, in entomology, be to make classification impossible; to say that recognized genera should be enlarged from time to time to admit aberrant forms would be merely to create repertoires of incongruous species.

These remarks, which may be considered almost out of place when discussing a collection so distinctive in all its aspects as the one before us, are rather directed to a class of critics who, looking on from afar, are troubled lest they should be overwhelmed by the excessive multiplication of genera. My object has been to show that genera may be not the less natural because founded on secondary characters, and that they *must* be so formed if we would avoid a greater evil than any multiplication of them would be, namely, putting species into genera where no one would think of looking for them. It is quite true that genera have been excessively multiplied

* No doubt many of our so-called species are hybrids; but a majority of these obscurer species do not appear to possess the intermediate characters we should expect to find if their existence were due to hybridity.

by many authors, and that such genera have been based on characters so artificial as to divide species otherwise closely connected. It is not to be denied that this is an evil.

The following is a list of the species under their respective genera, subfamilies, and families. The genera and species not named are represented by dotted lines :—

Family LAMIIDÆ.

Subfamily ACANTHOCININÆ.

- Eoporis*, Pasc.
 — *elegans*, Pasc.
Ostedes, Pasc.
 —, sp. n.
 —, sp. n.

Subfamily EXOCENTRINÆ.

- Cuphisia*, g. n.
 — *callosa*, sp. n.

Subfamily NIPHONINÆ.

- Ælara*, J. Thoms.
 — *arrogans*, Pasc.
 — *concisa*, J. Thoms.
Daxata, Pasc.
 — *ustulata*, sp. n.

Subfamily MESOSINÆ.

- Anancylus*, J. Thoms.
 — *griseatus*, Pasc.
Ereis, Pasc.
 — *anthriboides*, Pasc.
Mesosa, Serv.
 — *allapsa*, sp. n.
Cacia, Newm.
 — *inculta*, Pasc.
 — *melanopsis*, sp. n.
 — *pistor*, sp. n.
 — *herbacea*, sp. n.
 — *obsessa*, sp. n.
Clyzomedus, Pasc.
 — *nanus*, Pasc.
 — *annularis*, sp. n.
Coptops, Serv.
 — *vomicosa*, Pasc.
 — *polyspila*, Pasc.
 — *lecideosa*, Pasc.
Saimia, Pasc.
 — *albidorsalis*, Pasc.
 — *bituberosa*, sp. n.

- Agelasta*, Newm.
 — *lambii*, sp. n.
 — *polynesus*, White.
 — *sobrina*, Pasc.
 — *balteata*, sp. n.
 — *substrigosa*, sp. n.
Æsopida, J. Thoms.
 — *malasiaca*, J. Thoms.
Golsinda, J. Thoms.
 — *corallina*, J. Thoms.
Palimna, Pasc.
 — *tessellata*, Pasc.
 — *mouhotii*, sp. n.
Sodus, Pasc.
 — *ursulus*, sp. n.

Subfamily APOMECYNINÆ.

- Cenodocus*, J. Thoms.
 — *adustus*, Pasc.
 — *granulosus*, sp. n.
Ixais, g. n.
 — *episomoides*, sp. n.
Cyadium, g. n.
 — *cribrosum*, sp. n.
Sesiosa, Pasc.
 — *subfasciata*, Pasc.
Praonetha, Blanch.
 — *obducta*, Pasc.
 — *illicita*, Pasc.
 — *consularis*, sp. n.
 — *villosa*, sp. n.
 —
 —
 —
Ropica, Pasc.
 — *vinacea*, Pasc.
 —
Sybra, Pasc.
 — *umbratica*, Pasc.
Atimura, Pasc.
 — *bacillina*, Pasc.
, g. n.
 —, sp. n.

Xylorhiza, Lap.— *venosa*, Lap.*Thylactus*, g. n.— *angularis*, sp. n.

Subfamily DORCADIONINÆ.

Obages, g. n.— *palparis*, sp. n.

Subfamily HYPELOMINÆ.

Cereopsius, Pasc.— *whitei*, J. Thoms.*Combe*, J. Thoms.— *brianus*, White.*Amesisa*, Pasc.— *consularis*, Pasc.*Pharsalia*, J. Thoms.— *incerta*, Pasc.*Cycos*, g. n.— *subgemmatus*, J. Thoms.*Peribasis*, J. Thoms.— *aspersa*, Pasc.— *pubicollis*, Pasc.*Omocyrius*, g. n.— *fulvisparsus*, sp. n.*Achthophora*, Newm.— *daetylon*, Pasc.*Trachystola*, Pasc.— *granulosa*, Pasc.

Subfamily LAMINÆ.

Batocera, Lap.— *victoriana*, J. Thoms.— *thomsoni*, Javet.*Apriona*, Chevrol.— *germari*, Hope.*Thestus*, g. n.— *oncideroides*, sp. n.*Cerosterna*, Blanch.— *approximator*, J. Thoms.*Metopides*, g. n.— *occipitalis*, sp. n.*Epepeotes*, g. n.— *luscus*, Fab.*Blephephæus*, g. n.— *succinator*, Chevrol.*Epicedia*, J. Thoms.— *plagiata*, J. Thoms.

— ?

— ?

Monochamus, Serv.— *fistulator*, Germ.— *musivus*, sp. n.— *sobrius*, Pasc.

— ?

Imantocera, J. Thoms.— *plumosa*, Ol.*Gnoma*, Fab.— *dispersa*, sp. n.*Mecotagus*, g. n.— *tigrinus*, Ol.*Olenecamptus*, Chevrol.— *bilobus*, Fab.— *optatus*, sp. n.— *quietus*, sp. n.

Subfamily ONOCEPHALINÆ.

Atossa, J. Thoms.— *atomaria*, sp. n.

Subfamily HIPPOPSINÆ.

Nyctimene, J. Thoms.— *agriloides*, J. Thoms.*Tetraglenes*, Newm.— *insignis*, Newm.

Subfamily SAPERDINÆ.

Entelopes, Guér.— *glauca*, Guér.— *similis*, sp. n.— *ioptera*, Pasc.*Serixia*, Pasc.— *prolata*, Pasc.

—

— *basalis*, sp. n.— *longicornis*, Pasc.— *prasinata*, sp. n.

—, sp. n.

Xyaste, g. n.— *nigripes*, Pasc.

Subfamily ASTATHEINÆ.

Astathes, Newm.— *splendida*, Fab.— *terminata*, Pasc.— *nigricornis*, J. Thoms.

—

Subfamily PHYTÆCIINÆ.

Glenea, Newm.

- Glenea elegans*, Ol.
 — *porphyrio*, sp. n.
 — *blandina*, Pasc.
 —
 — *rufina*, Pasc.
 — *neanthes*, sp. n.
 — *extensa*, Pasc.
 — *oudetera*, J. Thoms.
 — *anticepunctata*, J. Thoms.
 — *vesta (pulchella)*, Pasc.
 — , sp. n.
 — *algebraica*, J. Thoms.
 — *jubæa*, sp. n.
 — *cunila*, sp. n.
 — *alysson*, sp. n.
 — *æme*, sp. n.
 — *illuminata*, J. Thoms.
 — *manto*, sp. n.
 — *anthyllis*, sp. n.

-
Tanylecta, g. n.
 — *lambii*, sp. n.
Zosne, g. n.
 — *cincticornis*, sp. n.
Oberea, Muls.
 — *curialis*, sp. n.
 — *clara*, sp. n.
 — *tenuata*, sp. n.
Ectinogramma, J. Thoms.
 — *collare*, sp. n.
Nedytisis, g. n.
 — *obrioides*, sp. n.

Family CERAMBYCIDÆ.

Subfamily LEPTURINÆ.

- Capnolymma*, Pasc.
 — *stygium*, Pasc.
 — *capreola*, sp. n.
Asilaris, g. n.
 — *zonatus*, sp. n.
Ephies, g. n.
 — *cruentus*, sp. n.
Leptura, Lin.
 — , sp. n.
Philus, W. W. Saund.
 — *rufescens*, sp. n.

Subfamily STENODERINÆ.

- Dejanira*, J. Thoms.

- Dejanira 4-punctata*, J. Thoms.
 — *biapiculata*, sp. n.
Diosyris, g. n.
 — *miranda*, sp. n.

Subfamily DISTENIINÆ.

- Noëmia*, Pasc.
 — *flavicornis*, Pasc.
 — *chalybeata*, sp. n.

Subfamily NECYDALINÆ.

- Merionæda*, Pasc.
 — *acuta*, sp. n.

Subfamily OBRINÆ.

- Deuteromma*, Pasc.
 — *testaceum*, Pasc.
Ciopera, g. n.
 — *decolorata*, sp. n.

Subfamily RHINOTRAGINÆ.

- Epianthe*, g. n.
 — *viridis*, sp. n.
Mydasta, g. n.
 — *discoidea*, sp. n.
Sestyra, g. n.
 — *cephalotes*, sp. n.
Mimistena, g. n.
 — *femorata*, sp. n.
Plutonesthes, J. Thoms.
 — *crocata*, sp. n.

Subfamily ERYTHRINÆ.

- Erythrus*, White.
 — *ignitus*, sp. n.
 — *lacertosus*, sp. n.
 — *apiculatus*, sp. n.
 — *atricollis*, sp. n.
Pyrestes, Pasc.
 — *politus*, sp. n.
 — *scapularis*, sp. n.
 — *virgatus*, sp. n.
 — *nigricollis*, sp. n.

Subfamily CALLICHRMINÆ.

- Chloridolum*, J. Thoms.
 — *thomsoni*, Pasc.
 — *cinnyris*, sp. n.
Leontium, J. Thoms.
 —

Pachyteria, Serv.

- *equestris*, Newm.
- *lambii*, sp. n.
- *virescens*, sp. n.
- *spinicollis*, sp. n.
- *insignita*, sp. n.
- *strumosa*, sp. n.

Subfamily CLYTINÆ.

Xylotrechus, Chev.

- *australis*, Lap.
-
-

Clytanthus, J. Thoms.

- *annularis*, Fab.
-
-

Demonax, J. Thoms.

- *macilenta*, Chev.
-
-, g. n.
-, sp. n.

Dere, White.

- *marginata*, sp. n.

Bicon, g. n.

- *sanguineus*, sp. n.

Sigeum, g. n.

- *humerales*, Pasc.

Euryarthrum, Blanch.

- *nodicolle*, sp. n.
- *lambii*, sp. n.
- *carinatum*, sp. n.
- *interruptum*, sp. n.
- *egeum*, sp. n.
- *atripenne*, sp. n.

Asmedia, g. n.

- *mimetes*, sp. n.

Subfamily CERAMBYCINÆ.

Cerambyx, Lin.

- *pruinosis*, sp. n.
- Neocerambyx*, J. Thoms.
- *lambii*, sp. n.
- ? *intricatus*, sp. n.
-, sp. n.

Hoplocerambyx, J. Thoms.

- *relictus*, sp. n.

Dialeges, Pasc.

- *pauper*, Pasc.

Imbrius, g. n.

- *ephebus*, sp. n.
- *lineatus*, sp. n.
- *strigosus*, sp. n.
-, sp. n.

Rhytidodera, White.

- *simulans*, White.
- *cristata*, sp. n.

Cyriopalus, g. n.

- *wallacei*, sp. n.

Ceresium, Newm.

- *raripilum*, Newm.
- *vestigiale*, sp. n.
- *zeylanicum*, White.
- *simplex*, Gyll.
- *versutum*, sp. n.

Subfamily PURPURICENINÆ.

Purpuricenius, Serv.

- *sanguinolentus*, Ol.

Euryphagus, J. Thoms.

- *maxillosus*, Ol.

Euryclea, J. Thoms.

- *cardinalis*, J. Thoms.

Subfamily CERASPHORINÆ.

Stromatium, Serv.

- *asperulum*, White.

Noserius, Pasc.

- *tibialis*, Pasc.

Gnatholea, J. Thoms.

- *eburifera*, J. Thoms.

Xystrocera, Serv.

- *globosa*, Ol.
- *alcyonea*, sp. n.

-, g. n.

-, sp. n.

Family PRIONIDÆ.

Subfamily MACROTOMINÆ.

Remphan, Waterh.

- *hopei*, Waterh.

Subfamily ÆGOSOMINÆ.

Ægosoma, Serv.

- *marginale*, Fab.

Megopis, Serv.

- *procerus*, sp. n.

LAMIIDÆ.

ACANTHOCININÆ.

EOPORIS.

Eoporis, Pascoe, Long. Malay. p. 15.

EOPORIS ELEGANS, Pascoe, *l. c.* p. 16, pl. 1. f. 6.

Two specimens of this widely distributed species, which is found so far south as New Guinea, occur in the collection.

OSTEDES.

Ostedes, Pascoe, Trans. Ent. Soc. ser. 2. v. p. 43.

OSTEDES ———.

Two species of this, or a nearly allied genus, are in the collection, but are not sufficiently perfect to admit of description.

EXOCENTRINÆ.

CUPHISIA.

Caput magnum; oculi parvi, profunde emarginati.

Antennæ setosæ, scapo tenuiter cylindrico articulo tertio brevior.

Prothorax transversus, lateraliter inermis.

Head large, broad and convex in front; antennary tubers short, remote; lip small, rounded; eyes small, lateral, deeply divided; palpi short, pointed. Antennæ slender, setose, rather longer than the body; the scape attenuate, cylindrical, shorter than the third joint; the rest gradually but rapidly diminishing. Prothorax short, transverse, not broader than the head, the sides unarmed and slightly rounded. Elytra rather broad, with parallel sides, only rounded at the apex; the shoulders prominent; the disk with a slight callosity on each side near the scutellum. Legs of moderate length; anterior and intermediate coxæ globose and exerted, with the acetabula of the former broadly triangular externally; femora rather incrassated; anterior tibiæ slightly curved, the rest straight; tarsi equal, the three basal joints, taken together, triangular. Pro- and mesosterna simple. Body setose.

Twenty-two genera of this subfamily were found by Mr. Wallace; but there is only one exponent of it in this collection, representing a form which cannot be referred to any of them, although coming near *Egesina*. From that genus, however, it differs in its slender antennæ and elongate and cylindrical scape, which, notwithstanding, is shorter than the third joint; *Emeopedus* is in no wise setose; *Ebæides* and *Dyemus* differ in their remarkably thickened and nodulose antennæ; *Enispia* and *Nesomomus* have also differently formed antennæ; and, lastly, *Oloessa* has (*inter alia*) divided eyes. All the other eastern genera have the prothorax spined or toothed at the sides.

CUPHISIA CALLOSA. (Pl. XXVI. fig. 1.)

C. pallide fusca, sparse griseo pubescens; elytris fortiter punctatis, basi fulvis, maculis paucis fulvo pilosis ornatis.

Pale brown, subnitid, with a sparse greyish pubescence; head and prothorax reddish brown, impunctate, the pubescence thicker, with a yellowish tinge; scutellum nearly triangular, pointed posteriorly; elytra coarsely substriate-punctate, the base fulvous, and having a well-marked callus on each near the suture and a little behind the scutellum, posteriorly four patches of fulvous hairs, one behind the middle, equidistant from the suture and external margin, another and the largest preapical, and two outer on the same lateral lines as the preceding; body beneath, legs, and antennæ more or less fulvous brown, subnitid, and all, as well as the whole upper surface, clothed with scattered erect setose hairs, principally white, but intermixed with a few black. Length $2\frac{1}{2}$ lines.

NIPHONINÆ.

ÆLARA.

Ælara, J. Thomson, Syst. Ceramb. p. 55.

ÆLARA ARROGANS.

Niphona arrogans, Pascoe, Journ. of Entom. i. p. 338.

Ælara arrogans, Pascoe, Long. Malay. p. 82, pl. 4. f. 5.

M. Thomson has two other genera (*Camptocnema* and *Ocheutes*) which I am unable to distinguish satisfactorily from this. The comparative length of the antennæ, upon which they appear to be chiefly based, varies according to the species and to the sex: thus the male of *Ælara arrogans*, which is an *Ocheutes*, has the antennæ quite as long as *Æ. excisa*, which I take to be congeneric with *Æ. ferdinandi*, the type of the genus. Neither of the three genera would admit *Niphona cylindracea*, White; and one or two others would be nearly as difficult to locate. At the same time they are all tolerably homogeneous in appearance. The species under review has been taken by Mr. Wallace in Sarawak, where it does not appear to be uncommon.

ÆLARA CONCISA, Thomson.

I have received a specimen from M. J. Thomson under this name from Java. I am not aware if he has published it. I have seen it, or a species very similar, from the Himalaya, in Mr. W. Wilson Saunders's collection.

DAXATA.

Daxata, Pascoe, Long. Malay. p. 88.

DAXATA USTULATA. (Pl. XXVII. fig. 4.)

D. griseescens, maculis punctiformibus nigris ornata; elytris singulis basi lineato-cristatis.

Covered with a short greyish pile, scarcely concealing the shining brownish or yellowish-brown derm beneath; head grey in front, a black patch behind the eye, which is continuous with a line of the same colour on each side of the prothorax, the latter slightly depressed in the centre, with a short longitudinal elevated line, the sides transversely wrinkled; scutellum subquadrate, but a little rounded posteriorly; elytra nearly impunctate, except at the base, rather sparsely dotted with small black punctiform spots, but two or three of larger size forming a transverse interrupted bar behind the middle, at the base a few shining granules and two elevated lines, the innermost simulating a crest; behind the shoulder the elytron is slightly incurved and marked with a dark-brown longitudinal patch; body beneath and legs reddish brown, with a sparse ochreous-grey or greyish pile; the tibiæ varied with dark brown; antennæ brown, the joints, from the third inclusive, ashy at the base, the scape varied with ochreous. Length 8 lines.

Daxata is particularly distinguished by its thick pyriform scape and the tooth-like process on the inner edge of the antennary tuber. In this species the eye is larger in proportion, and the remarkably elevated and conical protuberance of the elytron in *Daxata camelus* is replaced by a short narrow crest. The second abdominal segment of the specimen before me is furnished on each side with the curious semicircular hairy patch common to many of the members of this subfamily, and which, I believe, is confined to the males. *D. camelus* is from Sarawak.

MESOSINÆ.

ANANCYLUS.

Anancylus, J. Thomson, Syst. Ceramb. p. 61.

ANANCYLUS GRISEATUS.

Mesosa griseata, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 243.

All the individuals of this species I have hitherto seen have been from Sarawak.

EREIS.

Eris, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 110 (nec Koch).

Ereis, Pascoe, Long. Malay. p. 105.

EREIS ANTHRIBOIDES, Pascoe, Trans. l. c. pl. 22. f. 7.

This also has hitherto only occurred at Sarawak. I have described two other species from Cambodia.

MESOSA.

Mesosa, Serville, Ann. Soc. Entom. de France, t. 4. p. 43.

MESOSA ALLAPSA.

M. rufo-grisea, fusco variegata; antennis rufescentibus, fusco maculatis et annulatis.

Covered above with a short dense reddish-grey pubescence varied or marbled with brown; head minutely punctured, the mesial line extending to the lip; prothorax transverse, rounded at the sides, rather finely punctured; scutellum rounded behind; elytra broader behind the middle, the punctures larger than those on the prothorax, and very irregular, the brown mottling the whole of the elytra in a very indefinite manner, but forming posteriorly an oblique zigzag line, anterior to which, but behind the middle, is a large brown well-marked spot; body beneath dark chestnut, the sides of the abdomen densely clothed with a rich-reddish-brown pile; legs covered with a delicate rosy pubescence, banded with dark brown, the two basal joints of the tarsi entirely rosy, the third and fourth varied with brown; antennæ longer than the body, also with a short rosy pubescence, the four basal joints spotted, and at their tips, as well as the tips of the remainder, ringed with brown. Length 7 lines.

Not to be distinguished generically, as it appears to me, from the *Mesosa curculionoides* of Europe. It is a very distinct species from the *M. perplexa* of China.

CACIA.

Cacia, Newman, Entom. p. 290 (1842).

Corethrophora, Blanchard, Voy. au Pôle Sud, t. 4. p. 301 (1843).

CACIA INCULTA, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 102.

Mr. Wallace took this species in Singapore and Sarawak.

CACIA MELANOPSIS. (Pl. XXVI. fig. 4.)

C. fusco-grisea, nigro et albo variegata; capite antice glabro, nigro; prothorace transversim corrugato; tarsis cinereis, atro marginatis.

Dark brown, the pubescence brownish grey mingled with spots and patches of dark brown and white; head glabrous in front (from abrasion?), black, finely punctured, a patch of whitish pubescence under the eye; prothorax transverse, scarcely broader than the head, finely corrugated, the pubescence very slight and mostly brownish grey; scutellum small, rounded posteriorly; elytra with a slightly elevated granular line on each side at the base, the punctures very small and partly concealed by the pubescence, behind the middle a series of white spots forming an indefinite band, nearer the apex a similar band but narrower, the rest greyish, with dark spots; body beneath and legs with a slight greyish pile; the knees and ends of the tibiæ black; tarsi ashy, bordered with black; antennæ (♀) as long as the body, black, the third and fourth joints (except at the tips and their tufts) ashy, scape nearly glabrous, finely punctured. Length 8 lines.

A fine and very distinct species.

CACIA PISTOR.

C. albescens, fusco maculata; capite prothoraceque albescentibus, hoc haud corrugato; tarsis cinereis, nigro marginatis.

In size and outline like the last ; but the general colour is white without any brownish grey, the head pubescent in front, and the prothorax not corrugated ; the antennæ and legs similar, except that the black on the knees is less marked. There is only one specimen of each. In both, the third and fourth antennary joints are produced at the apex, but the process is concealed by the tuft of hairs with which the apices of these joints are furnished.

CACIA HERBACEA. (Pl. XXVI. fig. 3.)

C. capite fulvescente ; elytris griseo-viridibus, basi et ultra medium dilutioribus ; tarsi infuscatis.

Head with a pale ochreous-grey pubescence, finely punctured in front ; lip pale brown ; prothorax short, greenish grey with four oblong blotches, the two central paler ; scutellum transverse ; elytra setulose at the sides, yellowish green, the base and behind the middle paler, the latter with darker blotches forming an incomplete band ; body beneath and legs covered with a fine greyish-yellow pile, the ends of the tibiæ and tarsi chocolate-brown ; antennæ about as long as the body (♀), ochreous, the fourth joint and its tuft brown except at the base, the third finely spined at the apex*. Length $4\frac{1}{2}$ lines.

CACIA OBSESSA.

C. cinerea ; prothorace fusco bivittato ; elytris fusco irroratis vel plagiatis ; tarsi infuscatis.

Pubescence pale ashy varied with stripes or spots of blackish ; head ashy, a dark band between the eyes ; eyes very small ; prothorax short, impunctate, with two blackish stripes, each continuous with a patch behind the eye ; scutellum semicircular ; elytra rather short, sparingly punctured, especially towards the apex, indeterminate sprinkled with blackish ; body beneath and legs ashy, the tarsi darker ; antennæ blackish, bases of the second, third, fourth, and fifth joints entirely ashy, elongated tuft on the fourth black. Length 4 lines.

Cacia is a somewhat heterogeneous genus, though, on the whole, one readily recognized. In some of the species the two sexes have the antennæ nearly equal in length ; in the females of others the seven terminal joints are together scarcely a quarter the length of the remainder, while in the male they are half as long again as the basal portion. Tufts of hairs are found on the third or fourth joint, or on both, or they disappear altogether ; these are sometimes supported by spines or short prolongations of the apices of the joints, or the spines occur without tufts. The colouring is very variable, even occasionally in the same species.

CLYZOMEDUS.

Clyzomedus, Pascoe, Long. Malay. p. 115.

* In *Cacia inculta* this character is present or absent in the same species.

CLYZOMEDUS NANUS.

Coptops nanus, Pascoe, Trans. Ent. Soc. ser. 2. v. p. 39.

Clyzomedus nanus, Pascoe, Long. Malay. p. 116, pl. 8. f. 4.

This species was found in New Guinea by Mr. Wallace, but in none of the intervening islands.

CLYZOMEDUS ANNULARIS.

C. pallide brunneus, tenuissime griseo pubescens; antennis griseis, brunneo annulatis.

Pale reddish brown, with an exceedingly delicate greyish pubescence, which is, however, coarser on the head and face; prothorax very short, impunctate; scutellum scutiform; elytra rather short, finely punctured, the punctures larger at the base, the pubescence somewhat irregular and forming, principally posteriorly, one or two indefinite flexuous lines; body beneath, legs, and antennæ with a thin greyish pubescence, the latter with tips of the joints dark reddish brown. Length $3\frac{1}{2}$ lines.

Clyzomedus has been separated from *Coptops* on account of its prosternum produced posteriorly, forming an angular transverse ridge between the coxæ, not rounded or without such angle. The species are also smaller and far less robust.

COPTOPS.

Lachnia, deuxième division *Coptops*, Serville, Ann. Soc. Ent. de France, t. 4. p. 64.

COPTOPS VOMICOSA.

Abryna vomica, Pascoe, Journ. of Entom. i. p. 341.

This species, described in the work above quoted, was found by the late M. Mouhot in Cambodia, where it appears to be common.

COPTOPS POLYSPILA, Pascoe, Long. Malay. p. 118.

Also found by Mr. Wallace at Pulo Penang.

COPTOPS LECIDEOSA, Pascoe, Long. Malay. p. 120.

Mr. Wallace's specimens are from Sarawak and Sumatra.

SAIMIA.

Samia, Pascoe, Long. Malay. p. 121.

SAIMIA ALBIDORSALIS.

Samia albidorsalis, Pascoe, *l. c.* p. 122, pl. 8. f. 6.

Found also by Mr. Wallace at Singapore and Sarawak. Mr. Lamb's specimen has five well-marked tuberosities on the disk*.

* I have slightly altered the orthography, the original name having been pre-occupied for a genus of Lepidoptera.

SAIMIA BITUBEROSA.

Fusca, grisescente pubescens; prothorace medio valde bituberoso.

Brownish, with a thin greyish pubescence, forming on the elytra little longitudinal silky ridges; head rather broad and thinly pubescent in front; prothorax about equal in length and breadth, two approximate strongly marked tubers a little before the middle, the rest of the disk tolerably regular, on each side anteriorly a short thick tooth; scutellum transversely quadrate; elytra rather short, thinly punctured, a broad callus on each side at the base; body beneath and legs chestnut-brown, shining, the pubescence thin and spotty; antennæ more than twice as long as the body, chestnut-brown, the basal joints with greyish pubescent spots, the middle and terminal joints with the base and the tip of each greyish. Length 9 lines.

AGELASTA.

Agelasta, Newman, *The Entom.* p. 288.

AGELASTA LAMBII. (Pl. XXVI. fig. 7.)

A. fusca, pube alba brevissima et densissima induta; capite prothoraceque albo vittatis; elytris albis, ultra medium fascia angusta vittisque fuscis ornatis.

Covered with a very short but very dense white pubescence, varied with lines or stripes of dark chocolate-brown, which are very nearly glabrous; head with one central and two lateral yellowish-white stripes, the latter interrupted above the eye, the cheeks white; prothorax yellowish white, with two central brown stripes connected posteriorly, and three lateral stripes, the two innermost united anteriorly and all continuous with the stripes on the head; scutellum transversely scutiform; elytra minutely punctured, of a clear chalky white to behind the middle, where they are crossed by a narrow irregular brown band, which throws out towards the apex two (or three) stripes on each side; body beneath black, shining, the sides pubescent, white; legs pure white, the tarsi dark brown, except the lobes of the third and middle of the fourth joints; antennæ longer than the body in the male and *twelve*-jointed, in the female shorter than the body and *eleven*-jointed, dark brown, the second and bases of the third to the sixth joints white. Length 7-8 lines.

Closely allied to *A. wallacei*, but differing in the absence of the brown band at the base of the elytra, and the presence of a supplementary joint in the antennæ of the male.

AGELASTA POLYNESUS, White, *Catal. Long. Brit. Mus.* (1855) pl. 10. f. 9 (sine descript.); *Proc. Zool. Soc.* 1856, p. 410.

Apparently a common species at Singapore and Sarawak.

AGELASTA SOBRINA, Pascoe, *Long. Malay.* p. 127.

In the Wallacean collection there are specimens from Singapore,

Sarawak, and Banca. It has been confounded with *Agelasta amica*, White.

AGELASTA BALTEATA. (Pl. XXVI. fig. 9.)

A. supra pube rufo-brunnea induta, maculis plurimis et fascia elytrorum rufo-fuscis.

Above with a short dense pale reddish-brown pubescence, mingled with a few white hairs, with several spots and a band on the elytra dark reddish brown; spots on the head somewhat obscure, on the prothorax about nine, the odd one nearly at the base; scutellum broadly triangular; elytra with a well-marked band between the middle and the base, and eight or nine spots on each posteriorly; body beneath pubescent, pale ashy; legs brownish, the tips of the tibiæ and the tarsi dark brown; antennæ brown, the base as far as the middle of the third joint and bases of the fourth and fifth ashy. Length 5 lines.

Approaches in some respects *A. newmani*, which, however, is of an ashy colour, with two bands on the elytra; in both, the scape and third and fourth joints are of equal length.

AGELASTA SUBSTRIGOSA. (Pl. XXVI. fig. 8.)

A. nigra, pube dispersa cinerea induta; capite, prothorace, et basi elytrorum granulis numerosis nigris nitidis instructis.

Black, with small patches (on the elytra, posteriorly, lines) of pale ashy pile; head and prothorax with numerous small black shining granules, between which are little patches of ashy hairs, the latter narrowed behind, a little contracted anteriorly, the sides without any projections; scutellum transverse, nearly glabrous; elytra subcylindrical, the base finely granulate, the middle with a few foveolate punctures and three or four white spots on each side, towards the apex indefinite longitudinal lines of pale ashy; body beneath and legs black, subnitid, with a mottled ashy pubescence, tarsi ashy, the basal and apex of the claw-joint black; antennæ slender, about half as long again as the body in the male, black, with the base speckled with ashy, the bases of the fourth and fifth and eighth and ninth joints ashy. Length 5 lines.

An interesting species, resembling in colour *A. irrorata*, but more cylindrical than any other member of the genus, and furnished with little granuliferous points rising in an exceedingly definite manner from the derm. In this species the third joint of the antennæ has a double curve, and is considerably longer than any other. The technical characters of *Agelasta* are extremely variable, yet, notwithstanding, it is a very natural genus and very readily recognized.

ÆSOPIDA.

Æsopida, J. Thomson, Syst. Ceramb. p. 62.

ÆSOPIDA MALASIACA, J. Thomson, l. c. p. 62.

Apparently not uncommon in Malacca.

GOLSINDA.

Golsinda, J. Thomson, Essai Class. Céramb. p. 343.

GOLSINDA CORALLINA, J. Thomson, *l. c.* p. 344.

The single example in Mr. Lamb's collection differs a little in the colour of its antennæ and legs from the Borneo species. In the former a pale ashy replaces the bright orange of the latter, and *all* the joints of the antennæ, except the last, are ringed; beyond this I am unable to distinguish it. M. Mouhot also took it in Laos.

PALIMNA.

Palimna, Pascoe, Journ. of Entom. i. p. 346 (1862).

Cylanca, J. Thomson, Syst. Ceramb. p. 58 (1864).

PALIMNA TESSELLATA.

Golsinda tessellata, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 49; Long. Malay. p. 135, pl. 6. f. 2.

Numerous individuals of this species were found by Mr. Wallace in Sarawak.

PALIMNA MOUHOTII.

P. nigra, albo maculata, densissime et breviter pubescens; elytris apice rotundatis; articulo ultimo tarsorum toto nigro.

Covered with a very dense and short black pubescence, marked with large definite, occasionally almost confluent, white spots; head white, band between the eyes and behind them black; prothorax a little transverse, the lateral angle fringed with a row of small black granules, the disk irregular, with a large black patch, varied with two or three spots of white; scutellum scutiform, black, the centre white; elytra with two erect spines at the base of each, the shoulders also slightly spinous or tuberculate, an oblique angular line on each side, the apex rounded; legs and antennæ ringed with black and white, the first two joints of the tarsi white bordered with black, the last two entirely black. Length 10 lines (♂)—13 (♀).

This description has been drawn up from Laos specimens collected by the late M. Mouhot. The species bears a very decided resemblance to *P. tessellata*, but the colours are much purer and more clearly limited, the prothorax shorter, more coarsely toothed, and the last tarsal joint is entirely black. There are other differences, which may, however, not be so permanent.

SODUS.

Sodus, Pascoe, Long. Malay. p. 137.

SODUS URSULUS. (Pl. XXVI. fig. 2.)

S. fulvo-brunneus, setulosus; capite scutelloque griseis; prothorace basi latiore; antennis brunneis, griseo setulosis.

Tawny brown, thickly pubescent, everywhere, except the under surface, clothed with short erect setulose hairs; head with sparse greyish hairs, behind the eye a yellowish spot, which corresponds with another on the prothorax, the latter turgid in the centre and expanded at the base; scutellum nearly triangular; elytra remotely and irregularly punctured, obscurely varied with dark brown, particularly two flexuous marks which enclose near the shoulder a pale yellowish spot; body beneath dark chestnut-brown, subnitid, minutely pubescent; legs and antennæ tawny brown, obscurely varied with greyish. Length $4\frac{1}{2}$ lines.

A somewhat broader species than *Sodus verticalis*, and otherwise very distinct. *Sodus* is a somewhat isolated genus, differing from the other genera of its subfamily in the rounded apex of the scape, not dilated nor cicatricose, and in the presence of setulose hairs clothing every part of the insect, except the breast and abdomen.

APOMECCYNINÆ.

CENODOCUS.

Cenodocus, J. Thomson, Syst. Ceramb. p. 47.

CENODOCUS ADUSTUS, Pascoe, Long. Malay. p. 142, pl. 10. f. 3.

Mr. Wallace's specimen of this species is from Sumatra. M. Thomson's type (*C. antennatus*) is from Java.

CENODOCUS GRANULOSUS. (Pl. XXVI. fig. 12.)

C. ferrugineo-griseus; *elytris singulis medio impressione obliqua instructis*; *tarsis concoloribus*.

Derm black, closely covered with a coarse rusty-grey pile; head rugose in front, the pile sparsely distributed; prothorax oblong, with numerous large foveolate punctures; scutellum semilunar; elytra short, strongly punctured, with here and there black glossy granules between them, from near the suture at about the middle of each elytron a large shallow impression proceeds outwards and downwards, this is nearly free from punctures or granules, and is of a lighter colour than the rest; body beneath and legs with a coarse greyish pile; antennæ brown, the fringe, apex of the fourth, which is otherwise white, and the remainder of the joints black. Length 6 lines.

This is a well-marked species belonging to a well-marked genus. The antennæ are unusually short, even for this subfamily, and the joints of very unequal length, the last seven, for instance, being together shorter than the third; this joint is feathered as it were on two sides by densely compacted hairs. In this species the feathering does not extend to the base of the joint. The scape and also the second joint have also slighter plumes beneath, so far as the above species are concerned, but in M. Thomson's species no mention is made of the plume on the scape.

IXAIS.

Caput *antice subtransversum, linea mediana ad orem attingente.*
 Antennæ *perbreves, articulis tertio et quarto subæqualibus, infra fimbriatis.*

Elytra *basi angusta, postice latiora, in medio elevato-convexa.*

Head rather transverse in front, the impressed median line extending from the vertex to the mouth; antennary tubers almost obsolete. Eyes deeply divided, the lower lobe somewhat approximating to the base of the mandibles. Antennæ very short, entirely pubescent, scape ovate, the third joint very little longer than the fourth, both closely fimbriated beneath, the last seven joints exceedingly short. Prothorax subquadrate, its sides nearly straight. Elytra highly convex in the middle, narrower and depressed at the base, broadest posteriorly. Legs short, robust, nearly equal; anterior coxæ exerted, their acetabula with a vertical angle. Pro- and mesosterna slightly raised, their opposing faces rounded.

This genus is a modification of the *Cenodocus* form, differing principally in the shape of the elytra, the presence of a strongly impressed median line on the head, and the relative proportion of the third antennary joint. The only species which it contains at present is remarkable for its general resemblance to *Episomus pauperatus*, Fab. (*Curculio*), a native of Sumatra, and probably extending to the opposite coast of Malacca, as it occurs also in Java. There are other genera of Longicorns which never fail to recall forms belonging to widely different groups.

IXAIS EPISOMOIDES. (Pl. XXVI. fig. 10.)

I. *supra fusco-grisea, infra albida; elytris seriatim punctatis, punctis oblongis, profunde impressis.*

Derm brownish testaceous, covered above with a thin greyish pile; head slightly punctured in front, two brownish stripes on the vertex, continuous with a broad central stripe of the same colour on the prothorax, the latter with crowded foveolate punctures; scutellum transverse; elytra seriate punctate, the punctures rather irregular near the suture, oblong and very deeply impressed, with a few pale-testaceous granular elevations, principally at the base, the sides anteriorly and a few small spots white; body beneath and legs covered with a whitish pubescence; antennæ about half as long as the body, closely pubescent, white, except the apex of the fourth and all the succeeding joints. Length 6 lines.

CYARDIUM.

Caput *subtransversum, fronte sulcato.*

Antennæ *breves, robustæ, vix fimbriatæ, scapo obconico.*

Prothorax *capite paulo latior, dente antico instructus.*

Elytra *elongata, cylindrica.*

Head transverse in front, the forehead deeply sulcate; antennary tubers robust; eyes deeply divided. Antennæ short, stout, pubes-

cent, scarcely fimbriated; scape obconic, third joint much longer than the fourth, the rest very short. Prothorax a little broader than the head, subcylindrical, toothed anteriorly. Elytra elongate, cylindrical, callous at the base. Legs short, equal; anterior tibiæ not toothed internally. Prosternum elevated. Mesosternum toothed anteriorly.

The presence of a prothoracic tooth, as well as the style of sculpture, places this genus in the neighbourhood of *Synelasma*, from which, however, it abundantly differs in the characters of the head, antennæ, and in its elongate cylindrical form.

CYARDIUM CRIBROSUM. (Pl. XXVI. fig. 5.)

C. pallide ferrugineum, sparse griseo pubescens; elytris post medium fascia albida ornatis; antennis articulis tertio et quarto, apice excepto, albis.

Pale rusty brown, rather sparingly clothed with a greyish pubescence; head deeply impressed on the vertex between the upper lobes of the eyes, the front coarsely punctured, each puncture with a stiff whitish hair at the base; prothorax with deep crowded irregular impressions having apparently a deciduous greyish pubescence, the raised intermediate portions tuberculiform or granular; scutellum very transverse; elytra with a slight callus near the base, and numerous large foveolate punctures, and little patches of ochreous pubescence between them, behind the middle a broad whitish band; body beneath pale buff, spotted with yellowish brown; legs buff, varied with brownish; antennæ dark brown, the scape reddish brown, third and fourth joints white except at their tips. Length 8 lines.

SESIOSA.

Sesiosa, Pascoe, Long. Malay. p. 154.

SESIOSA SUBFASCIATA, Pascoe, *l. c.* p. 154, pl. 8. f. 2.

The Wallacean specimen is from Singapore. The genus is allied to *Apomecyna*.

PRAONETHA.

Prioneta (ab errore), Blanchard, Voy. au Pôle Sud, iv. p. 292.

PRAONETHA OBDUCTA, Pascoe, Long. Malay. p. 165.

The puncturation is a little coarser than on the typical specimens from Ceram and Bouru, on which I have based my description.

PRAONETHA ILLICITA, Pascoe, *l. c.* p. 169.

It is possible that this is only a subspecies or variety of a widely distributed species, and it will then be found to extend from Penang to Java on the one hand, and to Aru on the other. Other localities are Goram, Batchian, and Mysol.

PRAONETHA CONSULARIS.

P. fusca, pube densa flavida vestita; vertice maculis duabus,

prothorace plagis duabus basalibus, scutelloque medio purpureo-fuscis; tarsiis fuscis.

Dark brown, covered with a coarse yellowish-grey pile; head white between the eyes, the vertex with two purplish-brown spots; prothorax transverse, a large purplish-brown spot on each side extending to the base; scutellum triangular, with a dark-brown central spot; elytra subtrigonal, strongly crested at the base, three well-marked raised lines on each, across the middle, and curving round from the shoulders a broad band paler and less pubescent than the base and apex; body beneath pilose, yellowish grey, the abdomen ashy; legs closely covered with a yellowish-grey pubescence, the tarsi dark brown, with a few scattered hairs; antennæ yellowish brown. Length 6 lines.

This description is from a specimen in my own collection, taken by Captain Smythe of H. M. 34th; Mr. Lamb's example is smaller and much injured. It is a very distinct species, and will stand for the present after *Praonetha scopulifera*, Pasc.

PRAONETHA VILLOSA.

P. fusca, brunneo-griseo pubescens; prothorace bituberculato; scutello triangulari; elytris obscure fusco variis, linea curvata alba ante cristam posticam sita, crista antica nigro pilosa, apicibus rotundatis.

Dark brown, with a pale brownish-grey pile, and numerous fine erect hairs; head with a few punctures in front, antennary tubers strongly marked; prothorax subtransverse, the disk slightly bituberculate, with numerous small punctures; scutellum triangular; elytra slightly subtrigonal, rather coarsely punctured, compressed, the basal crests formed of black erect hairs, a short curved white transverse line before the posterior crests, rest of the elytra obscurely varied with brown; body beneath and legs rufous, with a thin grey pile; antennæ brown, slightly annulate with grey. Length 4 lines.

This species will stand in my fifth section of the genus, after *P. fractilinea*, characterized by the "elytra abruptly declivous posteriorly, the angle generally furnished with a short tuft (of hair)—the exterior raised lines nearly obsolete." There are two or three other species in the collection, which appear to be distinct from any of the fifty-three species described in the 'Longicornia Malayana.'

ROPICA.

Ropica, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 247.

ROPICA VINACEA, Pascoe, Long. Malay. p. 194.

Found also at Ternate and Sarawak by Mr. Wallace, whose collection contained twenty-three species.

SYBRA.

Sybra, Pascoe, Long. Malay. p. 198.

SYBRA UMBRATICA, Pascoe, *l. c.* p. 203.

Occurs also in Sarawak, Mysol, and Ternate. Fifty-two species of this genus are described in the work above quoted.

ATIMURA.

Atimura, Pascoe, *Trans. Ent. Soc. ser. 3. i.* p. 548.

ATIMURA BACILLINA, Pascoe, *Long. Malay.* p. 158.

Mr. Wallace finds this species in Sarawak and Sumatra, and another species in the same localities as well as in Singapore. It is one of the few Longicorn genera common and confined to Australia and the Malayan archipelago.

XYLORHIZA.

Xylorhiza, Laporte de Castelnau, *Hist. Nat. des Ins. ii.* p. 476.

XYLORHIZA VENOSA, Laporte, *l. c.* p. 476.

A handsome insect, sometimes nearly two inches long, common to both sides of the Bay of Bengal. It is lazy in its habits, remaining for a long time in one spot, and, unlike the Longicorns generally, bores into the young and living shoots of trees, probably to deposit its eggs.

THYLACTUS.

Scapus obconicus.

Palpi brevisculi, glabri.

Prothorax utrinque spina valida armatus.

Head transverse in front; antennary tubers very stout and prominent, approximate at the base. Eyes narrow, broadly emarginate. Antennæ shorter than the body, pubescent, not fimbriated, the scape obconic; third joint longest, the rest gradually shorter (the last joints are wanting). Palpi rather short, not hairy or only slightly pubescent. Prothorax narrow, unequal, armed on each side with a stout spine. Elytra elongate, cylindrical, irregular, a little depressed, expanded at the apex into a broad angular process. Legs short; femora fusiform; tibiæ rather shorter than the tarsi. Pro- and mesosterna depressed.

A remarkable insect, allied to *Xylorhiza* and *Cymatura*, is the type of this genus. From both it will be readily distinguished by its strongly toothed prothorax, as well as the different form of the scape. I should have been inclined to consider these, and other species still referred to *Xylorhiza*, highly individualized members of one group, which, although differing in several technical characters, have a very obvious relationship. This view, however, would not be likely to be adopted.

THYLACTUS ANGULARIS. (Pl. XXVII. fig. 6.)

T. pube sericea densissima fulvo-brunnea indutus; elytris lateraliter fusco uniplagiatis.

Covered above with a very dense short silky pubescence of a light

reddish or fulvous-brown colour, beneath coarser and less compact; head slightly punctured in front, the vertex and between the eyes deeply grooved; prothorax with an elevated longitudinal line, the base of the spine occupying the middle third on each side; scutellum nearly semicircular; elytra about five times as long as the prothorax, and much broader at the base, minutely and sparingly punctured, the base and a large longitudinal patch on each side behind the middle, where the elytron is hollowed or impressed, dark brown, the apices broadly truncate and expanding beyond the side into a large rectangular convex plate; legs and antennæ concolours. Length 13 lines.

DORCADIONINÆ.

OBAGES.

Tubera antennifera erecta, approximata.

Palpi maxillares elongati, art. ultimo dilatato, truncato.

Prothorax muticus, ovatus, ad elytra arcte applicatus.

Tarsi art. penultimo dilatato.

Head rather narrow, quadrate in front; the antennary tubers stout, nearly erect, approximate or nearly contiguous at the base. Eyes lateral, broadly emarginate, pointed below. Antennæ setaceous, rather longer than the body; scape subelongate, cylindrical; third joint longest, the rest gradually shorter. Maxillary palpi very long, the terminal joint, as also in the labial palpi, considerably larger than the preceding ones, and truncate. Prothorax oblong, subcylindrical, a little broader than the head, the disk regular, the sides unarmed. Elytra ovate, very convex, the convexity culminating at the middle, not wider than the prothorax at the base, humeral angles entirely absent. Legs rather slender, especially the tibiæ of the posterior pair; femora slightly thickened; tarsi short, the penultimate joint dilated. Anterior acetabula narrowly angulated. Pro- and mesosterna declivous.

The unique specimen before me is the only representative of the subfamily in the collection. Mr. Wallace during all his researches only found two species, but neither of these has the slightest affinity to it; nor can I mention any other to which it can be said to be allied. The Australian genus *Microtragus* agrees in its eyes and approximate antennary tubers, but differs in other characters, and has a totally different habit.

OBAGES PALPARIS. (Pl. XXVI. fig. 11.)

O. piceus, pube sparsa grisea subtiliter indutus.

Pitchy brown, with a short sparse greyish pile; head more pubescent, rather coarsely punctured; prothorax covered with coarse crowded punctures; scutellum very transverse; elytra deeply striatopunctate, the interstitial lines alone pubescent, the third line from the suture with a small white spot posteriorly, apices obliquely truncate, the outer angle produced; body beneath, legs, and antennæ with a tolerably copious greyish pubescence. Length 4 lines.

HYPSELOMINÆ.

CEREOPSIUS.

Cereopsius, Pascoe, Journ. of Entom. i. p. 344.

CEREOPSIUS WHITEI, J. Thomson, Syst. Ceramb. p. 556.

A very distinct species, having two large white spots on each elytron.

COMBE.

Combe, J. Thomson, Syst. Ceramb. p. 83.

COMBE BRIANUS.

Monohammus brianus, White, Proc. Zool. Soc. 1858, p. 409.

Combe fulgurata, J. Thomson, *op. cit.* p. 84.

This handsome insect appears to be very scarce. Mr. Lamb has found only a single example, a female; this is much larger than a male in my own collection. The specimen in the British Museum from which Mr. White described the species is without a head.

AMESISA.

Amesisa, Pascoe, Long. Malay. p.*

AMESISA CONSULARIS, Pascoe, *l. c.* p. , pl. 11. f. 2.

Mr. Wallace's specimen is from Singapore.

PHARSALIA.

Pharsalia, J. Thomson, Syst. Ceramb. p. 85.

PHARSALIA INCERTA, Pascoe, Long. Malay. p. .

The single specimen in Mr. Lamb's collection is referred very doubtfully to this species.

CYCOS.

Antennæ *in maribus longissimæ, normales.*

Scapus *cylindricus, basi subito constrictus.*

Pedes *in maribus elongati, antici longiores.*

Mesosternum *dentatum.*

Head rather small, quadrate in front, the antennary tubers very robust, erect or very slightly divergent. Eyes of moderate size, broadly emarginate. Antennæ very long in the male, scarcely longer than the body in the female, not fimbriated beneath; scape moderately long, cylindrical, suddenly constricted at the base, the third joint longer than the scape, the remainder gradually abbreviated, except the last in the male, which is more than twice as long as the preceding joint. Prothorax scarcely broader than the head, sub-

* When this was written I anticipated that this genus and two or three species mentioned further on, collected by Mr. Wallace and which are identical with those in Mr. Lamb's collection, would have been published in the above work; but, although the plates to accompany the forthcoming part are ready, the text has been unfortunately delayed.

cylindrical, with a median tooth at the side, the base subbisinuate. Elytra broadest at the base, the shoulders prominent, apex rounded. Legs in the males elongate, the anterior longest, their tarsi dilated and fringed; in the female the legs comparatively short, but all of nearly equal length, the tarsi neither dilated nor fringed. Prosternum simple. Metosternum toothed.

The closely approximate and nearly erect antennary tubers separate the insect on which this genus is founded from *Monochamus*, as well as from the *Laminæ*—its position appearing to me to be between *Pharsalia* and *Triammatus*, the long legs of the male, *inter alia*, distinguishing it from the former, and the normal antennæ from the latter. The scape is remarkably constricted at the base above the articulating portion, the outer side of it, indeed, is so produced as to form a very acute angle.

CYCOS SUBGEMMATUS.

Monochamus subgemmatus, J. Thomson, Arch. Entom. i. p. 294 (1857).

Monohammus georgius, White, Proc. Zool. Soc. 1858, p. 407.

A handsome species originally discovered in Sylhet, and apparently not uncommon in the more eastern Himalayan range.

PERIBASIS.

Peribasis, J. Thomson, Syst. Ceramb. p. 86.

PERIBASIS ASPERSA.

Monohammus aspersus, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 48. Apparently a common species at Penang and Singapore.

PERIBASIS PUBICOLLIS, Pascoe, Long. Malay. p. .

Taken also by Mr. Wallace at Singapore and Sarawak. *Monohammus larvatus*, White (Proc. Zool. Soc. 1858, p. 406) is also a *Peribasis*.

OMOCYRIUS.

Caput *exsertum*, *infra oculos sensim latiore*.

Antennæ *art. 4, 5, in utroque sexu, omnino incrassatis*.

Elytra *ad humeros producto-lobata*.

Pedes *antici, in maribus, perlongi*.

Head exserted, narrowed above and gradually widening below the eyes; antennary tubers very stout and approximate, but not contiguous. Eyes small, broadly emarginate. Antennæ longer than the body in the male, shorter than the body in the female, the scape obconic, the third joint longer than the scape, clubbed at the apex, the fourth and fifth thickened throughout in both sexes, in the female, however, gradually smaller towards the base, the sixth and remaining joints shorter than the fifth, and nearly equal in length, except the last in the male, which is longer, subulate, and curved. Prothorax oblong, rather narrower anteriorly, toothed at the sides,

bisinate at the base. Elytra slightly depressed, the sides narrowing posteriorly, the shoulders lobed above. Legs elongate, especially the anterior pair in the males; protibiæ curved; tarsi equal in length, the anterior dilated in the males. Prosternum slightly elevated. Mesosternum produced.

This handsome genus is allied on the one hand to *Otarionomus* in respect of its lobed shoulders, a character which it shares also with *Achthophora*, and on the other to *Triammatus*, with which it otherwise agrees, except in a modification of the remarkable antennæ, especially in the female, and in the divergent, although still approximate, antennary tubers, which are not cornuted or produced as in *Triammatus*. The protibiæ, too, are curved throughout, and the preapical tooth is nearly obsolete.

OMOCYRIUS FULVISPARSUS. (Pl. XXVII. fig. 3.)

O. rufo-fuscus; capite prothoraceque fulvo bilineatis; elytris fulvo maculatis; tarsis nitidis, luteis.

Reddish brown, slightly nitid, nearly glabrous, but varied with lines and spots of fulvous pubescence; head brownish opaque in front, with a raised median line, two narrow stripes on the vertex, another longitudinal one before the eye, and a third extending beneath it horizontally; mandibles dark brown; palpi luteous; prothorax finely corrugated, the corrugations becoming gradually granular at the sides, the disk with two narrow fulvous stripes, below on each side a broader, nearly white, stripe, which passes also along the sterna; scutellum triangular, obtuse; elytra coarsely and irregularly punctured, with three slightly raised lines on each, the shoulders above produced into a prominent ear-shaped lobe, the disk with numerous small and a few large well-defined spots of fulvous; body beneath reddish brown, nitid, each abdominal segment, at the side, with a pale fulvous spot; legs dark brown, with a fine ashy pubescence, the tibiæ becoming more and more luteous towards the extremities, the tarsi bright luteous, shining; antennæ more or less dark reddish brown, the fourth and succeeding joints pale flesh-coloured at the base. Length 12 lines.

ACHTHOPHORA.

Achthophora, Newman, The Entom. p. 292.

Stegenus, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 104, pl. 22. f. 6.

ACHTHOPHORA DACTYLON.

Stegenus dactylon, Pascoe, l. c.

The differences between *Stegenus* and *Achthophora* are, I think on a re-examination, too slight to justify their being treated as distinct genera. Mr. Wallace, who first discovered this species at Sarawak, found only a few specimens; at Penang, however, it seems to be abundant.

TRACHYSTOLA.

Trachystola, Pascoe, Journ. of Entom. i. p. 350.

TRACHYSTOLA GRANULOSA, Pascoe, *op. cit.* p. 351.

Trachystola is placed at the end of this subfamily only provisionally; its general form, sculpture, and colour point to the *Dorcudininae*, and, but for the presence of humeral angles, in that group it would undoubtedly take its place. M. J. Thomson puts it between *Aderpas* and *Anamera* in his "groupe *Mesositæ*," a location, I think, very far from natural. *T. granulosa* is apparently a common insect at Sarawak. A second species is described by M. J. Thomson, from Java.

LAMINÆ.

BATOCERA.

Batocera, Laporte de Castelnau, Hist. Nat. des Insectes, t. 11. p. 470 (1840).

BATOCERA VICTORIANA, Thomson, Rev. et Mag. de Zool. 1856, p. 529; Arch. Ent. t. 1. p. 23. "Frontispiece."

Found also by Mr. Wallace in Borneo. The spots on the elytra are of a fine vermilion during life.

BATOCERA THOMSONI, Javet in Thoms. Arch. Ent. t. 1. p. 412, pl. 20. f. 2.

This is also a Bornese species. Mr. Wallace found not less than eighteen species of this magnificent genus; some of them measure, from tarsus to antennæ, nearly a foot in length.

APRIONA.

Apriona, Chevrolat, Rev. et Mag. de Zool. 1852, p. 414.

APRIONA GERMARI.

Lamia germarii, Hope, Zool. Miscell. p. 28.

The original specimens of this species were from Sylhet, but it appears to be generally distributed in continental India.

THESTUS.

Antennæ *subtus fimbriatæ*.

Prothorax *lateribus haud spinosus*.

Tibiæ *anticæ compressæ*.

Mesosternum *productum*.

Head transverse in front, not dilated below the eyes; antennary tubercles very robust, approximate at the base; eyes rather large, broadly emarginate. Antennæ longer than the body, densely fringed beneath, except the terminal joints; the scape obconic, rather short, strongly cicatricose at the apex; the third joint the longest, the following to the sixth or seventh gradually shorter, the remainder about equal. Prothorax not broader than the head, cylindrical, short, slightly toothed at the sides. Elytra broad at the base, the sides nearly parallel, shoulders produced. Legs nearly equal; tibiæ compressed. Mesosternum toothed anteriorly.

The closely fringed antennæ, compressed tibiæ, and general out-

line, only a little less convex, approximates this genus to *Sarothro-cera*, from which it would be distinguished by the form of the head, nearly unarmed prothorax, and toothed mesosternum. The example here described betrays a certain resemblance to some of the larger species of *Oncideres*.

THESTUS ONCIDEROIDES. (Pl. XXVII. fig. 7.)

T. fuscus, pube ferruginea albo irrorata tectus; antennis nigro fimbriatis; elytris pallide sub-bifasciatis.

Dark brown, covered with a short close yellowish-ferruginous pubescence, minutely speckled with whitish on the elytra; head uniformly ferruginous, lip short, not fringed; prothorax very short, its anterior and posterior portions slightly grooved, a few punctures behind the middle on each side; scutellum subscutiform; elytra finely punctured, more or less sprinkled with minute white spots, which are collected at about the middle to form a broad but rather indefinite band, behind this a similar but narrower one; the base with numerous small black granules, apex rounded; body beneath, legs, and antennæ ferruginous, the latter with its fringe brownish black. Length 14 lines.

CEROSTERNA.

Cerosterna, Blanchard, Hist. Nat. des Insectes, t. ii. p. 158 (ab. err. *Celosterna*).

CEROSTERNA APPROXIMATOR, Thomson, Syst. Ceramb. p. 552.

From the short description given by M. Thomson I am somewhat doubtful of this species. If in the reference to *C. clathrator*, and this in its turn to *C. reticulator*, it is to be assumed that the same style of antennæ characterizes the three, then the specimen in Mr. Lamb's collection, which has black simple antennæ, will probably be different.

METOPIDES.

Caput antice latissimum.

Antennæ distantes, haud fimbriatæ, scapo subcylindrico, cicatricoso.

Prothorax angustus, transversus, lateraliter armatus.

Mesosternum dentatum.

Head somewhat triangular in front, very broad along the line of the antennary tubers, which are stout and somewhat raised across the forehead. Eyes narrow, broadly emarginate. Antennæ longer than the body, distant at their insertion, not fimbriated; the scape subcylindrical, a little irregular at the apex, and strongly cicatricose; third joint as long as the scape, the rest gradually shorter, except the last, which is a little longer than the preceding. Prothorax short and narrow, irregular or rugose, the sides strongly toothed, the base bisinuate, not broader than the apex. Elytra a little depressed, broadest at the base, rounded at the apex. Legs somewhat slender; the femora not thickened; tibiæ straight; tarsi equal. Mesosternum toothed.

In its widely separated antennæ this genus resembles *Diastocera*;

perhaps in habit and colour it is most suggestive of some species of *Phryneta* (e. g. *P. caeca*); but its cicatricose antennæ will not permit it to be placed near that genus. For the present I should be inclined to put it after the African genera *Imalmus* and *Hagesata*.

METOPIDES OCCIPITALIS. (Pl. XXVII. fig. 5.)

M. fuscus, pube densissima cervina tectus, vertice nigro signata.

Dark brown, covered with a very close fawn-coloured pubescence; head rugosely punctured in front, no median line, the vertex velvet-black, bordered at the sides and spotted in the middle with ochraceous; prothorax deeply punctured, the intervals irregularly convex, sulcated behind, a black line at the apex and a black spot at the base; scutellum subscutiform, black in the middle; elytra finely and irregularly punctured, with a few small granules at the base, two black spots on each side the scutellum, and an irregular mass of spots behind the middle mixed with a few white specks; body beneath, legs, scape, and second joint of the antennæ densely pubescent, somewhat darker than the elytra, &c., with larger snowy-white setulose hairs scattered over them, rest of the antennæ with a thin greyish pubescence. Length 11 lines.

EPEPEOTES.

Antennæ graciles, art. tertio scapo duplo vel triplo longiore.

Pedes antici elongati; protibiæ curvatæ.

Mesosternum elevatum, productum.

Head exserted, subtransverse in front; antennary tubers robust, approximate at the base; eyes large. Antennæ very long in the males, the scape not produced at the apex, the third joint two or three times as long as the scape, the following shorter and more or less equal, the last sometimes the longest of all. Prothorax transverse, the propectus produced. Fore legs elongate, the tibiæ curved, not toothed, their tarsi with the basal joint spined externally in the males. Mesosternum elevated, produced or keeled in front.

Separated from *Monochamus* for the reception of those species which differ chiefly in a strongly produced mesosternum, the other characters being mostly those of that genus as it is here restricted. The type is *Lamia lusca*, Fab.

EPEPEOTES LUSCUS.

Lamia lusca, Fabricius, Ent. Syst. t. i. pt. 11. p. 283.

Besides Siam, Malacca, and Borneo, this well-known species extends through Sumatra and Java to Timor.

BLEPEPHÆUS.

Antennæ subincrassatæ, art. tertio quam scapus vix longiore: art. ult. præc. fere æquali.

Propectus abbreviatum.

Pedes antici cæteris haud longiores.

Mesosternum elevatum, dentatum.

Head not exerted, subquadrate in front; the forehead deeply sulcate; antennary tubers very robust. Antennæ rather stout, longer than the body in both sexes, pubescent, not fringed; the scape narrowly obconic; the third joint scarcely longer than the scape; the remainder gradually shorter, except the last, which is a little longer than the preceding. Prothorax transverse, strongly spined at the sides; the propectus short. Legs nearly equal in size. Prosternum rounded. Mesosternum elevated, toothed.

The relative proportion of the antennal joints, the equal size of the legs, and the toothed mesosternum would have distinguished this genus from *Monochamus*, to which the type has been referred, without the characters of the shortened head and prothorax, which, as we venture to think, accord better with the more normal *Laminæ*.

BLEPEPHÆUS SUCCINCTOR.

Monohammus succinator, Chevrolat, Rev. et Mag. de Zool. 1852, p. 417.

Monohammus sublineatus, White, Proc. Zool. Soc. 1858, p. 410.

Monohammus obfuscatus, White, l. c. p. 411.

Rather variable as to colour. This species appears to be abundant at Penang; it has also been found in India (Dacca) and in China (Hong Kong).

EPICEDIA.

Epicedia, J. Thomson, Syst. Ceramb. p. 78.

EPICEDIA PLAGIATA.

Leprodera plagiata, J. Thomson, Arch. Entom. i. p. 178.

This is the *Leprodera trimaculata*, Chev., according to M. J. Thomson—an unpublished name, I believe. The genus *Leprodera* of Dejean's catalogue was first published by M. J. Thomson with *L. elongata* as the type and *L. pleuricausta* as one of its members. The latter, which is the *Lamia carcelii* of Guérin, is separated in the 'Systema' to form the genus *Epicedia*, chiefly distinguished by the shorter antennæ in both sexes, and the shorter anterior legs. *Archidice*, Thoms., and *Euoplia*, Hope, are also nearly allied genera. I have several undescribed species which cannot be satisfactorily referred to any of these, but which are all more or less nearly related by habit and coloration, yet at the same time with characters sufficiently distinctive to probably necessitate the institution of more genera for their reception. Two of these species are in Mr. Lamb's collection, both of them have simple mesosterna; and one has the apex of the scape entire, a very important character generally. I prefer leaving these alone at present, or until they can be all more thoroughly examined.

MONOCHAMUS.

Monochamus, Serville, Ann. de la Soc. Ent. de France, t. 4. p. 91.

MONOCHAMUS FISTULATOR.

Lamia fistulator, Germar, Ins. Nov. Sp. p. 478.

Very generally distributed in India, and extending also to Australia (Brisbane), where, however, it seems to be very uncommon.

MONOCHAMUS MUSIVUS.

M. fuscus, *pube dense brunnescente indutus, elytris sparse albo irroratis; vertice capitis impunctato; scutello pallide griseo, apice rotundato; elytris singulis apice rotundatis.*

Dark brown, with a pubescence varying from pale brownish ochre to rather dark chestnut-brown, speckled on the elytra with very pale grey; head pale greyish in front, sparsely spotted with brown, each spot inclosing a puncture, the vertex fulvous, entirely impunctate; prothorax transverse, sparingly punctured on the basal half only, or nearly so; scutellum very pale greyish, subscutiform, with the apex rounded; elytra gradually decreasing from the base, rounded at each apex, rather finely punctured; body beneath ochreous or ochreous grey; legs and antennæ varying from ochreous grey to ashy. Length 7-13 lines.

It is with some hesitation that I have come to the conclusion that the several specimens now before me belong to one species. In fact this is one of those genera in which it is almost impossible in many cases to separate the species satisfactorily when it is possible to examine a good series of individuals. *M. musivus* has also been found by Mr. Wallace at Singapore and Sarawak, and in Celebes.

MONOCHAMUS SOBRIUS, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 246 (var. ?)

It would be rash to treat this as a distinct species; yet Mr. Lamb's single example scarcely accords with my type, which is from North China, and which is not to be distinguished from another found by Mr. Wallace at Sarawak. It is larger, the pubescence thinner and more ashy, the punctures more decided (but this may in part be owing to its finer pubescence), and the scutellum is uniformly paler and more conspicuous.

IMANTOCERA.

Imantocera, J. Thomson, Arch. Entom. i. p. 188; Essai, &c., p. 102.

IMANTOCERA PLUMOSA.

Cerambyx plumosus, Olivier, Entom. iv. no. 67. p. 98, pl. 20. f. 152.

Imantocera and the following genera of this subfamily are very aberrant members of the *Lamiinæ*, and are but slightly connected among themselves. Although three species of this genus are described, it is somewhat doubtful if they be not all referable to one, or at most forming only geographical subspecies. M. J. Thomson's *I. plumosa* is said to be *I. penicillata*, Hope*. The species or sub-

* See Journ. of Entom. i. p. 192.

species extend from Assam to Flores. Mr. Wallace's specimen from the latter is an additional variety or subspecies.

GNOMA.

Gnoma, Fabricius, Syst. Eleuth. ii. p. 315.

GNOMA DISPERSA.

G. fuscescens, pube brevi grisea tecta; elytris pallide ochraceo irroratis, prothorace duplo longioribus.

Brownish, inclining to dark chestnut, with a thin short greyish pile, the elytra sprinkled with more or less confluent pale-ochreous spots; head sparingly punctured in front, varied with flavous above the eyes and mouth; prothorax about half as long as the elytra in the male, strongly corrugated; scutellum semicircular, entirely pubescent; elytra rather narrow, the sides nearly parallel, except at the posterior third, rather closely punctured; body beneath, legs, and antennæ with a sparse greyish pile, the tarsi nearly equal in size and outline. Length 10 lines.

This description is made from a male in my own collection. Mr. Lamb has only a single specimen, also a male, differing from the above in having the elytra more spotted, a little longer prothorax, and very decidedly longer legs, with the fore tarsi considerably longer and broader than the others. It may probably be found to be sufficiently well marked to deserve a specific, or quasi-specific, name; but in a genus so difficult as *Gnoma* it is almost impossible to say if such differences are permanent. I have never seen anything answering to Fabricius's description of *G. longicollis*: "nigra, ferrugineo irrorata." Olivier's figure (to which he refers) is, to me, an unknown species, and evidently a female.

MECOTAGUS.

Prothorax *subcylindricus, latera haud, vel parum antice, incurvata.*
Femora *linearia.*

Tarsi articulo basali duobus sequentibus simul sumptis æquali.

Head subtransverse in front; antennary tubers very stout, divergent, but approximate at the base. Eyes distant from the mouth. Antennæ very long in the male, the scape obconic, the third joint as long as or longer than the fourth and fifth together, the rest subequal in the male, except that the last is considerably longer than the preceding joint; in the female the joints slightly decreasing from the sixth or seventh. Prothorax elongate, especially in the male, subcylindrical, narrower anteriorly in the male, but scarcely or only very slightly incurved. Elytra oblong, subdepressed, truncate at the apex. Legs long, slender; femora linear; tibiæ gradually longer from the posterior to the anterior; tarsi elongate, the basal joint in the male as long as the two following together. Prosternum simple. Mesosternum with a projecting tooth.

This genus is founded on the *Cerambyx tigrinus*, Olivier, a con-

gener of which has been referred by Mr. White* to *Pelargoderus* of Serville, quite another genus altogether. A single specimen, a female, is in Mr. Lamb's collection, which agrees with Olivier's figure and description, also taken from a unique example, whose locality was at that time unknown. The genus differs from *Gnoma* in the form of the prothorax, linear femora not thickened in the middle, and the elongate basal joint of the tarsi.

MECOTAGUS TIGRINUS.

Cerambyx tigrinus, Olivier, Entom. iv. no. 67. p. 401, pl. 19. f. 142.

M. guerinii, White, apparently the commoner species, differs from this, *inter alia*, in having fewer and isolated spots, not crowded and more or less confluent, as in the one before us.

OLENECAMPTUS.

Olenecamptus, Chevrolat, Mag. de Zool. 1835, p. 134.

OLENECAMPTUS BILOBUS.

Saperda biloba, Fabricius, Syst. Eleuth. ii. p. 324.

Olenecamptus serratus, Chev. Mag. de Zool. 1835, p. 134.

Authades indianus, J. Thomson, Arch. Entom. i. p. 192.

A common species, found all over India, and as far south as Timor. It is also *said* to have been found in Australia. *O. serratus*, Chev., is a remarkable variety with the inner edge of the fore tibiæ minutely serrated. The basal elytral spots are sometimes tipped with the richest carmine.

OLENECAMPTUS OPTATUS.

O. fusco-brunneus, *pube grisea brevi tectus*; *scutello concolore*; *capite, prothorace elytrisque maculis rotundatis niveis ornatis*.

Dark reddish brown, covered with a short greyish pile, two or three spots on the cheek, one behind the eye, four on the prothorax, and four on each elytron, *i. e.* seven on each side from the eye to the apex of the elytra, snowy white; head broader than the prothorax, remotely punctured in front, the vertex impunctate; prothorax about half as long again as broad, transversely corrugated; scutellum semicircular, greyish brown; elytra rather closely punctured, the sides gradually narrowing posteriorly, the apices slightly dehiscent, each ending in a short mucro; body beneath and legs with a thin greyish-white pile; antennæ scabrous, slightly pubescent. Length 6-10 lines.

I have not seen this species from India; otherwise it appears to be scarcely less widely distributed than the preceding. The description is taken from one of Mr. Wallace's specimens from Singapore. *Schæniocera sex-notata* of Dejean's catalogue is probably this insect.

* Ann. & Mag. Nat. Hist. ser. 3. ii. p. 274.

OLENECAMPTUS QUIETUS.

O. luteus, supra pube flavescente dense tectus, infra niger, nitidus, interrupte albido pubescens; antennis fuscis.

Luteous, with a closely set yellowish pile above, beneath glossy black, the propectus, sides of the postpectus, and abdomen with a whitish pile; head nearly impunctate; prothorax scarcely longer than broad, not corrugated; scutellum semicircular; elytra with the sides nearly parallel at the basal half, then slightly diverging until towards the apex, where they are rounded off; the apex itself of each slightly truncate, but scarcely mucronate; legs glossy brown, the tibiæ and tarsi of the fore and intermediate legs luteous; antennæ brown, not scabrous. Length 5 lines.

Of this new and very distinct species there is only a single example in the collection.

ONOCEPHALINÆ.

ATOSSA.

Atossa, J. Thomson, Syst. Ceramb. p. 100.

ATOSSA ATOMARIA. (Pl. XXVI. fig. 6.)

A. fuscescens, nitida, pube sparsa tecta; capite prothoraceque flavo vittatis; elytris seriatim albido maculatis; lateribus infra et fronte capitæ albidis.

Pale brown, with a thin pubescence; head pale greyish in front, forehead, behind the eye, and vertex brown, the latter impunctate, with two yellowish longitudinal lines corresponding with two on the prothorax, a similar line also on each side, disk of the prothorax very slightly punctured; scutellum transversely scutiform; elytra finely punctured, speckled with numerous clear greyish pubescent points arranged to a certain extent in longitudinal lines; body beneath dark chestnut-brown, shining, with a sparse silvery pubescence, which is dense along the sides of the breast; legs and antennæ with a pale greyish pile, the latter about two-thirds the length of the body. Length 6 lines.

A. strenua, M. J. Thomson's type, is from Java. The present species has the elytra finely but very distinctly speckled with greyish, and the front uniformly greyish, except the space in a line with the antennary tubers.

HIPPOPSINÆ.

NYCTIMENE.

Nyctimene, J. Thomson, Arch. Ent. i. p. 314.

NYCTIMENE AGRILOIDES, J. Thomson, *l. c.*

Not uncommon apparently in the Malayan region. M. J. Thomson has placed this genus in a "groupe" to itself, as it differs from the rest of its subfamily in not having its antennæ approximate at the base. I do not think, however, that it would be natural to sepa-

rate it from such genera as *Pothyne* and its allies, as, it seems to me, it is one of those aberrant forms in which a technical character must give way to an obvious affinity.

TETRAGLENES.

Tetraglenes, Newman, *The Entom.* p. 300.

TETRAGLENES INSIGNIS, Newman, *l. c.*

A remarkable and interesting form, having four very distinct eyes placed at a distance from the antennæ, and therefore not simply divided for the more easy play of those organs as in *Astathes*, *Tetraopes*, and many others. *Eucomatocera*, an allied genus from the same region, has the eyes slightly connected; but otherwise they have the same position and appearance. In *Euthuorus* and *Spalacopsis*, American forms, the upper eyes disappear. *Dorcasta*, another near ally, has the eyes of the normal character; but somewhat intermediate is that most singular genus *Aprosopus*. The specific name of this insect was given unfortunately on the antithetical principle; it is small and dull-coloured, and its peculiarities are only distinguishable under the lens.

SAPERDINÆ.

ENTELOPES.

Entelopes, Guérin, *Iconog. du Règne An.* p. 245.

ENTELOPES GLAUCA, Guérin, *l. c.*; Pascoe, *Trans. Ent. Soc.* ser. 2. iv. pl. 16. f. 2.

Found also in Borneo, Singapore, and Java.

ENTELOPES SIMILIS.

E. rubro-fulva, *subnitida*, *infra nigra*; *scutello fere semicirculari*, *apice haud lobato*.

Reddish fulvous, slightly nitid, especially on the head and prothorax; head and prothorax nearly glabrous, almost obsoletely punctured, the latter much shorter than the former; scutellum nearly semicircular, not elevated or bilobed posteriorly as in *E. wallacei*; elytra much punctured, with numerous small glossy granules at the base (one over each puncture); body beneath, intermediate and posterior femora, except at their apices, and their coxæ black, their trochanters yellow; antennæ with the terminal joints blackish. Length $4\frac{1}{2}$ (♂)– $5\frac{3}{4}$ (♀) lines.

Extremely like *Entelopes wallacei*, but with a differently formed scutellum, the upper surface more or less glossy (more so in the male), larger and more numerous granules on the elytra, and the intermediate femora, as well as the posterior, black.

ENTELOPES IOPTERA, Pascoe, *Trans. Ent. Soc.* ser. 2. iv. p. 108, pl. 23. f. 8.

Taken also by Mr. Wallace at Sarawak and Singapore. A more

detailed account of this genus is given by M. J. Thomson in his 'Essai, &c.,' p. 345.

SERIXIA.

Serixia, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 45.

Iolea (*Iole*), Pascoe, *op. cit.* iv. p. 254.

SERIXIA PROLATA.

Iole prolata, Pascoe, *l. c.*

Not uncommon at Sarawak. A somewhat thick-set uniformly coloured luteous species with the apices of the elytra rounded.

SERIXIA VARIANS.

S. lutea, pube nitida argenteo-velutina tecta; antennis totis infuscatis.

Luteous, covered with a shining silvery velvet pile, varying when viewed with and against the light; head and prothorax very slightly punctured, the latter much narrower than the head, and gradually narrowed behind from nearly the anterior border; scutellum small, rounded behind; elytra seriate-punctate, the punctures small, the sutural angle at the apex slightly produced; body beneath darker yellow, and less pubescent; antennæ two or three times as long as the body. Length 4 lines.

Distinguished from *S. prolata* by its glossy velvet-like pubescence, prothorax tapering behind, the small punctures on the elytra, antennæ entirely brownish black, &c.

SERIXIA BASALIS.

S. lutea, elytris dimidio basali griseo-nigris, utrinque macula alba prope scutellum sita.

Pale luteous; head and prothorax darker, with an exceedingly delicate pile and impunctate; the head considerably wider than the prothorax, the latter gradually narrowed to the base; scutellum truncate behind; elytra seriate-punctate, the rows and the punctures widely apart, pubescence very fine, much denser than on the prothorax, and varying with the light, sutural angle of the apex forming a short mucro; body beneath entirely luteous; antennæ brownish black, the base of the fourth joint luteous. Length 3-4 lines.

A very distinct species, which may take its place immediately after my *S. cephalotes*.

SERIXIA LONGICORNIS.

Iole longicornis, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 255.

Taken also by Mr. Wallace in Singapore, Batchian, Ceram, and Waigiou. It is a narrow palc-luteous species, with the apices of the elytra rounded. A variety in the collection is less pubescent, with the basal antennal joint testaceous.

SERIXIA PRASINATA. (Pl. XXVII. fig. 1.)

S. plumbeo-viridescens, pube velutina albicante tecta; labro, corpore infra pedibusque luteis; antennis nigris.

Pale leaden green, the greener hue predominating on the elytra, and covered with a satiny whitish pile, varying with the light; head very distinctly punctured in front, the vertex and prothorax nearly impunctate, the latter slightly narrower than the head, and the sides a little narrowed towards the base; scutellum rounded behind; elytra lightly seriate-punctate, the sides gradually narrower posteriorly, the apices obliquely truncate, each angle produced into a very slight mucro; body beneath and legs, lip, and palpi luteous; antennæ black. Length 4-5 lines.

One of Mr. Lamb's specimens is almost entirely of a leaden colour above, and of a much darker luteous beneath, but does not otherwise differ. The species is very distinct. In the 'Journal of Entomology' (vol. i. p. 354) I have proposed to unite *Iolea** to *Serixia*: the slight difference in habit, and the more depressed form of the latter, which, in conjunction with its fimbriated antennæ, induced me to consider the three or four species of the supposed group to belong to two veritable but nearly allied genera were subsequently bridged over by newly discovered forms. M. J. Thomson, however, in his 'Systema,' regards them not only as distinct, but refers *Iolea* to his "groupe" Saperditæ veræ, and *Serixia* to his "groupe" Amphionychitæ.

XYASTE.

Articulus tertius antennarum incrassatus, sæpissime hirsutus.

Scapus tenuiter cylindricus.

Tarsi antici dilatati, articulis tribus basalibus æqualibus.

As this genus has only one described species, and there are several others in Mr. Wallace's collection, I shall reserve further remarks for the 'Longicornia Malayana,' only observing that it is distinguished (*inter alia*) from *Serixia* by its thickened third antennal joint, which, in the majority of the species, is also closely covered with short hairs, so as to give it the appearance of being thicker than the scape.

XYASTE NIGRIPES. (Pl. XXVII. fig. 2.)

Iole nigripes, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 255.

An insect of a uniform dull testaceous colour, with the third joint less thickened than in any of the other species, and therefore not the most typical of the genus.

ASTATHEINÆ.

· ASTATHES.

Astathes, Newman, The Entom. p. 299 (1842).

Tetraophthalmus, Blanchard, Hist. Nat. des Ins. ii. p. 161 (1845).

* *Iole* was first proposed; but finding very soon after that a genus of birds was already so designated, I altered it to *Iolea*.

ASTATHES SPLENDIDA.

Cerambyx splendidus, Fabricius, Ent. Syst. t. i. pt. 2. p. 263.

This is also an Indian species.

ASTATHES TERMINATA, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 109.

Varies in the extent and depth of the yellow at the apex of the elytra; the abdomen is also frequently more yellowish than brown. In some examples a sort of areola may be noticed round the punctures on the posterior part of the elytra, a peculiarity which is very remarkable in *A. perplexa*, Newm.

ASTATHES NIGRICORNIS, J. Thomson, Syst. Ceramb. p. 560.

An entirely fulvous species, with black antennæ. A marked callosity on each side of the prothorax will distinguish it from an undescribed species from Morty with a similar coloration. A fourth species, with the antennæ imperfect, is in the collection. It has a yellow head, with a dusky patch behind each eye; otherwise it approaches very closely to an undescribed species from Singapore. The distribution of the two colours, blue and yellow, and the intensity of the black, are too variable in this genus to carry much weight in the determination of the species. The *Astatheine* are remarkable for the peculiar modification of the metasternum: this is prolonged anteriorly between the intermediate coxæ, so as to completely overlap that part of the mesosternum lying between them.

PHYTÆCIINÆ.

GLENEA.

Glenea, Newman, The Entom. p. 301.

Sphenura, Laporte de Castelnau, Hist. Nat. des Ins. ii. p. 489, 1840 (nec Lichtenstein, 1823).

GLENEA ELEGANS.

Saperda elegans, Olivier, Coléop. iv. no. 68. p. 15, pl. 4. f. 40 (1795).

Stenocorus pictus, Fabricius, Syst. Elcuth. ii. p. 306 (1801).

Of this extensive and very difficult genus I have about twelve species or quasi-species, which may be probably referable to Olivier's *Saperda elegans*. They are all of the richest metallic blue, with snowy-white spots and stripes, varying in length from 8 lines to $1\frac{1}{4}$ inch. The spots and stripes are without doubt very uncertain characters, and the minor differences, for there are no others, are very unsatisfactory on paper. Nevertheless it may be perhaps necessary to name some of the extreme forms. Mr. Lamb's specimens have yellow legs; but this scarcely seems of specific importance. *Glenea delia*, J. Thoms., from the character "humeris fere nullis," is doubtless distinct. Another *Glenea* in the collection has the elytra rapidly narrowing from the shoulders, and rather suddenly rounded near the apex, which is much narrower and at the same time more

deeply emarginate than in the more typical forms of *G. elegans*. Viewed as one polychromatous species, it extends from India to New Guinea, but is apparently nowhere more common than in Malacca.

GLENEA PORPHYRIO. (Pl. XXVIII. fig. 5.)

G. nigro-purpurea, nitida; *prothorace crebre punctato, in medio bituberculato*; *elytris grosse punctatis, lateribus cyaneo micantibus*; *pedibus flavis*; *tarsis infuscatis*.

Blackish purple, shining, the pubescence nearly obsolete; head narrow between the eyes, which are nearly contiguous above; prothorax oblong, gradually widening towards the base, the sides straight, the disk bituberculate, closely and coarsely punctured; scutellum narrowly triangular; elytra coarsely punctured, elongate, gradually tapering from the base, the shoulders acutely prominent, the sides with a bluish tinge, apices slightly obliquely truncate with the outer angle produced; body beneath chalybeate blue, with a whitish pile on the sterna; legs yellow, the tarsi brownish, the posterior only partially so; antennæ purplish black. Length 12 lines.

A very distinct species, with an unusually narrow head and approximate antennary tubers, at variance with the characters of the genus. The elytra have faint indications of a bluish pubescent spot on the centre of each, and also at the apex.

GLENEA BLANDINA, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 259.

Mr. Lamb's specimens rather depart from the typical form in having the sutural region pale greyish brown. In other respects, however, they agree. The species is distinguished by the first three joints of the antennæ, underneath, being of a beautiful cobalt-blue. Another species, confined to a single example, has a similar coloration; but the spots are white, not blue, the elytra more obliquely truncate at the apex, the form narrower, and the eighth and ninth joints of the antennæ pure white. It is without doubt distinct.

GLENEA RUFINA, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 259.

One of the four species in the present collection that is found also in Burmah. It is a pale but clear reddish chestnut-colour, with greyish or greenish-grey elytra.

GLENEA NEANTHES. (Pl. XXVIII. fig. 4.)

G. rufo-lutea; *elytris castaneis, nitidis, niveo maculatis, regione suturali et lateribus rufo-luteis, immaculatis*; *antennis nigris*.

Reddish luteous, partially pubescent; head slightly punctured; prothorax equal in length and breadth, rounded at the sides anteriorly, vertically compressed behind, the disk with few punctures and two small round black spots; scutellum scutiform; elytra broad at the base, gradually narrowing posteriorly, a broad brown nearly glabrous stripe from the shoulder to the apex, limited externally by the carina, but shading off towards the suture, and having five snowy-white pubescent spots; body beneath pale ferruginous, with an

ochreous pile; legs luteous, tarsi darker; antennæ black. Length 7-10 lines.

A very distinct and handsome species.

GLENEA EXTENSA, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 258.

Found also by Mr. Wallace at Singapore and Sarawak.

GLENEA OUDETERA.

Stibara oudetera, J. Thomson, Arch. Ent. i. p. 143.

Also from Sarawak.

GLENEA ANTICEPUNCTATA.

Stibara anticepunctata, J. Thomson, Arch. Ent. i. p. 142.

M. J. Thomson's type is from Java. It appears to be a common species at Singapore.

GLENEA VESTA. (Pl. XXVIII. fig. 3.)

Glenea pulchella, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 260.

I have altered the specific name *pulchella*, it having been previously used by Hope. It appears to be rather a common species in Singapore and at Sarawak, and is found also in Mysol and Ceram.

GLENEA ALGEBRAICA.

Stibara algebraica, J. Thomson, Arch. Ent. i. p. 144.

Also from Java and Borneo.

GLENEA JUBÆA.

G. rufo-brunnea, fulvo vittata, sparse pubescens; prothorace angusto; elytris trivittatis, vitta intermedia obliqua, abbreviata; antennis concoloribus.

Reddish brown, with fulvous stripes, sparingly pubescent; head nearly glabrous between the eyes, and coarsely punctured; prothorax closely punctured, oblong, narrow, vertically compressed posteriorly, the disk with three fulvous stripes, and two paler stripes on each side; scutellum semicircular, fulvous; elytra tapering posteriorly, moderately punctured, the apex with its outer angle strongly mucronate, each elytra with three stripes, one sutural, one near the carina, and an intermediate short oblique one at the base; body beneath with a close pale-ochreous pile, divided by three glabrous stripes; legs dark testaceous; antennæ entirely dark brown. Length 5 lines.

Mr. Lamb has a specimen very near this species in most respects, but with a much broader head and shorter scape. The outer stripe on the elytra is also wanting. It is probably distinct.

GLENEA CUNILA.

G. capite, prothorace, scutello et regione suturali pube velutina grisea tectis, cateris elytrorum fuscis, glabris; antennis pedibusque fuscis, his femorum basi rufescentibus.

Head, prothorax, scutellum, and broad stripe along the sutural region covered with a dense greyish velvety pile, rest of the elytra brown and glabrous; head and prothorax remotely punctured, the latter gradually narrowed posteriorly, the disk with a slight longitudinal ridge; elytra narrow, gradually tapering to the apex, the glabrous brown portion only punctured, the apices obliquely emarginate with a long mucro at the external angle; body beneath greyish pubescent; antennæ blackish brown; legs brown, base of the femora reddish; posterior tarsi greyish. Length 5 lines.

Allied to *G. mathematica*, but with the head and prothorax entirely unicolorous. The description is taken from one in Mr. Wallace's collection. In Mr. Lamb's example there is also a narrow greyish stripe on the brown portion of the elytron, &c.

GLENEA ALYSSON. (Pl. XXVIII. fig. 8.)

G. capite prothoraceque fuscis, hoc et vertice in medio vitta ochracea; elytris brunneis, extus infuscatis, apice singulorum macula nivea ornatis; antennis nigris, articulis quatuor ultimis albis.

Head dark brown, a white line bordering the eye in front, the vertex with an ochraceous spot continuous with a broad stripe of the same colour on the prothorax; cheeks, stripe on the side of the prothorax, and all the under parts pale ashy; scutellum ochraceous; elytra pale brown, the outer side darker, a snowy-white spot on each at the base of the strongly marked exterior mucro; legs testaceous, the lower half of the posterior tibiæ and their tarsi white; antennæ black, the last four joints white. Length 5-6 lines.

The colouring of the antennæ and the absence of stripes on the elytra will readily distinguish this species. The description is from one of Mr. Wallace's specimens taken at Singapore.

GLENEA ŒME. (Pl. XXVIII. fig. 2.)

G. capite prothoraceque niveis, illo vertice nigro, hoc vittis duabus nigris; elytris testaceo-brunneis, pube sparsa albida tectis; antennis pedibusque testaceis, illis articulis duobus basalibus nigris, articulo ultimo albo.

Head and prothorax snowy white, the former with the vertex and behind the eyes black, the latter with a broad black stripe on each side; scutellum large, subscutiform, white; elytra rather short, gradually tapering posteriorly, the outer angle of the apex strongly mucronate, covered with a uniform thin whitish pile; body beneath reddish ferruginous, subglabrous, the sides with a dense snowy-white pile; legs testaceous; antennæ testaceous, the two basal joints black, the last white. Length 4 lines.

There is but one example of this species, but it is very distinct from any other known to me.

GLENEA ILLUMINATA.

Stibara illuminata, J. Thomson, Arch. Entom. i. p. 144.

My specimen from Singapore has testaceous antennæ, except the two basal joints. Mr. Lamb's specimen has black antennæ, except the underside of the third joint, which is of a cobalt blue. M. J. Thomson does not mention the antennæ at all.

GLENEA MANTO. (Pl. XXVIII. fig. 7.)

G. nigra; prothorace dimidio basali, elytrisque plaga media magna communi et macula apicali pube crassa albida (vel ochracea), indutis.

Black, with a short black pubescence, mixed with a few setulose hairs; the posterior half, or rather more, of the prothorax, a large median patch common to both elytra, and a spot at the apex of each densely covered with a very coarse whitish or ochraceous pubescence; head with two white stripes in front; prothorax slightly rounded at the sides, scarcely contracted behind; scutellum rounded, black; elytra tapering posteriorly, the pubescence nearly hiding the punctures in fresh specimens, the external mucro at the apex of moderate length; body beneath and legs testaceous, sparsely pubescent; antennæ brownish. Length 5-6 lines.

Similar in the disposition of its colours to *Glenea funerula*, Thoms.*; but the pubescence (*inter alia*) of that species, so far as the white portion of it is concerned, is exceedingly short and dense, so as to look like a sort of incrustation. The white colour, however, varies; in my Sarawak specimens it is of a pure ochreous tint, in Mr. Lamb's specimen it is snowy white.

GLENEA ANTHYLLIS. (Pl. XXVIII. fig. 6.)

G. corpore pube densissima sulphurea, nigro maculata induto; elytris ante medium maculis duabus, apicem versus fasciis duabus latis (aliquando ad suturam interruptis) nigris.

Everywhere covered, except the legs and antennæ, with a dense bright sulphur-yellow pubescence spotted with black; head with the vertex and stripe between the eyes black; prothorax with four spots, or the two anterior united and forming a band; elytra rather short, the apex nearly directly truncate, the outer angle suddenly produced into a mucro, a large round spot anteriorly on each, posteriorly two bands, one nearly apical, either united or one or the other more or less interrupted at the suture; body beneath entirely yellow; legs pale testaceous; antennæ black. Length 6 lines.

Near *G. sulphurella*, Wh., which has, however, many-spotted elytra without apical bands. Found also in Sumatra and Borneo. Another *Glenea* in the collection is closely allied to *G. fricator*, Dalm., but with a yellowish head, not black. The whole of the genus *Glenea* will require more ample materials than any we now possess before we can be sure of the veritable species. What is generally considered to be conclusive evidence is not wanting to show that a form so entirely different as *G. grisea* is but the male

* *Stibara funerula*, Arch. Ent. i. p. 141. At least if I am right in my determination of it.

of *G. fulvo-maculata*; and this again is probably only a variety of *G. aroensis*. It is a misfortune that these and many other equally important questions can only be solved by naturalists on the spot; but in the meantime we must make the best of what is before us.

TANYLECTA.

Antennæ basi approximatae.

Pedes graciles; femora linearia; tibiæ intermediæ emarginatae.

Ungues simplices in utroque sexu.

Head nearly quadrate in front, the antennary tubers obsolete. Eyes large, the upper lobe narrow. Antennæ shorter than the body, approximate at the base, the scape subcylindrical, slightly shorter than the third joint, which is the longest, the rest gradually shorter, all nearly cylindrical, the last a little thickened. Palpi slender. Prothorax oblong, scarcely broader than the head, regular above, the sides towards the base vertically impressed. Elytra elongate cuneate, broadest at the base, the shoulders prominent, the sides abruptly declivous, the angle forming a carina, the apex of each acuminate externally. Legs slender, unequal, femora linear, intermediate tibiæ emarginate; tarsi with the basal joint elongate; claws simple in both sexes. Anterior acetabula slightly angulated. Pro- and mesosterna rounded.

The approximate antennæ and simple claws might seem to separate this genus from the *Phytæcinæ*; but, on the other hand, its location at any distance from *Glenea* would be most unnatural. The female is much stouter than the male, but there is no other difference. The upper surface has deeply impressed punctures, much coarser on the elytra, on which a second carina is found at the side, commencing a little distance from the shoulder, but both terminating at the apex.

TANYLECTA LAMBII. (Pl. XXVIII. fig. 9.)

T. nigra, nitida, lineis maculisque albo pubescentibus ornata; antennis albis, nigro annulatis.

Black, nearly glabrous, shining, with lines and spots composed of short white hairs; head with two central white lines and a line behind each eye, which are continued on the prothorax, the central, however, almost or quite contiguous, and the lateral having a supplemental line below it; scutellum scutiform, white; elytra covered with small round white spots, the suture bordered with white; body beneath black, with a broad white stripe from the cheeks to the end of the abdomen, the sternal and abdominal portions of the stripe with glabrous black patches; legs and centre of the abdomen with a delicate greyish pile; antennæ not so long as the body, white, the joints from the fourth to the tenth, the eleventh entirely, black. Length 10 lines.

ZOSNE.

Antennæ basi distantes; articuli ultimi sex abbreviati.

Pedes mediocres; tibiæ intermediæ integræ.

Ungues basi obtuse dentati.

Head rather transverse in front; antennary tubers short, distant. Eyes moderate, deeply divided. Antennæ shorter than the body, sublinear, the scape subcylindrical, as long or a little longer than the third joint, the fourth and fifth equal and shorter, the last six very short, all nearly cylindrical, except the last, which is ovate and pointed. Prothorax quadrate, regular, not broader than the head. Elytra cuneate, much broader than the prothorax at the base, the sides abruptly declivous, the angle scarcely forming a carina, the apex subtruncate. Legs moderate, slender; the intermediate tibiæ entire; tarsi with the basal joint short; claws obtusely toothed at the base. Anterior acetabula slightly angulated. Pro- and mesosterna rounded.

The peculiar shortening of the terminal joints of the antennæ (as in many *Apomecyninæ*) will readily distinguish this genus, which in style of coloration bears a striking resemblance to the last (*Tanylecta*). The two specimens before me appear to be females; almost as a matter of course, therefore, the toothed claws will characterize both sexes, not the male sex only, as it appears to do generally in *Glenea*.

ZOSNE CINCTICORNIS. (Pl. XXVIII. fig. 11.)

Z. nigra, subnitida, lineis maculisque albo pubescentibus ornata; antennis albis, medio et apice nigris.

Black, nearly glabrous, subnitid, with lines and spots of short white hairs; head with two central white lines on the vertex, another behind the eye, the front and cheeks white; lines on the head continued on the prothorax, the central, however, contiguous, the intervals sparsely pubescent and rather finely punctured; scutellum white, densely pubescent; elytra coarsely punctured, with numerous irregular white spots; body beneath with a white silvery pile, the sterna striped with black, two blackish spots on the side of each abdominal segment; legs and antennæ with a close greyish-white pubescence, the latter a little longer than half the length of the body, and having the upper half of the fourth and the whole of the fifth and eleventh joints black. Length 8 lines.

OBEREA.

Oberea, Mulsant, Hist. Nat. des Coléopt. de Fr., Longicornes, p. 194 (1839).

Isosceles, Newman, The Entom. p. 318 (1840).

OBEREA CURIALIS.

O. nigra; capite, prothorace, pedibus anticis et femoribus intermediis rubris; abdomine segmentis duobus basalibus argenteis.

Black; head, prothorax, anterior legs, and intermediate femora deep orange-red; metasternum and abdomen black, the latter with its two basal segments silvery white; head and prothorax finely punctured, the prothorax transverse, neither wider nor longer than the head; scutellum narrow, truncate, red, silvery in certain lights;

elytra much broader than the prothorax at the base, longer by 7 to 2 than the head and prothorax together, coarsely punctured, the intermediate carina strongly marked, the apices obliquely truncate, not mucronate at the angles; antennæ shorter than the body, the third joint much longer than the fourth, the basal joint red, the remainder black. Length 9 lines.

Description from a Sumatran specimen.

OBBEREA CLARA.

O. fulvo-testacea; elytris pube albescente velutina indutis, lateribus infuscatis; antennis nigris.

Fulvous testaceous, inclining to pale luteous on the head and prothorax, the elytra covered with a whitish velvety pubescence; head and prothorax finely punctured, the latter rather narrower and longer than the head; scutellum scutiform; elytra seriate-punctate, the external margin and apex brownish; body beneath and legs pale luteous, the posterior tarsi sometimes brownish; antennæ black, shorter than the body, the third joint the longest. Length 7-9 lines.

I have specimens from Mr. Wallace, taken at Singapore.

OBBEREA TENUATA.

O. angustata, subfuliginosa; capite prothoraceque rufis; elytris pube albescente velutina indutis.

Narrow and nearly linear throughout, pale fuliginous, with the head and prothorax rufous, the elytra dull reddish brown as to the derm; but, viewed through the velvety whitish pubescence, they appear of a dark-greyish or smoky colour; head rather finely punctured, broader than the prothorax, the latter much longer than broad, with a yellowish pubescence and minute scattered punctures; scutellum oblong, dark brown; elytra seriate-punctate, darker at the apex; body beneath, except the antepectus, and legs blackish, with a greyish-white pubescence; antennæ black, the third joint shorter than the fourth. Length 6 lines.

Described from a specimen taken in Sarawak. It seems to me that Mr. Newman's genus *Isosceles* has not the slightest claim to be preserved. Why he separated it from *Oberea** does not appear. M. James Thomson, who has adopted it, relies chiefly on the antennæ "corpore multum longiores;" but Mr. Newman expressly says of his genus that they are "corpore plerumque breviores." *Oberea* is a very extensive group, but with species often varying according to the individual, and therefore very difficult to determine satisfactorily. The three species described above are, however, unusually well marked.

* In my 'Longicornia Malayana' I have proposed to separate *Oberea* and its allies from the subfamily *Phytæciinæ*; I fear, however, that the characters on which I relied are more than usually questions of degree, too numerous and graduated to lead to anything satisfactory in adopting them.

ECTINOGRAMMA.

Ectinogramma, J. Thomson, Syst. Ceramb. p. 96.

ECTINOGRAMMA COLLARE. (Pl. XXVIII. fig. 10.)

E. nigrum, subnitidum; prothorace pedibusque anticis, tarsis exceptis, rufo-castaneis.

Very long, narrow, and nearly linear, black, subnitid, the prothorax and fore legs, except the tarsi, reddish chestnut; head deeply cleft between the antennæ, clothed with long pale-greyish hairs in front; prothorax finely punctured, scarcely wider than the head, the sides nearly parallel; scutellum narrow, rounded behind; elytra about five times as long as the prothorax, and but slightly broader, the shoulders rounded, rather irregularly punctured, the apex of each obliquely truncate; body beneath and legs, except the anterior pair, glossy black; antennæ setaceous, 12-jointed, rather longer than the body, the basal joint elongate, cylindrical, its apex entire, the third joint considerably shorter, but longer than the fourth, the rest very gradually shortened, the twelfth the shortest.

A most interesting genus, which M. J. Thomson has referred to the *Hippopsinæ* on account of its contiguous antennary tubers—a character, it is true, quite at variance with the *Obereinæ*, but which, it appears to me, should yield to the insect's more obvious affinities with that subfamily. His specimen was imperfect as to the antennæ; I have therefore subjoined a description of them. It will be seen that they have the remarkable character of being 12-jointed; but whether this is a sexual peculiarity or not cannot now be decided. *Ectinogramma isosceloides*, the type, differs from the above in having the head red: nothing is said about the legs; it may be therefore inferred that they are unicolorous.

NEDYTISIS.

Elytra lateraliter haud deflexa.

Prothorax capite latior, antice et postice constrictus et sulcatus.

Femora postica elongata, cæteris brevibus.

Coxæ anticæ contiguæ.

Head broad in front; antennary tubers small and widely apart. Eyes rather prominent, narrowly emarginate. Antennæ as long as the body, setaceous, fimbriated beneath, the scape slender towards the base; third joint longer than the scape, the remainder gradually shorter. Prothorax narrower than the head, cylindrical, constricted and grooved anteriorly and posteriorly. Elytra short, nearly parallel, not bent down at the sides, except a little at the shoulders, their apices slightly dehiscent and pointed. Legs very unequal, the anterior and intermediate pairs (especially their femora) short, the posterior femur two or three times as long as the anterior; basal joint of the posterior tarsi as long as the next two together. Claws broadly appendiculate. Anterior coxæ prominent, contiguous, their acetabula slightly angulated.

This genus, which has something of an *Obrioid* habit, has the anterior coxæ perfectly contiguous. The narrowly constricted prothorax posteriorly is also characteristic. It is perhaps nearest some of the African forms of *Phytæcia*, not yet clearly understood, e. g. *Obereopsis*, Chev. Col. (? *Nitocris*, Thoms.).

NEDYTISIS OBRIOIDES. (Pl. XXVIII. fig. 1.)

N. rufo-testacea; *elytris dimidio apicali fuscescentibus*; *abdomine segmentis tribus apicalibus argenteis*.

Reddish testaceous, the apical half of the elytra brownish; head and prothorax minutely pubescent, impunctate, a finely raised line on the vertex, but becoming impressed between the eyes, and so continued to the mouth; eyes and mandibles black; prothorax narrowest posteriorly; scutellum small, rounded; elytra subseriate-punctate at the base, more irregularly posteriorly, the apex of each dehiscient and terminating in a sharp angle; body beneath reddish testaceous, thinly pubescent, the posterior coxæ, posterior margin of the meta-thorax, and last three abdominal segments covered with a coarse bright silvery pubescence; legs and two basal joints of the antennæ reddish testaceous, rest of the antennæ blackish. Length 5 lines.

[To be continued.]

EXPLANATION OF PLATES XXVI., XXVII., XXVIII.

PLATE XXVI.

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|---|---|
| Fig. 1. <i>Cuphisia callosa</i> , p. 230. | Fig. 7. <i>Agelasta lambii</i> , p. 235. |
| 2. <i>Sodus ursulus</i> , p. 237. | 8. — <i>substrigosa</i> , p. 236. |
| 3. <i>Cacia herbacea</i> , p. 233. | 9. — <i>balteata</i> , p. 236. |
| 4. — <i>melanopsis</i> , p. 232. | 10. <i>Ixais episomoides</i> , p. 239. |
| 5. <i>Cyartidium cribrosum</i> , p. 240. | 11. <i>Obages palparis</i> , p. 243. |
| 6. <i>Atossa atomaria</i> , p. 254. | 12. <i>Cenodocus granulosus</i> , p. 238. |

PLATE XXVII.

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| Fig. 1. <i>Serixia prasinata</i> , p. 257. | Fig. 5. <i>Metopides occipitalis</i> , p. 249. |
| 2. <i>Xyaste nigripes</i> , p. 257. | 6. <i>Thylactus angularis</i> , p. 242. |
| 3. <i>Omocyrius fulvisparsus</i> , p. 246. | 7. <i>Thestus oncideroides</i> , p. 248. |
| 4. <i>Daxata ustulata</i> , p. 230. | |

PLATE XXVIII.

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| Fig. 1. <i>Nedytisis obrioides</i> , p. 267. | Fig. 7. <i>Glenea manto</i> , p. 262. |
| 2. <i>Glenea œme</i> , p. 261. | 8. — <i>alysson</i> , p. 261. |
| 3. — <i>vesta</i> , p. 260. | 9. <i>Tanylecta lambii</i> , p. 263. |
| 4. — <i>neanthes</i> , p. 259. | 10. <i>Ectinogramma collare</i> , p. 266. |
| 5. — <i>porphyrio</i> , p. 259. | 11. <i>Zosne cincticornis</i> , p. 264. |
| 6. — <i>anthyllis</i> , p. 262. | |

7. A Monograph of the Diurnal Lepidoptera belonging to the Genus *Euplœa*, with Descriptions of many New Species; founded principally on the Specimens in the Collection of the British Museum. By ARTHUR G. BUTLER, F.Z.S., Assistant, Zoological Department, British Museum.

(Plates XXIX., XXX.)

The last synopsis of this genus was made in 1847 by Mr. E. Doubleday, in his 'Genera of Diurnal Lepidoptera.' The number of species at that time amounted to thirty-seven; in the present monograph it will be seen that the species are more than doubled. A great proportion of them have hitherto been undescribed*.

I have endeavoured in the present paper to arrange the species as nearly as possible in a regular gradual series, so as to bring together the more closely allied forms. I have also made an effort to separate the numerous species into divisions and subdivisions, in order to facilitate their determination; these sections are, however, to some extent necessarily arbitrary, owing to the variations to which some of the species are subject, and to the difficulties arising from the knowledge of only one sex.

Genus EUPLŒA, Fabricius.

Euplœa, Fabricius (Illiger's Mag. 1807), Horsfield, Boisduval, Doubleday, Moore.

Terpsichrois, *Crastia*, *Salpinx*, *Didonis*, Hübner, Verz. bek. Schmett. (1816).

Danaus, p., Latreille.

Danaïs, p., Godart.

Danaida, p., Guérin.

Division I.

Ala supra fusca, plerumque elongata et cærulescentes; apice acuto, raro obtuso, plerumque maculis submarginalibus albis cæruleisve serie duplici positis: subtus maculis discalibus cæruleis aut albis, et plerumque submarginalibus albis.

Subdivision 1.

Ala plerumque magna et cærulescentes: antica subtus maculis, posticæ punctis discalibus, punctoque uno in cella posito.

1. EUPLŒA PROTHOË.

Danaïs prothoë, Godart, Enc. Méth. ix. p. 177. n. 1 (1816).

Papilio midamus, Cramer, Pap. Exot. iii. pl. 266. f. A, B (1780).

Terpsichrois alea, Hübner, Verz. bek. Schmett. p. 16 (1816).

* Several species, which I had overlooked whilst writing the present paper, will be found in the Appendix.



NEW SPECIES OF EUPLŒA

M. & N. Hancock imp.



2



3



G. Butler lith.

M. & M. Harber sculp.

NEW SPECIES OF EUPLA.



Euplœa pavetta, Zinken-Sommer, in Nova Acta Acad. Nat. Curios. xv. p. 189 (1831).

Hab. North Ceram ; Amboyna.

B.M.



Euplœa semicirculus.

2. EUPLŒA SEMICIRCULUS.

♂. *Alæ marginibus externis costisque subdirectis, supra cupreo-fuscæ, purpurascantes; anticæ serie macularum violacearum submarginalium apud costam bifurcata maculaque una indistincta in cella apud finem posita; posticæ maculis duabus subapicalibus violaceis; margine antico late albo; vena subcostali fascia lata ochrea pene cellam replente inclusa; margine anali quasi inuncto; corpus fuscum, antice nigrescens et ochreo punctatum; antennæ nigræ.*

Alæ anticæ subtus cupreo-fuscæ, extus fuscescentes, costa fusca, margine interno ochreo-albo, margine postico serie punctorum cæruleorum submarginalium, punctisque duobus marginalibus sub nervulo tertio mediano positis; serie interna macularum quatuor magnitudine crescentium, post cellam posita, duabus infimis albis maximis, unaque in cella violacea albo pupillata; alæ posticæ cupreo-fuscæ, extus fuscescentes, margine postico serie punctorum cæruleorum submarginalium apud apicem magnitudine crescentium, punctisque duobus marginalibus sub nervulo tertio mediano positis, serie interna macularum cærulearum arcuata post cellam posita maculaque una apud cellæ finem, basi punctis nonnullis minoribus albis; corpus thorace nigro, ochreo punctato; abdomine fusco pallido; antennæ nigræ.

Exp. alar. unc. $4\frac{1}{8}$.

Hab. — ?

B.M.

Allied to the preceding species, but proportionally much shorter

in the wings, the costa and outer margin of the front wings much more direct, and the apex more pointed; darker and more completely shot with purple; the spots smaller, less numerous, and violet. Below, the front wings with only one complete submarginal row of spots.

3. EUPLŒA PHŒBUS, sp. n.

Euplœa prothoë, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 12 (1847); F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 130. n. 259 (1857).

Alæ anticæ elongatæ, supra aureo-fuscæ, costa fusca; area interiore fuscescente; margine postico seriebus tribus macularum albarum submarginalium, maculaque una apud cellæ finem; serie externa maculis oblongis parvis, serie media maculis apud costam magnitudine crescentibus et linea arcuata currentibus, serie interna angulata, maculis oblongis, apud costam magnitudine crescentibus: alæ posticæ purpurascetes, area costali ochreo-alba, mediaque cella ochrea, areis externa et interna rufo-fuscis; margine postico femine seriebus tribus macularum albarum rufescentium submarginalium continuis, maris autem seriebus tribus interruptis nec angulum analem attingentibus; margine anuli maris quasi inuncto.

Alæ anticæ subtus basi fuscescentes, medio certo situ purpurascetes; margine interno pallido, macula permagna subanali alba; margine postico seriebus macularum ut supra, duabus maculis autem externis minoribus serieque interna post cellæ finem aliquando obsoleta maculisque majoribus: posticæ cupreo-fuscæ; margine postico maris fuscescente, serie punctorum alborum marginali, tribusque subapicalibus; serie punctorum quinque violaceorum arcuata post cellæ finem; femine seriebus punctorum duabus, serie interna macularum septem violacearum arcuata, unaque apud cellæ finem: corpus thorace nigro, ochreo punctato; abdomine cinereo; antennæ nigræ.

Exp. alar. unc. ♂ $4\frac{1}{2}$, ♀ $4\frac{1}{8}$.

Hab. Penang; Java.

B.M.

This species is quite distinct from *E. prothoë* of Godart, being much smaller, of a more golden colour, and quite differently spotted.

4. EUPLŒA ELISA, sp. n.

Alæ anticæ supra aureo-fuscæ margine interno fuscescente, seriebus macularum albarum tribus, serie interna brevi maculis tribus inter nervulos medianos positis, serie externa apicem non attingente, serie media maris valde interrupta, femine autem continua apud costam arcuata; macula una apud cellæ finem: posticæ maris cupreo-fuscæ area costali ochreo-alba medioque cellæ ochreo; punctis tribus discalibus post cellam positis; margine postico fusco; margine anali quasi inuncto: posticæ femine aureo-fuscæ, margine costali pallido, margine postico seriebus punctorum alborum duabus submarginalibus, apud angulum analem indistinctis, serieque macularum trium post cellam posita: corpus fuscum, antice fuscescens alboque punctatum; antennæ nigræ.

Alæ anticæ subtus velut supra, maculis autem majoribus serieque submarginali externa maris continua: alæ posticæ maris pallidiores; margine postico serie media punctorum quinque marginalium serieque punctorum violaceorum angulata post cellæ finem; basi punctis nonnullis minimis albis: alæ posticæ femine velut supra, serie autem interna punctorum sex post cellæ finem posita unoque apud cellæ finem: corpus thorace nigro, albo pupillato; abdomine fusco; antennæ nigræ.

Exp. alar. unc. ♂ 4 $\frac{3}{8}$, ♀ 4 $\frac{1}{8}$.

Hab. Ceylon.

B.M.

5. EUPLŒA OCHSENHEIMERI.

Euplœa ochsenheimeri, Lucas, Rev. et Mag. de Zool. 1853, p. 315; F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 132. n. 264 (1857).

Hab. East India (Lucas); Java.

B.M.

Var. (a.) *Alis posticis supra pæne immaculatis.*

Hab. Borneo.

B.M.

Var. (b.) *Alis posticis supra seriebus duabus macularum albarum submarginalium continuis.*

Hab. Madjico Sima, Borneo; Penang; Siam.

B.M.

This last appears to be the normal form of the species, and the true *E. ochsenheimeri* the variety.

6. EUPLŒA CAMARALZEMAN, sp. n. (Pl. XXIX. fig. 1.)

♂. *Alæ supra nigro-fuscæ: anticæ area basali viridi-cærulescente, puncto uno indistincto albo sub cellæ extimo, posticæ margine costali pallidior, anticarum medio viridi-cærulescente; maculis duodecim marginalibus ochreo-albis, serieque submarginali anali: corpus nigro-fuscum, antice albo punctatum, antennis nigris.*

Alæ subtus olivacæ, anticæ area basali medio fuscescente, et viridi-cærulescente; area interna pallidior; maculis duabus discalibus, puncto uno ad cellæ extimum tribusque minimis analibus, albis: posticæ maculis submarginalibus velut supra, punctis quinque discalibus unoque ad cellæ extimum ochreo-albis: corpus thorace nigro, albo punctato; abdomine fusco, maculis mediis cæruleis.

Exp. alar. unc. 4 $\frac{1}{8}$.

Hab. Siam.

B.M.

7. EUPLŒA CHLOË.

Euplœa chloë, Guérin, in Delessert, Souvenirs d'un Voyage dans l'Inde, App. 72 (1843).

Hab. Pulo Penang; Sumatra.

B.M.

8. EUPLŒA SUPERBA.

Papilio superba, Herbst, Pap. t. 119, 120 (1783-95).

Euplœa superba, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 14 (1847); F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 131. n. 260 (1857).

♀. *Papilio midamus*, Fabricius, Ent. Syst. iii. i. 39. n. 116 (1793).
(Vide Banksian Collection.)

Limnas mutabilis midamis, Hübner, Samml. exot. Schmett. Bd. i. pl. 24. f. 3, 4 (1806).

Dunais alopia, Godart, Enc. Méth. ix. p. 177 (1819).

Hab. China; North India; Cape of Good Hope?*. B.M.

Fabricius (Ent. Syst. iii. i. 39. n. 116 (1793)) refers to (Cramer, pl. 266. f. A, B, D, & E) three distinct species as representatives of his *midamus*; but in the Banksian Collection I find *E. superba*, ♀, as *midamus*.

9. EUPLŒA SPLENDENS, sp. n. (*E. superba*, var.?)

♂. *Alæ anticæ supra nigro-fuscæ omnino viridi-cæruleo mutabiles; margine postico seriebus macularum albarum duabus, externa apicem non attingente, interna antice arcuata de costa currente nec marginem analem attingente; serie brevi unguata macularum septem violacearum oblongarum post cellam posita et de costa super cellam angulis duobus currente; macula una apud cellæ finem; striga pallida sub nervulo mediano primo posita: alæ posticæ pallidiores, paulo cærulescentes, area costali pallida; macula permagna ochrea in vena subcostali posita, margine postico seriebus duabus macularum valde indistinctarum: corpus fuscum, albo antice punctatum.*

Alæ anticæ subtus cupreo-fuscæ, margine interno pallido seriebus macularum submarginalium velut supra, serie autem interna maculis minoribus; macula post costæ medium, una apud cellæ finem, una sub cellæ fine, unaque magna oblonga inter nervulos medianos, albis: posticæ cupreo-fuscæ seriebus duabus macularum submarginalium albarum, interna serie utrinque de punctis minimis, serie unguata macularum violaceo-albarum post cellæ finem maculaque una in cella; basi punctis albis: corpus fuscum, thorace albo punctatum.

Exp. alar. unc. 3 $\frac{2}{3}$.

Hab. Nepaul.

B.M.

Allied to *E. superba*, Herbst, but more brilliantly shot with variable blue green; the outer margin of front wings more arched; the costa of hind wings not so angular; the discoidal spots of the front wings much larger and oblong, and the submarginal spots smaller; the submarginal spots of hind wings nearly obsolete. Below, the discoidal spots are much more distinct and larger, the submarginal spots of the front wings more numerous, and the inner submarginal series of the hind wings very small, especially towards the apex and anal angle.

10. EUPLŒA CALLITHOË.

Euplœa callithoë, Boisduval, Faune de l'Océanie, p. 93 (1832); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 13 (1847).

Hab. New Guinea.

* We have a female specimen registered as from this locality but it may very likely be an error.

Var. a.? ♂, ♀.

Hab. Northern India.

B.M.

Var. b.? ♂. *Alæ posticæ seriebus duabus macularum albarum continuis.*

Hab. Sylhet.

B.M.

11. EUPLŒA KLUGII.

Euplœa klugii, F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 130. n. 258 (1857).

Hab. Bootan.

B.M.

12. EUPLŒA KINBERGI.

Euplœa kinbergi, Wallengren, Wien. Entom. Monats. iv. (1860).

Hab. China.

B.M.

Subdivision 2.

Alæ plerumque minores; supra raro cærulescentes vel apice acuto; maculis submarginalibus instabilibus, interruptis, aliquando obsoletis.

13. EUPLŒA MODESTA, sp. n.

♂. *Alæ supra fuscæ rufescentes, anticæ area basali cærulescente; posticæ area costali pallidiore macula permagna subcostali fusca, margine postico seriebus macularum submarginalium ochreo-albarum duabus, serie interna maculis elongatis, nec apicem attingente; corpus rufo-fuscum, capite albo punctato, antennis nigris. Alæ subtus pallidiores; anticæ area interna antice ochrea, margine late cinereo; macula una discali punctisque duobus, uno costali, maculaque ad cellæ extimum cæruleo-albis; posticæ maculis submarginalibus velut supra, punctis septem discalibus serie arcuata, maculaque ad cellæ extimum violaceo-albis; basi albo punctata; corpus thorace cinereo, albo punctato, antennis nigris; abdomine fusco, maculis elongatis mediis ochreis.*

Exp. alar. unc. $3\frac{3}{16}$.

Hab. Siam.

B.M.

14. EUPLŒA JANUS, sp. n.

Salpinx eleusina, Hübner, Samml. exot. Schmett. Bd. ii. pl. 9. f. 1, 2 (1806).

Alæ supra cupreo-fuscæ, anticæ maris area basali paulo fuscescente, serie subapicali punctorum alborum, puncto uno post costæ medium, unoque sub cellæ fine; posticæ serie marginali punctorum alborum serieque interna macularum trium subapicalium; anticæ femine serie marginali punctorum parvorum, serie subapicali pene ad angulum analem continuata; posticæ seriebus macularum submarginalium duabus; corpus cupreo-fuscum, antice fuscescens et albo punctatum.

Alæ subtus pallidiores, anticæ margine interno pallido; tribus quinque maculis discalibus albis unaque in cella; aliter velut supra:

alæ posticæ punctis quinque sexve discalibus serie arcuata unoque in cella, aliter velut supra.

Alar. exp. unc. ♂ $2\frac{5}{8}$, ♀ $2\frac{1}{16}$.

Hab. Java*. Allied to the next species.

15. EUPLŒA HUEBNERI.

Euplœa hübneri, F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 129. n. 255 (1857).

Hab. Java (*Horsf. Coll.*).

Var. intermediate. *Alæ anticæ supra maculis subapicalibus interruptis, puncto discali obsoleto: posticæ serie punctorum marginalium continuata, serieque trium subapicalium.*

Hab. Java. B.M.

16. EUPLŒA AMYNONE.

Euplœa amymone, Godart, Enc. Méth. ix. p. 179. n. 10 (1819); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 20 (1847).

Hab. Amboyna; Cochin China. B.M.

16a. EUPLŒA HAWORTHII.

Euplœa haworthii, Lucas, Rev. et Mag. de Zool. 1853, p. 317.

Hab. Java.

17. EUPLŒA TISIPHONE, sp. n.

Alæ supra nigro-fuscæ, area apicali pallidiore, serie angulata punctorum alborum quinque minimorum submarginalium: posticæ nigro-fuscæ, area apicali pallida olivaceo-fusca; margine costali late alba; macula triangulari ochrea in cella sub vena subcostali posita: corpus nigro-fuscum, albo antice punctatum, antennis nigris.

Alæ subtus olivaceo-fuscæ, anticæ macula permagna anali cinereu, fascia elongata ochrea ad venæ submedianæ basim posita; margine interiore ochreo-albo; puncto uno costali albo, duobusque discalibus inter nervulos medianos; margine postico seriebus punctorum alborum duabus, serie interna punctis quinque: posticæ olivaceo-fuscæ, serie punctorum violaceorum marginali punctisque quatuor minutis apud apicem submarginalibus; basi albo punctata: corpus nigrum, antennis nigris, thorace albo punctato, abdomine cinereo fasciato.

Alar. exp. unc. $3\frac{3}{16}$.

Hab. Philippine Islands. B.M.

Possibly this species may be closely allied to *E. midamus*; but at present we only possess the male sex. Above very similar to *E. amymone* (God.), but with the purple gloss scarcely distinguishable.

Subdivision 3.

Alæ anticæ supra vix cærulescentes, maculis submarginalibus obsoletis indistinctivæ; posticæ maculis submarginalibus continuis, serie interna elongatis.

* I think it possible that if we had a large series of this insect it might prove to be only a variety of the next species.

18. EUPLŒA MÉNÉTRIESII.

Euplœa ménétriesii, Felder, Wien. Ent. Monats. iv. p. 398 (1860).

Hab. Malayan peninsula.

19. EUPLŒA ALCATHOË.

Danaïa alcathoë, Godart, Enc. Méth. ix. p. 178 (1819).

Euplœa alcathoë, Boisduval, Faune de l'Océanie, p. 99 (1832); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 16 (1847); F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 131. n. 261 (1857).

Hab. Northern India.

B.M.

20. EUPLŒA FELDERI, sp. n.

♀. *Alæ supra fuscæ, anticæ area basali cærulescente, maculis duabus discalibus, una ad cellæ extimum, una costali, quinque subapicalibus serie arcuata, raroque tribus submarginalibus punctisque nonnullis marginalibus albis: posticæ immaculatæ seriebusve duabus macularum indistinctarum apud apicem albarum: corpus nigro-fuscum, antice albo punctatum.*

Alæ subtus pallidiores, anticæ area interna pallida, aliter velut supra, maculis autem submarginalibus minoribus: posticæ punctis sex discalibus serie angulata, uno ad cellæ extimum maculisque submarginalibus velut supra positis albis; basi albo punctata: corpus cinereum, albo maculatum.

Exp. alar. unc. 3½.

Hab. Sumatra.

B.M.

21. EUPLŒA ALECTO, sp. n.

Alæ supra cupreo-fuscæ, medio paulo fuscescente, anticæ puncto uno costali, uno sub cellæ extimo, duobus subapicalibus indistinctis quatuorque marginalibus apud angulum analem albis: posticæ seriebus duabus macularum oblongarum submarginalium albarum, serie externa maculis minoribus: corpus fuscum; caput albo punctatum, antennis nigris.

Alæ subtus pallidiores, anticæ macula una in cella, maculis duabus magnis et quinque parvis discalibus serie arcuata apud apicem albis, punctisque septem marginalibus nec apicem attingentibus: alæ posticæ maculis septem violaceo-albis serie arcuata circa cellam positas maculisque duabus in cella; maculis submarginalibus velut supra: corpus fuscum, abdomine albo punctato.

Exp. alar. unc. 3⁵/₈.

Hab. Ceram.

B.M.

22. EUPLŒA GODARTII.

Euplœa godartii, Lucas, Rev. et Mag. de Zool. 1853, p. 319.

Alæ supra fuscæ, margine postico pallescente: anticæ apice late roseo-violaceo, punctis albis velut in E. alcathoë: posticæ velut in E. core.

Alæ subtus velut in E. core, maculis discalibus autem majoribus.

Alar exp. unc. ♂ 3³/₈, ♀ 3⁵/₈.

Hab. Java (Lucas); Philippines; Siam.

B.M.

23. EUPLÆA CORE.

Papilio core, Cramer, Pap. Exot. iii. t. 266. f. E, F (1780).

Euplæa core, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 31 (1847); F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 131. n. 262 (1857).

Crastia core, Hübner, Verz. bek. Schmett. p. 16 (1816).

Papilio corus, Fabricius, Ent. Syst. iii. 1. p. 41 (1793).

Danaïs coreta, Godt. Enc. Méth. ix. p. 182 (1819).

Var. *Danaïs cora*, Godt. Enc. Méth. ix. p. 178. n. 7 (1819).

Hab. Ceylon.

B.M.

Var. *maculis submarginalibus parvis*.

Hab. Java (*Horsf. Coll.*).

Subdivision 4.

Alæ supra plerumque maculis submarginalibus instabilibus, raro obsoletis; anticæ maculis subapicalibus semper distinctis, plerumque oblongis.

24. EUPLÆA VERMICULATA, sp. n. (*E. core*, var.?)

Lemnas mutabilis cora, Hübner, Samml. exot. Schmett. Bd. i. pl. 25. f. 1, 2 (1806).

Alæ anticæ supra fuscæ, margine postico pallidiore, maculis novem submarginalibus, apicalibus permagnis maculisque marginalibus multis minoribus albis: posticæ pallidiores, basi fuscescentes, seriebus macularum albarum submarginalium duabus, serie interna maculis elongatis magnis: corpus fuscum; caput nigrum, albo punctatum, antennæ nigris.

Alæ subtus pallidiores, anticæ macula una costali, duabus discalibus, una apud cellæ finem, albis; maculis submarginalibus velut supra, majoribus autem: alæ posticæ maculis submarginalibus, apud apicem et angulum analem confusis; aliter velut supra; punctis quinque discalibus serie angulata post cellam positis unoque apud cellæ finem.

Exp. alar. unc. $3\frac{1}{4}$.

Hab. Northern India.

B.M.

This species appears to be allied to *E. core* of Cramer, of which it may possibly be the northern form; it differs from it chiefly in having the submarginal spots exceedingly large and distinct, especially near the apex.

25. EUPLÆA MEGÆRA, sp. n.

Alæ anticæ supra saturate brunneæ, margine postico pallido, maculis quinque subapicalibus albis serie obliqua positis; maris fascia discali nitente, feminæ macula una discali apud marginem posticum; puncto uno costali, uno discali post cellam unoque in cella albis; serie punctorum marginalium partim indistinctorum, nec apicem attingente: posticæ maris pallidiores, maculis tribus subapicalibus

albis; feminae margine postico late pallido, seriebus macularum submarginalium duabus continuis: corpus fuscum; caput nigrum, albo punctatum, antennis nigris.

Alæ subtus pallidiores, anticæ maris maculis septem subapicalibus punctisque tribus marginalibus albis, macula una discali sub nervulo mediano primo, quasi inuncta, punctis insuper duobus discalibus cæruleis unoque in cella: posticæ punctis sex discalibus serie arcuata, unoque in cella, maculis sex submarginalibus, punctisque quinque marginalibus albis: anticæ feminae margine interiore ochreo, maculis submarginalibus velut supra, punctis undecim marginalibus distinctis duobusque sub costa post medium, maculis tribus discalibus serie obliqua, una apud cellæ finem fasciaque apud marginem interiorem roseo-albis: posticæ punctis sex discalibus serie arcuata unoque in cella roseo-albis, seriebus macularum duabus submarginalium albarum.

Exp. alar. unc. ♂ 3, ♀ 3½.

Hab. Aru Islands.

B.M.

26. EUPLÆA ÆGYPTUS, sp. n.

Alæ elongatæ, supra fusca, anticæ striga discali nitente brevi, maculis quinque subapicalibus albis unaque subcostali rosea indistincta, strigis duabus minimis costalibus: posticæ seriebus punctorum duabus submarginalibus alborum aliquando indistinctorum, margine costali albo: corpus fuscum, antice nigrescens alboque punctato; antennis nigris.

♂. *Alæ subtus olivacco-fusca, anticæ margine interiore albo, strigis costalibus maculisque subapicalibus albis velut supra; serie punctorum marginalium valde interrupta punctoque uno submarginali apud angulum analem, macula una discali, una in cella, fasciaque discali quasi inuncta: posticæ seriebus punctorum duabus submarginalibus alborum, serie interna brevi; serie discali punctorum violaceorum arcuata punctoque uno in cella: corpus thorace nigro, albo punctato; antennis nigris; abdomine fusco, albo fasciato.*

Exp. alar. unc. 4 $\frac{1}{16}$.

Hab. Borneo; Sumatra.

B.M.

27. EUPLÆA CRAMERI.

Euplæa crameri, Lucas, Rev. et Mag. de Zool. 1853, p. 319; F. Moore, Cat. Lep. Mus. East India Comp. p. 129, n. 256 (1857).

Hab. Manilla (Lucas); Borneo.

B.M.

28. EUPLÆA BREMERI.

Euplæa bremeri, Felder, Wien. Ent. Monatsschr. iv. p. 398 (1860).

Hab. Malayan peninsula; India.

B.M.

29. EUPLÆA MOOREI, sp. n.

♀. *Alæ supra olivacco-fusca, anticæ cærulescentes, maculis velut in E. bremeri, Felder: posticæ seriebus punctorum alborum duabus, interna subapicali, externa marginali continua: corpus fuscum, antice nigrum alboque punctatum.*

Alæ subtus paulo pallidiores, anticæ maculis velut in E. bremeri: posticæ maculis marginalibus velut supra albis, maculis septem discalibus serie arcuata unaque ad cellæ extimum violaceo-albis; basi albo punctata: corpus nigrum, albo maculatum.

Exp. alar. unc. $3\frac{1}{8}$.

Hab. Sumatra.

B.M.

Closely allied to *C. bremeri*, Felder, but much smaller; the costa of the front wings more direct, the subapical spots smaller and more distinct, the inner submarginal row of spots in the hind wings not continuous.

30. EUPLŒA SWAINSONII.

Danaïs swainsonii, Godart, Enc. Méth. ix. p. 815. n. 17-18, Suppl. (1823); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 33 (1847).

Hab. Philippine Islands.

B.M.

31. EUPLŒA CRASSA, sp. n.

Alæ supra cupreo-olivaceæ, basi paulo fuscescentes et cærulescentes, anticæ apice valde acuto, seriebus macularum submarginalium albarum duabus, serie interna ad apicem permagnarum violaceo-albarum; punctis tribus discalibus post cellæ extimum unoque costali violaceo-albis: posticæ costa alba, seriebus macularum albarum duabus, interna apud apicem paulo majoribus: corpus fuscum, abdomine cærulescente; caput ochreo punctatum.

Alæ subtus pallidiores, anticæ seriebus macularum duabus, interna apicali, externa marginali continua, macula una interna magna, una costali duabusque plerumque post cellæ extimum roseo-albis: posticæ seriebus macularum duabus submarginalibus; basi albo punctata: corpus thorace fusco, albo punctato; abdomine cinereo, maculis albis mediis.

Exp. alar. unc. ♂ $3\frac{9}{16}$, ♀ $3\frac{1}{2}$.

Hab. Siam.

B.M.

32. EUPLŒA NOX, sp. n.

♀. *Alæ supra nigro-fuscæ, margine postico pallido, anticæ maculis quinque subapicalibus albis serie arcuata positis: posticæ maculis septem submarginalibus albis punctisque decem indistinctis marginalibus ochreis: corpus fuscum; caput albo punctatum, antennis nigris.*

Alæ subtus pallidiores, anticæ margine interiore albo, maculis subapicalibus velut supra, puncto uno submarginali punctisque duobus marginalibus albis; puncto uno post costæ medium ochreo, uno in cella unoque discali, cæruleis: posticæ maculis octo submarginalibus, punctis decem marginalibus, duobus discalibus, uno apud cellæ finem basique nonnullis albis: corpus fuscum, thorace ochreo-punctato, antennis nigris; abdomine pallidior, maculis tribus mediis quadratis albis.

Exp. alar. unc. $3\frac{1}{2}$.

Hab. Aru Islands.

B.M.

Division II.

Alæ lata, breves, supra nigro-fuscæ, maculis submarginalibus albis distinctis, subapicalibus anticarum oblongis: subtus maculis discalibus posticarum interruptis, raro obsoletis.

33. EUPLŒA GAMELIA.

Salpinx gamelia, Hübner, Samml. exot. Schmett. Bd. ii. pl. 10. f. 1, 2 (1806-27).

Euplœa gamelia, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 29 (1847).

Euplœa faber, Zinken-Sommer in Nova Acta Acad. Curios. xv. t. 16. f. 18, 19 (1831).

Hab. Java.

B.M.

Division III.

Alæ supra fuscæ, raro cærulescentes; anticæ plerumque immaculatæ, raro punctis discalibus: alæ subtus maculis discalibus distinctis.

Subdivision 1.

Alæ elongatæ, supra cærulescentes, anticæ apice leviter subangulato, plerumque puncto uno costali punctisque nonnullis minimis discalibus cæruleo-albis; posticæ aliquando maculis submarginalibus albis, serie interna elongatis: subtus pallidiores, maculis discalibus violaceo-albis.

34. EUPLŒA MARGARITA, sp. n.

Alæ supra olivaceo-fuscæ, anticæ fuscæ, cæruleo viridique variabiles, puncto uno costali albo, maris maculis duabus discalibus cæruleis, puncto uno subapicali, uno anali unoque submarginali ochreis; feminæ puncto uno discali albo: posticæ maris margine costali ochreo-albo, macula permagna subcostali ochrea; margine postico seriebus macularum ochreo-albarum duabus submarginalibus; feminæ seriebus macularum duabus, maculis ad angulum analem confusis, serie interna elongatis: corpus fuscum, antice nigrescens alboque punctatum.

Alæ subtus pallidiores, anticæ punctis nonnullis sparsis submarginalibus albis, unoque costali, maculis duabus discalibus, inferiore elongata magna lunulaque in cella iridescentibus, margine interiore pallido; feminæ striga elongata discoidali ochrea apud marginem posita: posticæ maris punctis quinque, feminæ sex discalibus duobusque in cella albis iridescentibus, maculis submarginalibus velut supra, basi albo punctata: corpus nigro-fuscum, albo punctatum; antennis nigris.

Exp. alar. unc. ♂ $3\frac{5}{8}$, ♀ $4\frac{1}{6}$.

Hab. East Indies.

B.M.

Allied to *Euplœa deione*, Westwood.

35. EUPLŒA DEIONE.

Euplœa deione, Westwood, Cab. Orient. Entom. p. 76, pl. 37. f. 3 (1847); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. Suppl.

p. 531 (1852?); F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 132.
n. 263 (1857).

Hab. Assam (*Westw.*); Darjeeling; Sylhet. B.M.

36. EUPLŒA PICINA, sp. n. (Pl. XXX. fig. 1.)

♂. *Alæ anticæ supra nigro-fuscæ, certo situ purpurascens, strigis duabus apud marginem internam: posticæ fuscæ, margine costali albo, margine postico pallido: corpus nigro-fuscum; caput albo punctatum, antennis nigris.*

Alæ subtus pallidiores, anticæ margine internam albo, strigis brunneis velut supra; serie macularum quatuor discalium viridi-albarum obliqua angulata post cellam posita, ad costam magnitudine decrescentium, maculaque una apud cellæ finem: posticæ maculis quinque discalibus cæruleis serie arcuata post cellam positis unaque in cella: corpus nigro-fuscum, abdomine albo punctato.

Exp. alar. unc. $3\frac{7}{8}$.

Allied to the preceding species.

Hab. Sumatra.

B.M.?

37. EUPLŒA WALLACEI, Felder, sp.

Euplœa wallacei, Felder, Wien. Entom. Monatschr. iv. (1860).

Hab. Gilolo.

♀, B.M.

Subdivision 2.

Alæ breviores, supra rarissime punctis nonnullis submarginalibus; plerumque area apicali pallescente: subtus maculis discalibus distinctis cæruleis pallidis, raro maculis submarginalibus similibus.

38. EUPLŒA MELANCHOLICA, sp. n.

♂. *Alæ supra nigro-fuscæ, posticæ margine anali paulo pallidiores, margine costali cinerascens; margine postico seriebus macularum fulvarum duabus, ad apicem obsoletis: corpus fuscum, antice nigrescens fulvoque punctatum, antennis nigris.*

Alæ subtus pallidiores, anticæ striis duabus internis maculisque quatuor quinqueve discalibus serie obliqua et magnitudine antice decrescentibus, punctis tribus costalibus tribusque minimis apud marginem internam albis: posticæ seriebus macularum submarginalium ochreo-albarum duabus, maculis septem discalibus serie angulata unaque ad cellæ extremum roseo-albis, basi ochreo punctata: corpus nigro-fuscum, thorace ochreo punctato, antennis nigris, abdomine medio ochreo punctato.

Exp. alar. unc. $3\frac{3}{8}$ – $3\frac{13}{16}$.

Hab. Bouru; Amboina (*B.M. and Salvin Coll.*).

39. EUPLŒA ANTHRACINA, sp. n. (Fig. 1, p. 281.)

Alæ supra saturate fuscæ, margine postico pallidiores, anticæ maculis submarginalibus serie una valde indistinctis, maris striga elongata nitente apud marginem internam: posticæ femine punctis tribus albis indistinctis subapicalibus: corpus fuscum; caput nigrum, albo punctatum; antennis nigris.

Alæ subtus pallidiores, anticæ serie punctorum viridi-alborum submarginalium apud apicem arcuata: anticæ maris macula magna, punctis quatuor discalibus serie directa, uno in cella unoque costali viridi-albis: anticæ feminae punctis nonnullis marginalibus minimis indistinctis, striga, macula punctisque quatuor discalibus, macula una in cella punctoque uno costali viridi-albis: posticæ maculis octo novemve submarginalibus, octo discalibus serie angulata, una in cella, feminaeque serie marginali, viridi-albis; basi punctis nonnullis ochreis: corpus fuscum, albo punctatum; antennis nigris.

Exp. alar. unc. ♂ $3\frac{3}{16}$ — $3\frac{3}{8}$, ♀ $3\frac{5}{16}$.

Hab. Amboina (♂ B.M., ♀ Salvin Coll.).

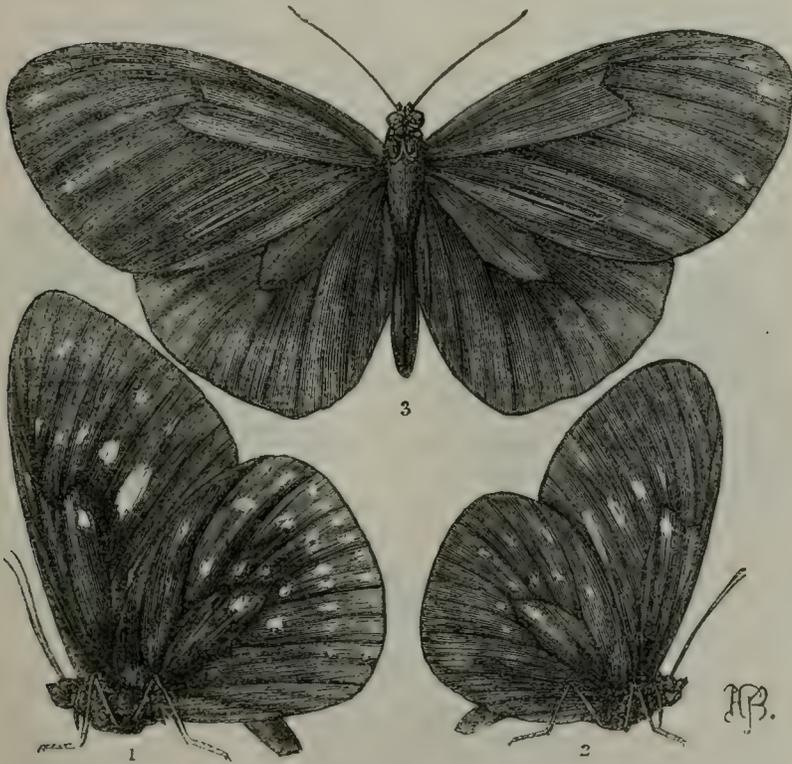


Fig. 1. *Euplœa anthracina*, p. 280.

2. — *morosa*, p. 282.

3. — *mæsta*, p. 284.

39 a. EUPLÆA ANTHRACINA, var.? (! *E. climena*, ♂.)

Alæ anticæ subtus maculis solum tribus discalibus: posticæ serie macularum submarginalium marginem analem non attingente.

Exp. alar. unc. $3\frac{1}{2}$.

Hab. Ceram (Coll. Salvin).

B.M.

40. EUPLŒA CLIMENA.

Papilio climena, Cramer, Pap. Exot. iv. t. 389. f. E, F (1782).

Crastia climena, Hübner, Verz. bek. Schmett. p. 16 (1816).

Euplœa climena, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 18 (1847).

Danaïs algea, Godart, Enc. Méth. ix. p. 178. n. 8 (1819).

Hab. Amboina; Ceram.

B.M.

41. EUPLŒA MELINA. (Fig. 1, p. 283.)

Danaïs melina, Godart, Enc. Méth. ix. p. 179. n. 9 (1819).

Euplœa melina, Boisduval, Faune de l'Océanie, p. 89 (1832); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 17 (1847).

Hab. New Guinea (*Doubl.*); Aru Islands; Ceram.

B.M.

42. EUPLŒA MOROSA, sp. n. (Fig. 2, p. 281.)

Alæ supra fuscæ margine postico paulo pallidiore: anticæ maris apice acuto, margine interiore brevi; margine postico convexo; maculis duabus apud marginem interiorem nitentibus, una parva alteraque insuper ovali magna: corpus fuscum; caput albo punctatum, antennis nigris.

Alæ subtus rufescenti-fuscæ; anticæ margine interiore pallido, striga elongata interna, macula punctisque duobus discalibus serie obliqua, maculaque ad cellæ extimum, cæruleo-albis: posticæ punctis septem discalibus serie arcuata post cellam positis, tribus subapicalibus maculaque ad cellæ extimum cæruleo-albis: corpus thorace nigro, albo punctato; antennis nigris; abdomine fusco-pallido.

Exp. alar. unc. 3.

Hab. Gilolo (*B.M. and Salvin Coll.*).

43. EUPLŒA DUPONCHELII.

Euplœa duponchelii, Boisduval, Faune de l'Océanie, p. 97. n. 6 (1832); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 7 (1847).

Hab. Bouru.

44. EUPLŒA AGLIDICE.

Euplœa aglidice, Boisduval, Faune de l'Océanie, p. 96. n. 5 (1832); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 6 (1847).

Hab. Rawack.

45. EUPLŒA LAPEYROUSEI.

Euplœa lapeyrousei, Boisduval, Faune de l'Océanie, p. 97 (1832); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 27 (1847).

Hab. Bouru (*Bdv.*); Aneiteum.

B.M.

46. EUPLŒA SEPULCHRALIS, sp. n. (Fig. 2, p. 283.)

Euplœa melina, F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 128. n. 254.

♂. *Alæ supra olivaceo-fascæ margine postico pallidiorè, anticæ raro puncto uno discali albo; margine anali posticarum albicante: corpus fuscum, caput albo punctatum, antennis nigris.*

Alæ subtus pallidiores, anticæ maculis tribus discalibus serie obliqua, una in cella, punctis duobus subapicalibus duobusque mediis submarginalibus cæruleo-albis: posticæ seriebus punctorum alborum subapicalium duabus, serie interna punctis majoribus, maculis sex discalibus serie arcuata, unaque ad cellæ extimum, albis: corpus thorace cinereo, albo punctato; abdomine ochreo.

♀. *Apice anticarum acuto; posticæ supra pallidiores, maculis subapicalibus: anticæ subtus strigis duabus elongatis internis, puncto uno costali, tribus subapicalibus minimis albis: posticæ puncto uno subcostali; serie macularum marginalium pene ad angulum analem continuata.*

Exp. alar. unc. $2\frac{3}{4}$.

Hab. Java (Horsf. Coll. & B.M.).

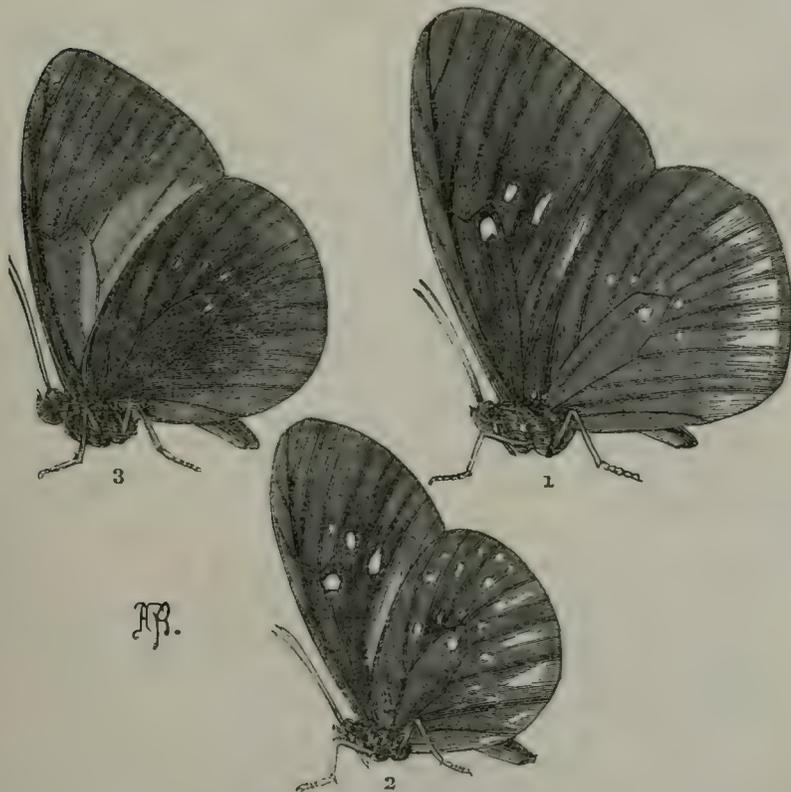


Fig. 1. *Euplea melina*, ♂, p. 282.
 2. — *sepulchralis*, ♂, p. 282.
 3. — *confusa*, ♀, p. 285.

Note.—The true *E. melina* of Godart is similar in size to *E. climena* of Cramer, from which it chiefly differs in having no subapical spots

on the underside of the hind wings. The *E. melina* of Horsfield's collection, however, is a much smaller insect, and has subapical spots on the hind wings as in *E. climena*.

47. EUPLŒA PALLA, sp. n.

Alæ supra nigro-fuscæ, certo situ cærulescentes; anticæ maculis septem submarginalibus albis ad apicem majoribus, striis duabus internis nitentibus: posticæ area anali rufescente; margine costali rufescente; margine interno cinereo; maculis decem submarginalibus ochreo-albis, punctis minimis marginalibus brunneis: corpus nigro-fuscum, antice albo punctatum; antennis nigris.

Alæ subtus pallidiores, rufescentes, maculis submarginalibus velut supra, anticæ autem uno minimo costali: anticæ punctis duobus discalibus novemque marginalibus minimis albis: posticæ punctis undecim marginalibus minimis, basi punctis duobus albis minimis: corpus thorace nigro-fusco, punctis nonnullis albis, antennis nigris; abdomine olivaceo-fusco, punctis mediis albis.

Exp. alar. unc. 3 $\frac{1}{8}$.

Hab. Aru Islands.

B.M

48. EUPLŒA TRISTIS, sp. n.

Alæ supra nigro-fuscæ purpurascantes, anticæ maculis quinque marginalibus albis: posticæ costa pallida, margine postico rufescente, margine apicali maculis sex irregularibus albis submarginato: corpus nigro-fuscum, collo albo punctato, antennis nigris.

Alæ subtus olivaceo-fuscæ, anticæ area basali fusciscente, certo situ purpurascentes, punctis quinque discalibus maculaque in cella subviolaceis; maculis duabus apicalibus, duabus mediis submarginalibus punctisque nonnullis marginalibus sparsis albis: posticæ punctis sex discalibus unoque in cella subviolaceis; punctis nonnullis minimis valde indistinctis submarginalibus sparsis: corpus nigrum, abdomine cæruleo punctato.

Exp. alar. unc. 2 $\frac{1}{8}$.

Hab. Aneiteum.

B.M.

49. EUPLŒA MŒSTA, sp. n. (Fig. 3, p. 281.)

♂. *Alæ supra nigro-fuscæ certo situ purpurascentes, posticæ extus pallescentes: anticæ maculis duabus subapicalibus punctisque duobus oblongis submarginalibus cæruleis: corpus nigro-fuscum; capite collo albo punctato, antennis nigris.*

Alæ anticæ subtus area basali nigro-fusca; costa areaque postica rufescentibus; margine interno albo-cinereo; maculis duabus discalibus unaque ad cellæ extimum; striis duabus internis sericeis: posticæ fusco-rufescentes, marginibus paulo pallescentibus, punctis quatuor discalibus cæruleis serie arcuata post cellam positus unoque ad cellæ extimum: corpus nigro-fuscum, abdomine medio cinereo punctato.

Exp. alar. unc. 3 $\frac{3}{8}$.

Hab. Dory; Sumatra (*alæ supra immaculatæ*).

B.M.

♂. Var. *Anticæ supra immaculatæ; posticæ margine postico fusco marginato: anticæ subtus punctis tribus minimis discalibus post cellam positis: posticæ margine costali obscuriore.*

Exp. alar. unc. 3 $\frac{3}{4}$.

Hab. Amboina.

B.M.

50. EUPLŒA ÆTHIOPS, sp. n.

♂. *Alæ anticæ supra nigro-fuscæ, margine postico rufescente: posticæ medio nigrescentes; area costali cinereo-fusca; area anali et margine apicali olivaceo-fuscis: corpus nigro-fuscum, antice albo punctatum, antennis nigris.*

Alæ subtus olivaceo-fuscæ, anticæ medio fusciscente, margine interiore striga magna interna alba, puncto uno subcostali unoque discali sub cellæ extimo strigaeque interna exigua elongata albis: posticæ punctis nonnullis minimis subapicalibus albis, punctis quinque discalibus serie arcuata post cellam unoque ad cellæ extimum violaceis.

Exp. alar. unc. 3 $\frac{1}{4}$.

Hab. Waigiou.

B.M.

Division IV.

Alæ fuscæ, breves, anticæ maris et raro feminæ macula una discali, sub nervulo mediano primo posita: alæ subtus plerumque maculis submarginalibus distinctis; anticæ maculis discalibus plerumque distinctis.

Subdivision 1.

Alæ anticæ supra striga media lata pallida roseo-ferruginea: alæ subtus sine maculis submarginalibus; punctis discalibus indistinctis obsoletisve.

51. EUPLŒA USIPETES.

Euplæa usipetes, Hewitson, Exot. Butterf. ii. pl. 12. f. 4 (♂) (1857-61).

Hab. Aru Islands.

B.M.

52. EUPLŒA CONFUSA, sp. n. (Fig. 3, p. 283.)

♀. *Alæ anticæ supra ochreo-fuscæ, striga discali interna elongata confusa roseo-pallida, costa basi fusciscente: posticæ obscuriores, margine costali pallido, fascia triangulari nigro-fusca de margine abdominali ad cellæ extimum currente: corpus fuscum, antice nigrescens alboque punctatum; antennis nigris.*

Alæ subtus velut in E. usipete (Hewitson), posticæ autem margine anali pallidiore: corpus thorace nigro, abdomine cinereo-fusco.

Alar. exp. unc. 3 $\frac{1}{8}$.

Hab. Waigiou (Coll. Salvin and B.M.).

This insect may be only a local form of *E. usipetes*; I have only seen female specimens.

Subdivision 2.

Ala antica margine postico pallido; antica et aliquando postica subtus maculis discalibus distinctis; antica maculis subapicalibus distinctis.

53. EUPLÆA EURYPON.

Euplæa eurypon, Hewitson, Exot. Butterf. ii. pl. 12. f. 3 (♀) (1857-61).

Hab. North Ceram; Ké Island.

B.M.

Subdivision 3.

Ala supra sine maculis submarginalibus: postica subtus maculis discalibus obsoletis.

54. EUPLÆA HISME. (Fig. 1 *infra*.)

Euplæa hisme, Boisduval, Faune de l'Océanie, p. 95 (1832); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 4 (1847).

Hab. Aru Islands.

B.M.

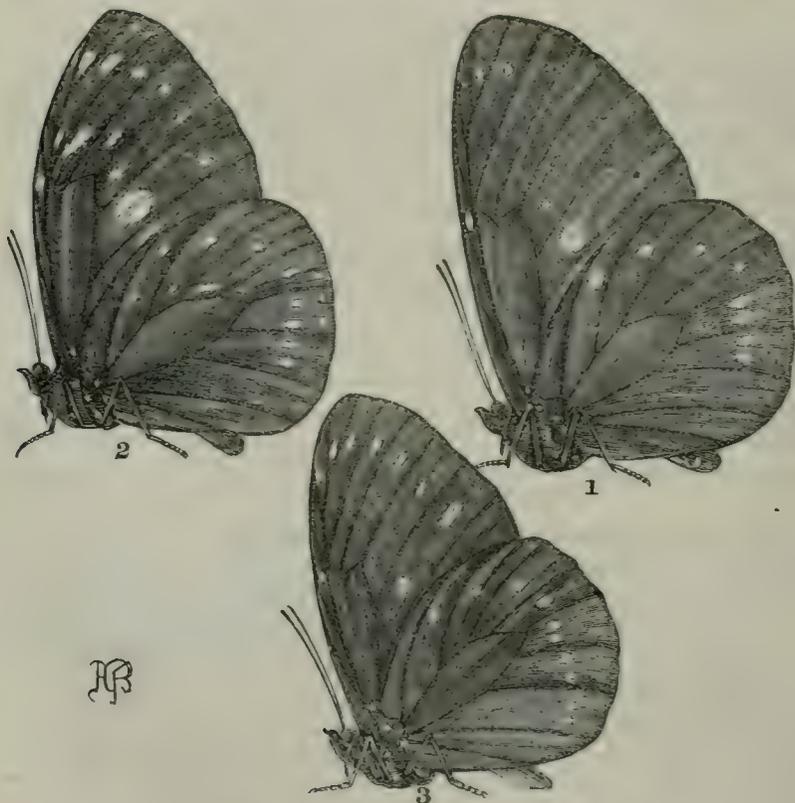


Fig. 1. *Euplæa hisme*, ♀, p. 286.

2. — *eunice*, ♀, p. 287.

3. — *iphianassa*, ♀, p. 287.

Subdivision 4.

Alæ supra maculis submarginalibus violaceis albisve serie una; posticæ subtus sine maculis discalibus.

55. EUPLŒA HERBSTII.

Euplœa herbstii, Boisduval, Faune de l'Océanie, p. 95. n. 3 (1832); Westw., Doubleday & Hewitson, Gen. Diurn. Lepid. p. 87. n. 8 (1847).

Hab. New Guinea.

56. EUPLŒA EUNICE. (Fig. 2, p. 286.)

Danaïs eunice, Godart, Enc. Méth. ix. p. 177 & p. 815. n. 2 (1819).

Euplœa eunice, Boisduval, Faune de l'Océanie, p. 94 (1832); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 1 (1847); F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 129. n. 257 (1857).
? *Danaida eunice*, Guérin, Icon. du Règne Animal, p. 474, pl. 77. f. 4 (1829-44).

Limnas mutabilis nemertes, Hübner, Samml. exot. Schmett. (1806-27).

Salpinx nemertes, Hübner, Verz. bek. Schmett. p. 17 (1816).

Hab. Ceram; Amboina; Java (*Westwood, Moore*); Pinang (*Moore*).
B.M.

57. EUPLŒA IPHIANASSA, sp. n. (Fig. 3, p. 286.)

Alæ supra fuscæ, marginibus pallescentibus; anticæ maris macula subapicali alba a venis interrupta, maculis tribus parvis submarginalibus, una costali unaque ovali magna discali, albis: posticæ area costali cinerea, macula permagna subtriangulari ochreo-feruginea: corpus fuscum, albo antice punctatum.

Alæ anticæ subtus fuscæ, ad marginem posticum pallidiores, maculis sex submarginalibus, una costali unaque discali magna globosa albis; margine interno ochreo: posticæ fuscæ, margine postico paulo pallidior, maculis septem submarginalibus serie angulata positis nec angulum analem attingentibus, cæruleo-albis; basi albo punctata: corpus cinereo-fuscum, antennis nigris.

Exp. alar. unc. $3\frac{2}{8}$.

Alæ anticæ femine subtus maculis septem submarginalibus punctoque uno costali albis: posticæ margine costali albo; maculis quatuor subapicalibus albis aliisque submarginalibus valde indistinctis: anticæ subtus margine interno ochreo-albo, macula una discali alba, aliter velut supra: posticæ maculis decem submarginalibus albis serie angulata positis; basi albo punctata; aliter velut supra.

Exp. alar. unc. $3\frac{1}{16}$.

Hab. Aneiteum.

B.M.

Note.—Allied to the preceding species, of which it may be only a local form; it differs from it chiefly in having only one discal spot on the front wings below, and none on the hind wings, also in the

female having no discal spot above; the latter may be a variable character, but it appears to be constantly the case with the females of *E. mazares* (Hübner).

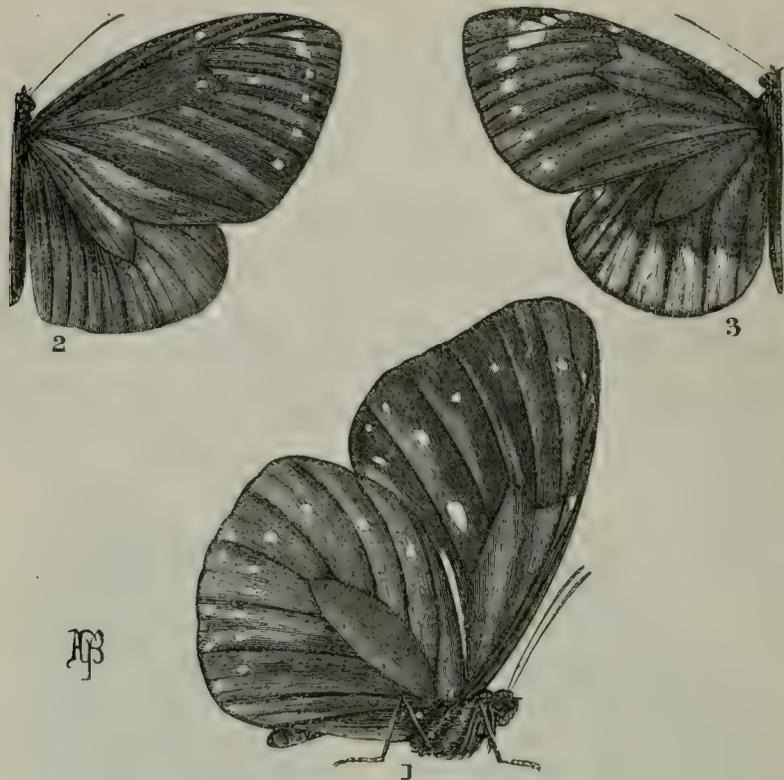


Fig. 1. *Euplœa vestigiata*, ♀, p. 288.
 2. — *inquinata*, ♂, p. 291.
 3. — *hyems*, ♀, p. 292.

58. EUPLŒA VESTIGIATA, sp. n. (Fig. 1 *suprà*.)

Alæ anticæ supra nigro-fuscæ, marginibus paulo rufescentibus; maculis submarginalibus octo novemve, una costali striaque brevi interna discali violaceis: posticæ olivaceo-fuscæ, medio fusciscente, margine costali albido; maculis tribus subapicalibus albis; alæ maris macula permagna subtriangulari ochrea apud costam posita: corpus nigro-fuscum, albo antice punctatum, antennis nigris.

Alæ subtus olivaceæ, margine interiore ochreo-albo, maris punctis sex submarginalibus, novem marginalibus maculaque una permagna ovali discali albis; macula una ovali discali interna cinerea; macula una parva costali duabusque discalibus post cellam positis violaceo-albis: anticæ feminæ maculis novem submarginalibus, punctis quatuor subanalibus, duabus subapicalibus minimis unaque discali magna ovali albis; macula una costali violaceo-alba: posticæ maculis decem submarginalibus et novem decemve analibus marginalibus albis, punctis duobus elongatis discalibus inter

venas subcostales violaceo-albis: corpus thorace nigro, albo maculato, antennis nigris, abdomine cinereo-fusco.

Exp. alar. unc. ♂ $3\frac{9}{16}$, ♀ $3\frac{3}{8}$.

Hab. Java.

B.M.

Note.—This species is also allied to *E. eunice*, Godart, and is probably the insect intended in the ‘Genera’ and in the ‘Catalogue of the East India Company.’ Our present specimens of *E. eunice* are named from insects that had been determined by Dr. Boisduval, and agree with the original description of the species.

59. EUPLŒA ELEUSINE.

Papilio eleusine, Cramer, Pap. Exot. iii. t. 266. f. D (1780).

Euplœa eleusine, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 9 (1847).

Danaïa eleusine, Godart, Enc. Méth. ix. p. 177 (1819).

Salpinx eleusina, Hübner, Samml. exot. Schmett. Bd. ii. pl. 9. f. 3, 4 (♀) (1806).

Terpsichrois eleusina, Hübner, Verz. bek. Schmett. p. 16 (1816).

Euplœa eleusine, F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 127. n. 252 (1857).

Euplœa mazares, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 10 (1847).

Hab. Java (*Horsf. Coll.*).

Var. ? *Danaïa darchia*, M‘Leay, King’s Survey of Australia, ii. App. p. 462 (1827); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 2 (*Eup. darchia*) (1847).

Hab. Australia.

Hübner (Samml. exot. Schmett. Bd. ii. pl. 9) figures two species under the name of *Salpinx eleusina*; he considers them to be the sexes of the species; they, however, belong to two distinct groups.

Division V.

Alæ supra fusco-cærulescentes: anticæ sine macula interna discali obsoleta; maculis submarginalibus, ad apicem majoribus: posticæ raro maculis submarginalibus. Alæ subtus maculis submarginalibus; anticæ aliquando macula discali; posticæ rarissime maculis discalibus.

Subdivision 1.

Alæ posticæ supra punctis nonnullis subapicalibus albis.

60. EUPLŒA MAZARES.

Euplœa mazares, F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 127. n. 253 (1857) (but not of Doubleday).

Hab. Java (*Horsf. Coll.*).

Var. *Alis majoribus, obscurioribus, feminæ sine puncto costali.*

Hab. Java; New Guinea.

B.M.

Note.—Hübner’s figures of *Salpinx eleusina* are certainly taken from a variety of Cramer’s insect, the discal spots above being only

partially obscured, the subapical spots not running so obliquely to the costa, and the subapical spots of the hind wings becoming very large at the apex. In the 'Genera,' however, they are quoted as *E. mazares*.

61. *EUPLŒA PUMILA*, sp. n.

Alæ anticæ brunneo-rufescentes et certo situ paulo purpurascens; margine postico dilutiore, femineæ roseo-albicante; anticæ maculis septem submarginalibus violaceo-albis: posticæ maris area costali cinerea, macula permagna ochrea apud costam posita; maculis duabus subapicalibus albis: posticæ femineæ margine costali ochreo-albo, maculis tribus subapicalibus albis: corpus fuscum, albo antice punctatum.

Alæ subtus brunneo-rufescentes, anticæ maris margine interno macula permagna ochrea; punctis quatuor subapicalibus albis: posticæ maculis quatuor subapicalibus punctisque decem minimis inconspicuis marginalibus albis; basi albo punctata: anticæ femineæ margine interno pallidiore, margine postico punctis plurimis submarginalibus albis serie duplici positis; posticæ maculis quatuor subapicalibus punctisque decem conspicuis marginalibus albis.

Exp. alar. unc. ♂ 2 $\frac{3}{8}$, ♀ 2 $\frac{5}{8}$.

Hab. New Guinea.

B.M.

62. *EUPLŒA POLLITA*.

Euplœa pollita, Erichson in Nov. Acad. Nat. Curios. xvi. pt. 2, pl. 40. f. 6. p. 282 (1833); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 21 (1847).

Hab. Philippine Islands.

B.M.

Note.—This species may be a local form of *E. tulliolus*, Fabricius.

63. *EUPLŒA SYLVESTER*.

Papilio sylvester, Fabricius, Ent. Syst. iii. 1. p. 41. n. 124 (1793).

Euplœa sylvester, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 25 (1847).

Danaïs sylvestris, Godart, Enc. Méth. ix. p. 182. n. 20 (1819).

Hab. Australia?

I think it doubtful whether this species is rightly placed; the description of it is so poor that it is impossible to recognize the insect by it.

Subdivision 2.

Alæ posticæ supra punctis subapicalibus obsoletis.

64. *EUPLŒA TULLIOLUS*.

Papilio tulliolus, Fabricius, Ent. Syst. iii. 1. p. 41. n. 123 (1793).

Euplœa tulliolus, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 26 (1847).

Danaïs tulliola, Godart, Enc. Méth. p. 181. n. 19 (1819); M'Leay, King's Survey of Australia, p. 461. n. 148 (1827).

Hab. Australia; Aneiteum.

B.M.

Var. *E. saundersii*, Bdv. MS. *Maculis punctisque albis multo minoribus, puncto costali obsoleto.*
Hab. Aru Islands (Sylvester Coll.). B.M.

Subdivision 3.

Alæ anticæ supra punctis nonnullis cæruleis apud costam positis.

65. EUPLŒA INQUINATA, sp. n. (Fig. 2, p. 288.)

♂. *Alæ anticæ supra area apicali et costali nigro-fuscis, cærulescentibus; area interna rufescenti-pallida, macula una oblonga apicali obliqua, maculis quatuor submarginalibus, una costali, una subcostali, una apud costam discali unaque ad cellæ extimum cæruleis: posticæ ochreo-fusco-pallidæ, apud basim fuscæ, area costali albicante; macula permagna subcostali ochrea, punctis tribus subapicalibus indistinctis: corpus fuscum, rufescens, pallidum; antennis nigro-fuscis.*

Alæ subtus olivaceo-fuscæ, anticæ margine interno cinereo, macula permagna ochrea, punctis plurimis minimis submarginalibus maculisque tribus mediis serie directa, una costali, una ad cellæ extimum unaque discali cæruleo-albis: posticæ maculis punctisque submarginalibus velut in E. mazares (Moore), basi fulvo punctata: corpus thorace cinereo, fulvo punctato; abdomine ochreo-cinereo.

Exp. alar. unc. 2 $\frac{3}{4}$.

Hab. India.

B.M.

This species has somewhat the appearance of having been stained; the coloration of the front wings is not quite regular.

66. EUPLŒA LEDERERI.

Euplœa ledereri, Felder, Wien. Entom. Monatsschr. iv. p. 397 (1860).

Hab. Malayan peninsula.

This species does not appear from the description to have any connexion with the *ledereri* of Dr. Boisduval, MS.

Subdivision 4.

Alæ posticæ fascia submarginali marginalive alba, a venis interrupta.

67. EUPLŒA PRIAPUS, sp. n. (Pl. XXIX. fig. 2.)

♂. *Alæ supra nigro-fuscæ, cærulescentes, fascia macularum apicali obliqua, maculis quatuor submarginalibus unaque costali roseo-albis: posticæ costa pallida, maculis sex albis difformibus submarginalibus, macula magna subcostali ochrea: corpus nigro-fuscum, antice albo punctatum, antennis nigris.*

Alæ subtus rufescentes, maculis submarginalibus et subapicalibus velut supra, punctisque nonnullis minimis sparsis marginalibus albis; margine interno pallido, macula permagna ochrea: posticæ maculis decem submarginalibus, una discali interna punctisque

plurimis marginalibus albis : corpus thorace nigro, albo punctato ; abdomine cinereo, ochreo maculato.

Exp. alar. unc. $2\frac{6}{5}$.

♀. *Alæ anticæ supra fuscæ, rufescentes, paulo cærulescentes, maculis velut maris : posticæ olivaceæ, basi rufescentes, sine macula subcostali, punctis nonnullis marginalibus albis, aliter velut maris. Alæ subtus pallide olivaceæ, anticæ maculis duabus discalibus plurimisque marginalibus albis, aliter velut maris : posticæ punctis quatuor discalibus unoque in cella, aliter velut maris.*

Exp. alar. unc. $2\frac{13}{16}$.

Hab. Australia.

B.M.

Obs. This species had the name *E. darchia* attached to it, but is, I believe, a very distinct insect.

68. EUPLŒA HYEMS, sp. n. (Fig. 3, p. 288.)

Alæ anticæ olivaceo-fuscæ, certo situ cærulescentes ; macula una apicali obliqua magna a venis intersecta, maculis quinque tribusve submarginalibus unaque costali albis : posticæ paulo pallidiores, margine costali pallido, apice pallido, fascia lata marginali alba maculisque tribus subapicalibus albis ; femineæ margine externo fusco ; alæ maris macula permagna subapicali ochrea : corpus fuscum, anticæ albo maculatum, antennis nigris.

Alæ subtus pallidiores, anticæ maculis submarginalibus velut supra aliisque minoribus marginalibus albis, margine interno pallido : posticæ fascia marginali paulo confusa, maris brunneo interrupta ; maculis subapicalibus minoribus ; basi albo punctata : corpus fuscum, thorace albo punctato, antennis fuscis, abdomine punctis albis mediis.

Exp. alar. unc. ♂ $2\frac{3}{8}$, ♀ $2\frac{6}{8}$.

Hab. Timor ; Australia.

B.M.

Division VI.

Alæ viridescentes, anticæ maris margine interno monstrose lobato.

69. EUPLŒA TREITSCHKEI.

Euplæa treitschkei, Boisduval, Faune de l'Océanie, p. 98 (1832) ; Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 5. pl. 11. f. 2 (♂) (1847).

Hab. New Ireland.

B.M.

Division VII.

Alæ elongatæ, supra nigro-fuscæ, cærulescentes, anticæ maculis submarginalibus magnis, posticæ plerumque maculis subapicalibus cæruleo-albis : alæ anticæ subtus maculis discalibus distinctis cæruleo-albis, posticæ punctis maculisve discalibus.

70. EUPLŒA LËTIFICA, sp. n. (Pl. XXIX. fig. 3.)

♂. *Alæ anticæ supra nigro-fuscæ, cærulescentes, maculis sex sub-*

marginalibus albis cæruleo inclusis tribusque quatuorve ad apicem maculam unam permagnam formantibus, striis duabus internis nitentibus, margine postico certo situ viridescente: posticæ margine anali dilutiore, area interna viridi-cærulescente, area costali alba, maculis tribus subapicalibus albis: corpus nigro-fuscum, antice albo punctatum, antennis nigris.

Alæ subtus olivaceæ, anticæ area basali medio fuscescente et certo situ cærulescente, margine interno albo, maculis tribus subapicalibus punctisque tribus submarginalibus albis; maculis duabus discalibus, una ad cellæ extimum, puncto uno costali unoque discali post cellæ extimum punctisque duobus subanalibus minutissimis cæruleo-albis: posticæ punctis quinque discalibus serie irregulari unoque ad cellæ extimum cæruleo-albis, punctis duobus subapicalibus aliisque minimis marginalibus albis, basi fulvo punctata: corpus nigrum, thorace fulvo punctato; abdomine cæruleo maculato.

♀. *Alæ anticæ supra purpurascens, maculis subapicalibus maculam unam formantibus; posticæ maculis duabus subapicalibus: anticæ subtus macula una permagna subapicali velut supra, punctoque uno submarginali; posticæ punctis duobus discalibus, nullis subapicalibus, aliter velut maris.*

Hab. Philippine Islands.

B.M.

71. EUPLŒA DOLESCHALII.

Euplœa doleschalii, Felder, Wien. Entom. Monatschr. iii. p. 267. n. 14 (1859).

Hab. New Guinea.

The following species may belong to the next Division; in pattern it much resembles *E. muisgechii* (♂) of Felder on the upperside.

72. EUPLŒA GLORIOSA, sp. n. (Pl. XXIX: fig. 4.)

♂. *Alæ supra nigro-fuscæ, cærulescentes, anticæ maculis septem magnis violaceo-albis, punctis quatuor minimis analibus albis, striis duabus nitentibus internis: posticæ costa pallida, maculis septem submarginalibus de costa magnitudine decrescentibus punctisque quinque marginalibus analibus albis: corpus nigro-fuscum, antice albo punctatum, antennis nigris.*

Alæ subtus olivaceæ, anticæ area basali medio fuscescente et certo situ cærulescente, margine interno albo, maculis septem submarginalibus albis de costa magnitudine crescentibus, punctis septem marginalibus albis analibus, puncto uno costali, tribus subcostalibus serie obliqua, maculis duabus discoideis unaque ad cellæ extimum albis iridescentibus: posticæ maculis novem submarginalibus de costa magnitudine decrescentibus punctisque novem marginalibus analibus albis, punctis sex internis discoideis post cellæ extimum unoque in cella albis iridescentibus: corpus thorace nigro, albo punctato; antennis nigris; abdomine cinereo, albo maculato.

Exp. alar. unc. $3\frac{1}{16}$.

Hab. Celebes.

B.M:

Division VIII.

Alæ maris et feminæ valde discrepantes.

73. EUPLŒA DIOCLETIA.

Amaura diocletia, Hübner, Samml. exot. Schmett. Bd. ii. pl. ? f. 3, 4 (♀) (1806).

Euplœa megilla, Erichson in Nova Acta Acad. Curios. xvi. p. 282, pl. 40. f. 7 (♀) (1834); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 22 (1847).

Hab. Philippines.

♂, ♀, B.M.

74. EUPLŒA DUFRESNII.

Danais dufresnii, Godart, Enc. Méth. ix. Suppl. p. 815. n. 12-13 (1819).

Euplœa dufresnii, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. pp. 87, 88, nos. 3 & 28 (1847).

Hab. Philippines.

75. EUPLŒA DRYASIS.

Papilio dryasis, Fabricius, Ent. Syst. iii. 1. p. 39. n. 117 (1793).

Danais dryasis, Godart, Enc. Méth. ix. p. 179. n. 10 (1819).

Euplœa dryasis, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 19 (1847).

Hab. Indian Islands.

76. EUPLŒA MIDAMUS.

Papilio midamus, Linnæus, Syst. Nat. ii. p. 765. n. 108 (1766); Act. Stockh. (1748) t. 6. f. 1, 2.

Danais midamus, Godart, Enc. Méth. ix. p. 179. n. 12 (1819).

Euplœa midamus, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 87. n. 11 (1847); F. Moore, Cat. Lep. Mus. East India Comp. p. 133. n. 265 (1857), pl. 4. f. 10, 10 a (metamorph.).

Papilio mulciber, Cramer, Pap. Exot. ii. pl. 127. f. C, D (1776); Guérin, Bonnat. Entom. i. p. 268, pl. 20. f. 7.

♀. *Papilio claudius*, Fabricius, Ent. Syst. iii. 1. p. 40. n. 119 (1793).

Danais claudia, Godart, Enc. Méth. ix. p. 180.

Papilio basilissa, Cramer, Pap. Exot. iii. pl. 266. f. C (1780); Guérin, Bonnat. Entom. i. p. 268, pl. 36. f. 2.

Hab. Java; Penang; Borneo; Sumatra.

B.M.

Linnæus's specimen appears to have been somewhat different to the normal form of *E. midamus*, ♂. He describes it as follows:—

“*Alis integerrimis nigris albido punctatis: primoribus supra cærulescentibus; posticis punctorum alborum lineâ.*

Corpus atrum punctis albis: alæ atro-cærulescentes, posticæ serie intra marginem e punctis albis, et alia serie interiore punctis majoribus albis. Habitat in Asia.”

This description agrees with the figure which he quotes (Act. Stock. 1748, t. 6. f. 1, 2).

Note.—The Javan specimens of *E. midamus* are the nearest to Linnæus's type; they differ from the Indian ones in having the wings slightly shorter and the spots larger; the Bornean specimens are very small.

77. EUPLŒA HEWITSONII, sp. n. (Pl. XXX. fig. 2.)

? *Euplœa eunice*, Boisduval, Sp. Gén. Léop. (1836) pl. 24. f. 1, ♂.

? *Danaïs eunice*, Guérin, Icon. du Règne Animal, p. 474, pl. 77. f. 4, ♂; Lucas, Léop. Exot. p. 45. f. 1, ♂.

♀. *Alæ supra nigro-fusca, cærulescentes; anticæ serie macularum octo cæruleo-albarum submarginali, apud apicem arcuata; macula una costali duabusque discalibus medium versus, inferiore permagna subovali, superiore raro obsoleta, cæruleo-albis: posticæ rufescentes, margine costali albo, serie macularum sex submarginulium cæruleo-albarum ad apicem magnitudine crescentium, maculis duabus discalibus post cellæ finem punctisque sex minimis analibus marginalibus cæruleis: corpus nigro-fuscum, medio rufescente, antice nigrum albo punctatum, antennis nigris.*

Alæ subtus cupreo-olivaceæ; anticæ margine interno pallidiore, macula una costali cærulea, serie macularum albarum marginalium continua serieque subapicali macularum quinque interna, macula una subanali unaque magna discali interna albis: posticæ seriebus macularum albarum submarginalium duabus, serie interna costæ medium attingente, basi albo punctata: corpus nigrum, albo maculatum, antennis nigris.

Exp. alar. unc. $4\frac{5}{16}$.

Hab. Philippines.

B.M.

I have named this insect after Mr. Hewitson, as a small acknowledgment of the kind interest which he has always taken in my efforts to acquire a knowledge of the Diurnal Lepidoptera.

78. EUPLŒA VIOLA, sp. n. (Pl. XXX. fig. 3.)

♂. *Alæ supra rufescenti-fusca, cærulescentes: anticæ serie macularum submarginalium subcærulearum apud apicem bifurcata maculaque una discali interna oblonga: posticæ macula permagna subcostali ochrea, margine costali cinereo, maculis duabus apicalibus parvis ochreis, maculis quinque magnis submarginalibus magnitudine decrescentibus subcæruleis, punctis sex cæruleis marginalibus: corpus fuscum; capite nigro, albo punctato; antennis nigris.*

Alæ subtus pallidiores, anticæ margine interno cinereo-albo, macula permagna ochrea, macula una discali magna ovali, quinque discalibus minoribus, una costali, tribus marginalibus, punctis insuper tribus punctisque septem marginalibus albis: posticæ maculis decem submarginalibus punctisque undecim marginalibus subcæruleis, maculis quinque discalibus subviolaceis unaque subcostali brunnea, basi albo punctata: corpus thorace nigro, ochreo-punctato; antennis nigris; abdomine fusco.

Exp. alar. unc. $4\frac{3}{16}$.

♀. *Alæ supra rufescenti-fuscæ, purpurascentes; anticæ serie macularum submarginalium oblongarum subviolacearum apud apicem bifurcata: posticæ margine costali albo, macula una apicali magna albida albo pupillata, maculis quinque elongatis magnis interruptis submarginalibus subviolaceis, magnitudine decrescentibus; punctis sex subviolaceis marginalibus: corpus velut maris, sed brevius.*

Alæ subtus pallidiores, anticæ margine interno albo; fascia media septem-maculata, interrupta, roseo-alba; maculis septem submarginalibus de costa magnitudine crescentibus punctisque duodecim marginalibus minimis albis: posticæ maculis decem submarginalibus undecimque marginalibus, quinque magnis discalibus unaque in cella roseo-albis, una magna subcostali ochreo-alba: corpus thorace nigro, ochreo punctato; antennis nigris; abdomine fusco, maculis tribus albis cæruleis.

Exp. alar. unc. 4½.

Hab. Celebes.

B.M.

This species is closely allied to *E. muisgechii* of Felder, which it greatly resembles in the coloration of both sexes; it differs from it chiefly in its much greater size. We have a curious female variety with a rosy blush in the hind wings below.

79. EUPLŒA MUISGECHII.

Euplœa muisgechii, Felder, Wien. Entom. Monatsschr. Bd. iii. (1859) p. 182. n. 4.

Hab. Celebes.

B.M.

80. EUPLŒA HYACINTHUS, sp. n. (Pl. XXIX. fig. 5.)

♀. *Alæ supra cærulescentes, anticæ nigro-fuscæ, fascia media irregulari alba medio interrupta et a venis nigris intersecta, punctis septem submarginalibus albis: posticæ olivaceo-fuscæ, margine costali pallido, macula media permagna alba a venis interrupta, punctis octo submarginalibus albis: corpus nigro-fuscum, antice albo punctatum.*

Alæ subtus pallidiores, ochreo-cinereæ, serie macularum marginalium albarum continua; anticæ margine interno ochreo-albo, aliter velut supra: corpus thorace nigro, albo maculato; abdomine cinereo, albo maculato.

Exp. alar. unc. 2½.

Hab. Celebes.

B.M.

81. EUPLŒA RHADAMANTHUS.

♂. *Papilio rhadamanthus*, Fabricius, Ent. Syst. iii. 1. p. 42 (1793); Jones, Icon. t. 45. f. 2.

Euplœa rhadamanthus, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 23 (1847); F. Moore, Cat. Lep. Mus. East India Comp. p. 126. n. 250 (1857).

♀. *Danaïs dioeletianus*, Fabricius, Ent. Syst. iii. 1. p. 40 (1793); Godart, Enc. Méth. ix. p. 181 (1819).

♂. *Terpsichrois thoösa*, Hübner, Samml. exot. Schm. (1806-27).

♂. *Danaïs alcidice*, Godart, Enc. Méth. ix. p. 181 (1819).

♂. *Danaïs rhadamia*, Godart, Enc. Méth. ix. p. 180 (1819).

Hab. India; Java; Penang; Borneo. B.M.

82. EUPLŒA EUPATOR.

Euplœa eupator, Hewitson, Exot. Butterf. ii. p. 23, pl. 12. f. 1 (1857-61).

Hab. Celebes. B.M.

Division IX.

Alæ supra punctis submarginalibus maculisque discalibus albis.

Subdivision 1.

Alæ anticæ supra, margine interno stria oblonga violacea submarginato.

83. EUPLŒA DIANA, sp. n. (Plate XXIX. fig. 6.)

Alæ supra olivaceo-fuscæ, basi fuscescentes et cærulescentes, anticæ maculis duabus punctoque uno mediis discalibus, macula una ad cellæ extimum, stria discali interna punctisque duobus subcostalibus albis violaceo cinctis, punctis sex septemve submarginalibus aliisque marginalibus minimis albis: posticæ area costali pallida; maculis tribus quatuorve mediis, decem submarginalibus punctisque plurimis marginalibus albis: corpus nigro-fuscum, antice nigrum albo punctatum, antennis nigris.

Alæ subtus pallidiores, posticæ fascia media lata arcuata pallida; anticæ fascia macularum roseo-albarum media, macula ad cellæ extimum plurimisque submarginalibus velut supra albis: posticæ maculis septem discalibus serie arcuata maculaque una ad cellæ extimum roseo-albis, maculis submarginalibus velut supra albis; basi ochreo-punctata: corpus nigrum, thorace ochreo punctato, antennis nigris.

Exp. alar. unc. ♂ $3\frac{3}{8}$, ♀ $3\frac{1}{2}$.

Hab. Celebes.

B.M.

Not closely allied to any known species; below somewhat similar to the next species.

Subdivision 2.

Alæ anticæ supra sine stria violacea, maculis discalibus apud costam distinctis.

84. EUPLŒA CRATIS, sp. n. (Fig. 1, p. 298.)

♀. *Alæ supra olivaceo-fuscæ, anticæ maculis quatuor punctisque duobus post cellæ finem maculaque una in cella roseo-albis, maculis sex subapicalibus, duabus mediis discalibus apud marginem posticum, puncto uno subanali plurimisque marginalibus ochreo-albis: posticæ area basali crassa, costa pallida, fascia discali macularum, excipe apud apicem, oblongarum punctisque marginali-*

bus plurimis ochreo-albis : corpus nigro-fuscum, antice albo punctatum, antennis nigris.

Alæ subtus pallidiores ; anticæ margine interno cinerascete, stria irregulari discoidali in cella maculisque septem post cellam serie angulata positæ roseo-albis, aliter velut supra : posticæ maculis quatuor radiatis supra cellam positæ, stria lineisque duabus in cella roseo-albis, aliter velut supra, basi albo punctata : corpus thorace nigro albo punctato, antennis nigris, abdomine cinereo albo maculato.

Exp. alar. unc. $3\frac{3}{16}$.

Hab. Philippine Islands.

B.M.

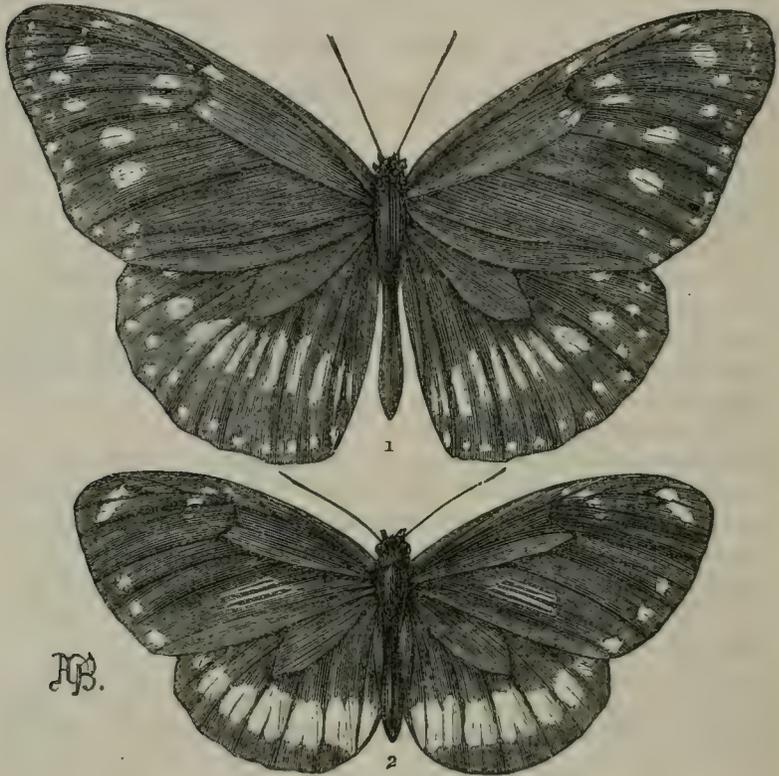


Fig. 1. *Euplæa cratis*, ♂, p. 297.

2. — *melpomene*, ♂, p. 300.

Division X.

Alæ supra fuscæ, anticæ plerumque punctis marginalibus albis, fascia maculari subapicali alba maculisque submarginalibus magnis ; posticæ plerumque fascia maculari alba a venis plus minusve interrupta : subtus punctis discalibus aliisque submarginalibus.

Subdivision 1.

Alæ fuscæ maculis elongatis valde interruptis : subtus punctis discalibus pene obsolete.

85. EUPLŒA ABJECTA, sp. n.

Alæ supra olivaceo-fuscæ, anticæ punctis maculisve tribus subapicalibus elongatis punctoque uno costali ochreo-albis: posticæ margine costali pallido, maris maculis quatuor elongatis apud disci medium submarginalibus ochreo-albis, femine velut maris punctis quoque discalibus et quinque marginalibus similibus: corpus fuscum, collo albo punctato, antennis nigris.

Alæ subtus pallidiores, rufescentes, anticæ margine interno pallido, maculis velut supra, femine stria interna, punctis quatuor submarginalibus albis, duobusque subcostalibus linea obliqua subviolaceis: posticæ maris puncto uno maculisque quatuor velut supra discalibus, punctis duobus marginalibus valde indistinctis ochreis; posticæ femine maculis submarginalibus punctisque marginalibus confusis, puncto uno subcostali subviolaceo: corpus thorace nigro albo punctato, antennis nigris, abdomine fusco albo lineato.

Alar. exp. unc. ♂ $2\frac{1}{6}$, ♀ $2\frac{1}{6}$.

Hab. Philippine Islands.

B.M.

This species in form much resembles *E. mitra* of Moore.

Subdivision 2.

Alæ anticæ fascia lata obliqua subapicali nivea, maculis apicalibus unaque subanali albis, posticæ immaculatæ; subtus punctis octo discalibus aliisque submarginalibus serie duplici violaceis.

86. EUPLŒA MITRA.

Euplœa mitra, Moore, Cat. Lep. Mus. East Ind. Comp. p. 127. n. 251 (1857).

Hab. — ?

B.M.

Subdivision 3.

Alæ posticæ supra maculis fasciave submarginalibus semper distinctis.

87. EUPLŒA ROGERI.

Crastia rogeri, Hübner, Samml. exot. Schmett. Zutrage, pl. ? f. 947 (1806).

Hab. — ?

88. EUPLŒA OROPE.

Euplœa orope, Boisduval, Faune de l'Océanie, p. 100 (1832); Sp. Gén. Léop. (planches) pl. 11. f. 9 (1836); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 35 (1847).

Hab. Taiti (*Bdv.*); Timor.

B.M.

Var. Anticæ fascia submarginali valde interrupta: posticæ margine postico pallido seriebus macularum albarum duabus, serie interna maculis majoribus.

Hab. Sumatra?

B.M.

Note.—I should have been utterly unable to recognize this insect

from the description given in the 'Faune de l'Océanie;' it does not at all suit the figure in the 'Spécies Général des Lépidoptères;' it is therefore not impossible that I may have redescribed one or two of Dr. Boisduval's insects on account of the incomplete manner in which they are noticed. I have, however, carefully gone through all our specimens of *Euplæa* with his descriptions, and in most cases have, I think, satisfactorily determined the species which they represent.

89. EUPLÆA ELEUTHO.

Danaïs eleutho, Quoy & Gaim. in Freycinet, Voy. t. 83. f. 2 (1815); Godt. Enc. Méth. (Suppl.) ix. p. 815. nos. 17, 18 (1823).

Euplæa eleutho, Boisduval, Faune de l'Océanie, p. 100 (1832); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 36 (1847).

Hab. Taiti; Navigators' Islands; New Caledonia. B.M.

Var. (a). *Anticæ maculis subapicalibus magnis: posticæ maculis submarginalibus fasciam latam formantibus.*

Hab. ———? B.M.

Var. (b). *Anticæ apice acuto producto, maculis subapicalibus magnis: posticæ fascia submarginali lata apud alarum medium.*

Hab. North Australia. B.M.

90. EUPLÆA PROSERPINA, sp. n.

♂. *Alæ supra nigro-fuscæ, anticæ ad marginem paulo pallescente, stria interna nitida, maculis quinque punctoque uno subapicalibus, maculis duabus submarginalibus, una subtriangulari alteraque magna claviformi, albis, punctis nonnullis minimis marginalibus valde indistinctis: posticæ costa pallida, fascia maculari submarginali punctisque nonnullis marginalibus ochreo-albis: corpus nigro-fuscum, antice albo punctatum, antennis nigris.*

Alæ subtus pallidiores, anticæ margine interno pallido, maculis velut supra, punctis quatuor apicalibus, quatuor marginalibus mediis, uno discali interno, uno post cellæ extimum unoque costali albis, uno in cella subviolaceo: posticæ costa ochrea basi albo punctata, punctis quinque discalibus unoque ad cellæ extimum cæruleis, maculis submarginalibus velut supra: corpus nigrum albo punctatum, antennis nigris.

Exp. alar. unc. 2 $\frac{1}{2}$.

Hab. Figi Islands. B.M.

Allied to *E. pelor* of Doubleday and *E. eleutho* of Quoy.

91. EUPLÆA PELOR.

Euplæa pelor, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 34. t. 11. f. 1 (1847); Chenu, Enc. d'Hist. Nat. (Papillons) p. 64. f. 153 (1851-53).

Hab. North-western Australia. B.M.

92. EUPLÆA MELPOMENE, sp. n. (Fig. 2, p. 298.)

♂. *Alæ supra nigro-fuscæ cærulescentes, anticæ punctis tribus subcostalibus albis, macula magna apicali a vena una interrupta*

tribusque marginalibus analibus ochreo-albis: posticæ fascia maculari submarginali ochreo-alba punctisque marginalibus indistinctis: corpus fuscum antice albo-punctatum, antennis nigris.

Alæ subtus olivaceæ, anticæ paulo rufescentes, area basali fuscescente certoque situ viridescente, punctis sex septemve mediis serie arcuata positis unoque in cella cæruleo-albis, maculis apicalibus et submarginalibus velut supra punctisque plurimis marginalibus albis: posticæ punctis septem discalibus roseo-albis serie arcuata positis unoque in cella, fascia submarginali velut supra, punctis marginalibus distinctis albis: corpus thorace nigro albo punctato, antennis nigris, abdomine fusco albo maculato.

Exp. alar. unc. $2\frac{1}{16}$ — $3\frac{3}{16}$.

Hab. Australia.

B.M.

93. EUPLŒA EUPHONE.

Euplœa euphone, Fabricius, Syst. Ent. Suppl. v. p. 423. nos. 184, 185 (1793).

Danais euphone, Godart, Enc. Méth. ix. p. 181. n. 18 (1819).

Euplœa euphone, Boisduval, Faune Ent. de Madag. t. 3. f. 1 (1833); Lucas, Hist. Nat. Anim. Articul. iii. p. 434, pl. 9. f. 1 (1840); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 37 (1847).

Hab. Mauritius.

B.M.

94. EUPLŒA DESJARDINSII.

Danaida desjardinsii, Guérin, Icon. du Règne Anim. texte, ii. p. 474 (1829-44); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 38 (1847).

Hab. Island of Rodriguez.

95. EUPLŒA GOUDOTII.

Euplœa goudotii, Boisduval, Faune Ent. de Madag. t. 3. f. 2 (1833); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 88. n. 30 (1847); Trimen, Rhop. Afric. Austral. i. p. 83 (1862).

Hab. Mauritius.

B.M.

96. EUPLŒA EURIANASSA.

Euplœa eurianassa, Hewitson, Exot. Butterf. ii. p. 23, pl. 12. f. 2 (1857-61).

Hab. New Guinea (Coll. Hewitson).

P.S. Since writing the present paper I have detected the following species:—

95 a. EUPLŒA EBENINA, sp. n.

♂. *E. pallæ simillima. Alæ supra nigro-fuscæ paulo cærulescentes, anticæ sine strâis internis, maculis submarginalibus ochreo-albis, apud apicem serie obliqua velut in E. crameri positis: posticæ area costali paulo dilutiore, serie punctorum marginalium alborum aliaque macularum interna: corpus nigro-fuscum antice albo punctatum, antennis nigris.*

Alæ subtus olivaceo-fuscae; anticæ medio fuscescentes, margine interno pallescente, striis duabus albidis indistinctis, puncto maculaque discalibus ochreis, puncto uno in cella violaceo, maculis submarginalibus velut supra: posticæ maculis marginalibus velut supra, punctis nonnullis minimis basalibus albis: corpus nigro-fuscum, thorace albo punctato.

Exp. alar. unc. $3\frac{9}{16}$.

Hab. Aru Islands.

B.M.

Resembling *E. palla*; but differing from it in the form of the wings, the position, colour, and number of the submarginal spots, the absence of the internal discoidal streaks above, &c. It is allied to *E. goudotii*, the form of the wings being nearly identical.

10 a. EUPLÆA DEHAANI.

Euplæa dehaani, Lucas, Rev. et Mag. de Zool. 1853, p. 313.

Hab. Java.

9 a. EUPLÆA GYLLENHALII.

Euplæa gyllenhalii, Lucas, Rev. et Mag. de Zool. 1853, p. 316.

Hab. Java.

90 a. EUPLÆA BOISDUVALII.

Euplæa boisduvalii, Lucas, Rev. et Mag. de Zool. 1853, p. 321.

Hab. Australia.

EXPLANATION OF THE PLATES.

PLATE XXIX.

Fig. 1. *Euplæa camaralzeman*, ♂, p. 271.

2. — *priapus*, ♂, p. 291.

3. — *letifica*, ♀, p. 292.

Fig. 4. *Euplæa gloriosa*, ♂, p. 293.

5. — *hyacinthus*, ♂, p. 296.

6. — *diana*, ♂, p. 297.

PLATE XXX.

Fig. 1. *Euplæa picina*, ♂, p. 280.

2. — *hewitsonii*, ♀, p. 295.

Fig. 3. *Euplæa viola*, ♂, p. 295.

8. On a New Species of the Genus *Accipiter* from New Granada. By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to the Society.

Mr. J. H. Gurney has kindly placed in my hands for examination a skin of a small species of *Accipiter* from New Granada which is unknown to him. During a recent visit to Paris I have taken the opportunity of comparing this specimen with the fine series of Rapacious Birds belonging to the Musée d'Histoire Naturelle in the Jardin des Plantes, in doing which I had the advantage of the assistance of my friend M. Jules Verreaux, Aide-Naturaliste to that establishment.

In that magnificent collection are two specimens evidently of the same species, transmitted from Bogota by M. Leydig. As, however, the bird does not as yet appear to have received a name, I propose to call it, from the conspicuous chestnut colouring of the belly,

ACCIPITER VENTRALIS, sp. nov.

Supra obscure plumbeus, subtus castaneus gula albicante, pectore plumbescente: alis nigris, subtus albo transfasciatis; cauda nigra, fasciis transversis quinque, subtus albis, supra plumbeis, item margine apicali albo: rostro nigro, pedibus flavis, unguibus nigris: long. tota 10 poll. Angl., alæ 6·8, caudæ 5·5, tarsi 2, dig. med. cum ungue 1·6.

♀. *Similis mari, sed major et gula dilutiore, fere albida: pectore vix plumbeo tincto.*

Hab. in Nova Granada interior.

Mus. Parisiensi et dom. Gurney.

This is a typical *Accipiter* with rather elongated wings and long middle claw as in *Acc. erythrocnemis*. It is readily distinguishable from every other American species of the group by its chestnut belly and plumbeous thorax. In Mr. Gurney's skin the breast is suffused with plumbeous, and there are faint shaft-stripes on the throat and breast. The plumage is in moult, but the third and fourth primaries appear to be nearly equal and longest. The tarsi are long and very slender. The under wing-coverts are white, spotted with black and suffused with rufous. Mr. Salvin and I propose to give a figure of this bird in the second number of 'Exotic Ornithology.'

I am acquainted with nine American species of *Accipiter*, namely:—

1. ACCIPITER FUSCUS.

Falco fuscus, et *dubius*, Gm.

Accipiter fuscus, Baird, B. N. A. p. 18.

Falco velox et *F. pennsylvanicus*, Wilson.

Hab. Whole of North America and Mexico down to Guatemala, where specimens were obtained by Mr. Salvin.

2. ACCIPITER ERYTHROCNEMIS.

Falco nisus, Max. Beitr. iii. p. 111.

Nisus striatus, D'Orb. Voy. p. 88; Burm. Syst. Ueb. ii. p. 71 (see Jard. Contr. 1850, p. 64).

Accipiter erythronemis, Gray, List of Accipitres (1848), p. 70; Sclater, P. Z. S. 1855, p. 134, et 1860, p. 96; Sclater et Salv. Ibis, 1859, p. 218; Salvin, Ibis, 1861, p. 140.

Nisus fringillarius, subsp. *erythronemius*, Kaup, Arch. f. Nat. (1850) xvi. Bd. i. p. 34.

Nisus chionogaster, Kaup, P. Z. S. 1851, p. 41.

Hab. Whole of South America and northwards to Guatemala, where numerous examples were obtained by Mr. Salvin. The perfect adult in both sexes appears to be white below, with narrow shaft-stripes, which are occasionally absent, in which stage the bird is *N. chionogaster*, Kaup. A specimen marked as the type of "*Sparvius*

guttatus, Vieill.," and "*Nisus variatus*, Cuv.," Less., in the Paris Museum, appears to be a young bird of this species, for which, however, it is more prudent to retain the better-known name imposed upon it by Mr. Gray.

3. ACCIPITER VENTRALIS, sp. nov.

Hab. Interior of New Granada.

4. ACCIPITER TINUS.

Falco tinus, Latham.

Accipiter tinus, Gray & Mitch. Gen. B. pl. 10.

Nisus tinus, Burm. Syst. Ueb. ii. p. 70.

Accipiter fontanieri, Bp. C. R. xxxvii. p. 810 (juv.).

Hab. New Granada (*Fontanier*); Veragua (*Arcé*).

The type specimen of *Accipiter fontanieri* is now in the gallery of the Jardin des Plantes, and is certainly referable to the rufous stage of this species.

5. ACCIPITER PILEATUS.

Falco pileatus, Max. Beitr. iii. p. 107; Temm. Pl. Col. 205.

Hab. Brazil, Cayenne, and northwards to Guatemala, where fine specimens of both sexes were obtained by Mr. Salvin. The adult of this bird is correctly figured by Temminck, *l. c.* It is difficult to understand how it has come to be confounded with *A. cooperi*.

6. ACCIPITER COOPERI.

Falco cooperi, Bp. Am. Orn. ii. p. 1, pl. 10. f. 1.

Falco stanleyii, Aud.

Accipiter cooperi, Baird, B. N. A. p. 16.

Hab. North America, and southwards to Guatemala, where examples were obtained by Mr. Salvin.

7. ACCIPITER PECTORALIS.

"*Falco pectoralis*, Cuv.," Bp. R. Z. 1850, p. 474.

Accipiter pectoralis, Sclater, Ibis, 1861, p. 313, pl. 10.

Hab. South America.

8. ACCIPITER COLLARIS.

Accipiter collaris, Sclater, Ibis, 1860, p. 148, pl. 6.

Hab. New Granada.

9. ACCIPITER CASTANILIUS.

Accipiter castanilius, Bp. Rev. Zool. 1853, p. 578; Compt. Rend. xxxvii. p. 810 (1853).

Hab. Vicinity of Santa Martha, New Granada.

M. Verreaux informs me that he received several examples of this very distinct species from his collector at Santa Martha. One of them is now in the British Museum, and is the only specimen I have seen of this bird.

May 22, 1866.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

Mr. P. L. Slater, Secretary to the Society, called the attention of the Meeting to a specimen of a rare American Monkey (*Pithecia leucocephala*), figured in Audebert's 'Singes,' pl. 6. fig. 2, lately added to the Society's Menagerie. The example in question had been presented to the Society on the 15th instant by Mr. W. H. Barton of the R. W. I. M. S. S. Wye, and was stated by that gentleman to have been obtained from the Buck-Indians of Demerara, by whom it had been brought from a locality about 300 miles distant in the interior of that country. Mr. Slater stated that this Monkey appeared to be of some rarity, there being no specimen of it in the National Collection.

Mr. W. H. Flower exhibited two specimens of the Common Death's-Head Moth (*Acherontia atropos*), taken on board the 'Hotspur,' East Indiaman, Captain Henry Toynbee, on her homeward voyage, in lat. $40^{\circ} 29' N.$, long. $15^{\circ} 00' W.$, 260 miles from the coast of Portugal, after an easterly gale: also a specimen of *Sphynx convolutuli*, ♀, which flew on board the same ship in lat. $12^{\circ} 09' N.$ and long. $21^{\circ} 17' W.$,—the prevailing winds being westerly and northerly.

The following papers were read:—

1. Notes on some Young Specimens of Tortoises (*Testudo*).

By Dr. J. E. GRAY, F.R.S., V.P.Z.S., &c.

The British Museum has lately received a number of specimens of Tortoises (*Testudinata*), preserved in spirits, which formerly formed part of Prof. Lidth de Jeude's Museum at Utrecht, in Holland.

They are interesting as containing series showing the growth of some of the species which are found in the Dutch colonies.

Among others there are two specimens of South American species of *Testudo*, proving that there must be two species, which differ in the coloration of the head of the animal and in the general colour of the shell, though the adult skulls have been regarded as all belonging to a single species.

This is an instance showing how important it is in distinguishing species to study the animal in all its ages. A species, as in this case, may be very distinct in its young state, and the characters which separate them appear to gradually disappear as the animal increases in age, so that the adult specimens of the two species cannot be distinguished.

TESTUDO DENTICULATA.

Thorax pale yellow; the margin sharp, with small deep notches. Nuchal plate none. Legs dark, yellow-spotted. Head pale brown; two plates over the nose oblong, large, yellow; crown yellow-varied,

with rather darker edges to the plates; temple with a large subtriangular oblong spot over the tympanum.

Hab. —.

The front and hinder lobes of the sternum broad; the sides of the front lobes straight and nearly parallel. The hinder vertebral plate is as wide as the three hinder marginal plates. The hinder lateral marginal plates are small; that is to say, they have the typical characters of the American *Testudines* called Gophers.

TESTUDO TABULATA.

Shell dark brown; the margin sharp, entire. Nuchal plate none. Head dark brown; the front of the crown with a large subtriangular spot with rounded angles, surrounded in front by many series of small oblong spots, the front spots over the nostrils being the largest; the hinder part of the crown with three series of small transverse spots, and with a series of somewhat similar-sized and -shaped spots on each side of the crown. The front and hinder lobes of the sternum narrowed at the end, with straight converging sides.

CHERSINA ANGULATA.

Head of young black brown above, with a small white spot over each nostril, a white streak over each eye to the temple, and a large round white spot on each side of the crown, with a streak behind, and sometimes confluent, with the hinder part of the spots rather diverging from each other on the occiput; side of the head dark, with a very narrow white streak from the nostril to the front edge of the eyes, and two narrow streaks on the temple; chin, throat, and sides of the neck pale, with some dark streaks.

Hab. Cape of Good Hope.

2. On the Species of Porcupines in the Gardens of the Society and in the British Museum. By Dr. JOHN EDWARD GRAY, F.R.S., V.P.Z.S., F.L.S., &c.

(Plate XXXI.)

Having observed a living Porcupine in the Gardens sent from India by Mr. Arthur Grote, F.L.S., C.M.Z.S., which is very unlike the Crested Porcupine of Europe, Africa, and India, and the Non-crested Porcupine of Java and Nepaul, I was induced to compare it with the specimens in the British Museum, and was rather surprised to find that it is nearly identical with a Porcupine which I noticed in the 'Proceedings of the Zoological Society,' 1847, p. 103, and which, as I was informed by Mr. Bartlett, was a hybrid between the female Crested Porcupine and a male of the Non-crested Porcupine of Java—more than one animal, the result of this mixture of the species, having been born in the Surrey Zoological Gardens.

I had no doubt of the accuracy of the account of the origin of the specimen which I received from Mr. Bartlett. But Mr. Bartlett

1875



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AGANICHOECERUS GROTEI



is as much surprised as myself to observe that the animal that was sent from India by Mr. Grote and a stuffed specimen which we received from India as a wild Porcupine are scarcely to be distinguished from the male which was said to be bred between the two species or rather genera of Porcupines.

Are the two specimens from India to be regarded as a distinct species, bearing an external resemblance to the hybrid? or are they a mixed breed which has established itself in India? If the latter, are they hybrids between the Crested Porcupine of the Plains and the Crestless Porcupine of the Himalayas? If so, the slight difference in coloration between the specimens I described, born in the Surrey Zoological Gardens, and the two from India may be explained by one having been produced from the Javan and the others from the Nepalese Crestless Porcupines.

It would be very interesting to know if the specimens received from India are a hybrid race that has established itself in the country and is reproduced, or if it is the result of artificial domestic culture; or is it possible, which I think most probable, that there may be some mistake about the history of the animal received from the Surrey Zoological Gardens? for we know that formerly keepers of menageries were not as careful as they might have been respecting the history of the animals which they exhibited, or as careful of preserving the history of them as we now are in the Gardens of this Society*.

Until more is known of the history of the animal, it would be very unsafe to form any theories on the subject.

Whether the animal, or rather the form of Porcupine, under consideration is a mule or a distinct type, as it appears to be permanent and the form to have occurred in two very distant localities, I believe that it is well that it should have a generic name and a place in the systematic catalogues.

In my "Monograph of the Porcupines of the Eastern Hemisphere," published in the 'Proceedings of the Zoological Society' for 1847, before referred to, I divided the species into three genera, according to the structure of the skull and teeth, viz. *Hystrix*, *Acanthion*, and *Atherura*.

I then believed that the Acanthions were separated from the *Hystrices* by their being destitute of any vertical or nuchal crest; but the more extended series of animals which have come under my examination since that paper was written has shown that the Acanthions, as there defined from the skull, include animals which have a large nuchal crest, and which can hardly be distinguished externally from the species of *Hystrix*, others without any indication of a crest, as *A. javanicum*, and, thirdly, some specimens which have a small and low nuchal crest of short spines, as the "Hybrid Porcupine" and the one received from Mr. Grote from India, now living in the Zoological Gardens.

* Since the above was read I have seen Mr. Warwick, who had the care of the animals in the Surrey Zoological Gardens; and he seems to think that there must have been some mistake in the account. He never recollects any *hybrid* Porcupines being born in the Gardens; if any had been born he would have noted it, as he is interested in such matters.

The species of *Hystrix*, as defined in my monograph (P. Z. S. 1847, p. 99), are as follows:—

1. *HYSTRIX CRISTATA*, Linn.; Gray, P. Z. S. 1847, p. 99; Blainv. Ostéogr. t. 2.

Hystrix cristata de Syrie, Blainv. Ostéogr. t. 2.

? *Hystrix hirsutirostris*, Brandt.

Hab. Italy; Xanthus (*G. Scharff.*); South Africa (*Burchell.*).

2. *HYSTRIX LEUCURUS*, Sykes, P. Z. S. 1831, p. 103; Gray, P. Z. S. 1847, p. 100.

Hystrix cristata de Bengal, Blainv. Ostéogr. t. 2 (skull).

Hab. India, Dukhun (*Dickinson*; *Sykes.*).

3. *HYSTRIX MALABARICA*, Day; Sclater, P. Z. S. 1865, p. 353, pl. xvi.

Hab. India, Malabar.

I may here observe that the Red-quilled Porcupines (*H. malabarica*, Day & Sclater), now in the Zoological Gardens, do not show any appearance of red quills. The red quills fell out when the animals moulted, and have been replaced by black-and-white quills, like those of the common Indian species.

The species is very like *H. leucurus* of Colonel Sykes, which also has some of the spines banded with red brown; and, like the Dukhun species, it has long white tips to the longer slender dorsal spines.

The typical specimen in the British Museum indeed chiefly differs from the Dukhun specimens in not having a white half collar on the front of the chest.

The genus *Acanthion*, as defined from the skulls in the monograph in the 'Proc. Zool. Soc.' 1847, p. 161, must be divided into three groups or genera, according to the general appearance of the animal.

1. *ŒDOCEPHALUS*.

ACANTHION, § * ††, Gray, P. Z. S. 1847, p. 102.

Crown and nape with a large compressed crest formed of elongated slender cylindrical spines. The skull very ventricose. The nasal very large, dilated behind, and reaching to a line with the middle of the orbit.

ŒDOCEPHALUS CUVIERI.

Porc-épic d'Italie, F. Cuvier, Mém. Mus. ix. t. 20*. f. 1 (skull).

Hystrix cristata, Brandt, Mém. Pétersb. 1835, t. 8. f. 1, 2.

Acanthion cuvieri, Gray, P. Z. S. 1847, pp. 102, 128.

Hystrix africa australis, Peters, Mossamb. Mamm. t. 32. f. 6, 7, Sclater, P. Z. S. 1865.

H. cristata d'Algérie, Caffrérie, Sénégal, Europe, Blainv. Ostéogr. t. 2.

H. cuvieri, Waterhouse, N. II. Mamm. ii. p. 448, t. 20. f. 1, 2 (skull); Gerrard, Cat. Bones B. M. p. 190.

Hab. North Africa: Algiers; Gambia (*Fraser*); Tunis (*Fraser*).

South Africa (*Peters*; *B.M.*, skin); Southern Europe, Portugal (*B.M.*, stuffed skin and skull).

I am not aware of any external characters by which this species can be distinguished from the *Hystrix cristata*, though the skull is so different; indeed I am daily more convinced that there are three classes of species. The most numerous class consists of those which can be distinguished by their external and their osteological characters; others can only be distinguished by their osteological characters, the outer appearance being common to two or more species; and, thirdly, there are species which are very different externally, but which have skeletons that are so similar that they would not be distinguishable except for the external differences,—that is, speaking of the adult animal. But there are also species, as I have shown this evening respecting the South-American Tortoises, which are only to be distinguished when the animals are studied in all their ages—for example, which are to be distinguished in their young, but not in their adult age, or *vice versâ*.

M. de Blainville regards all the Crested Porcupines as a single species; for he represents the skulls with the wide and the narrow intermaxillaries all under the name of *H. cristata* of Algeria, Caffraria, Senegal, Syria, Europe, and Bengal, the Bengal and Syrian skull being *Hystrices*, and the others *Acanthia*, or rather *Ædocephali*.

If the figures are accurate copies of the skulls, the hinder part of the intermaxillaries in the specimen figured from Senegal is wider than in that from Caffraria; but the skull from Algeria seems to be intermediate in form between the other two.

Dr. Peters, in his description of his *H. africæ australis*, in the 'Reise nach Mossambique,' p. 170, published in 1852, entirely overlooks the fact that the skull figured by Schreber, Cuvier, and several other authors is exactly similar to the one he figures, and to which he gives a new name—overlooking also my paper in the 'Proc. Zool. Soc.' for 1847, where the distinctions are pointed out.

Dr. Selater, when describing the Orange-spined Porcupine (*H. malabarica*) in the 'Proc. Zool. Soc.' 1863, p. 356, gives a list of four species of Crested Porcupines. He separates *H. malabarica* from *H. leucura* of Sykes, and in the synonymy of the latter species has most erroneously included the *Hystrix cristata* of my Monograph, which is found in Europe and North Africa and is very distinct externally (by the length and form of the spines) from the Indian species. On the other hand, he has separated the *Acanthion cuvieri* of my Monograph (from Europe and Africa) as distinct from the *H. africæ australis* of Peters, from South Africa, which I do not think he would have done if he had examined and compared carefully the skulls and stuffed specimens of the animals in the British Museum Collection.

2. ACANTHOCHÆRUS.

The nape with a short, thin, compressed crest, formed of a few short spines. The skull elongate; crown slightly arched. The nasal bones broad, truncated behind, reaching to the front of the orbit. The spines of the front part of the body flat, subtriangular, grooved. The dorsal spines cylindrical, white, with a single central black ring.

ACANTHOCHÆRUS BARTLETTII.

The spines in the front of the body black, with short white tips; the crest extending the whole length of the nape; spines on the head slender, brown.

"*The Hybrid Porcupine*," Gray, P. Z. S. 1847, p. 103.

Hab. —.

"Bred in the Surrey Zoological Gardens, between a male *Acanthion javanicum* and a female *Hystrix cristata*."—*Bartlett*.

ACANTHOCHÆRUS GROTEI. (Pl. XXXI.)

Spines of the front of the body black; the small nuchal crest of a few elongated spines only on the front part of the nape; spines of the head black; sides with some scattered elongated slender white arched spreading spines.

Hab. India (*Grote*); specimen in the British Museum; a specimen living in the Zoological Gardens.

Animal black, white-varied; nape with a very slight compressed crest, of rather longer black, white-tipped spines; the spines of the back elongate, thick, strong, very acute, white, with a single broad black band rather above the middle of the spine. The spines in the front part of the body flattened, grooved, whitish at the base and black at the ends, appearing black; some of those on the head and neck with a white tip, the latter forming a narrow lunate half collar round the lower part of the throat in front of the chest. The lower part of the sides of the front of the body with exserted, elongated, slender, curved, white spines, much longer than the usual spines of those parts. The tail rather elongated, covered with white spines; the spines on the end of the tail truncated, with long slender cylindrical cup-like cavities. Whiskers black, cylindrical.

3. ACANTHION.

The nape covered with short grooved spines, without any indication of a crest.

* *The nasal bones very long and broad, to the middle of the orbit.*
Acanthion.

1. ACANTHION HODGSONII, Gray, P. Z. S. 1847, pp. 101, 128.

Hystrix hodgsonii, Waterh. Mam. ii. p. 461, t. 20. f. 3.

H. daubentonii, Blainv. Ostéogr. t. 2 (skull).

H. alophus, Hodgson, Journ. Asiat. Soc. Calcutta, 1847, p. 772, t. 22.

H. nepalensis, Hodgson.

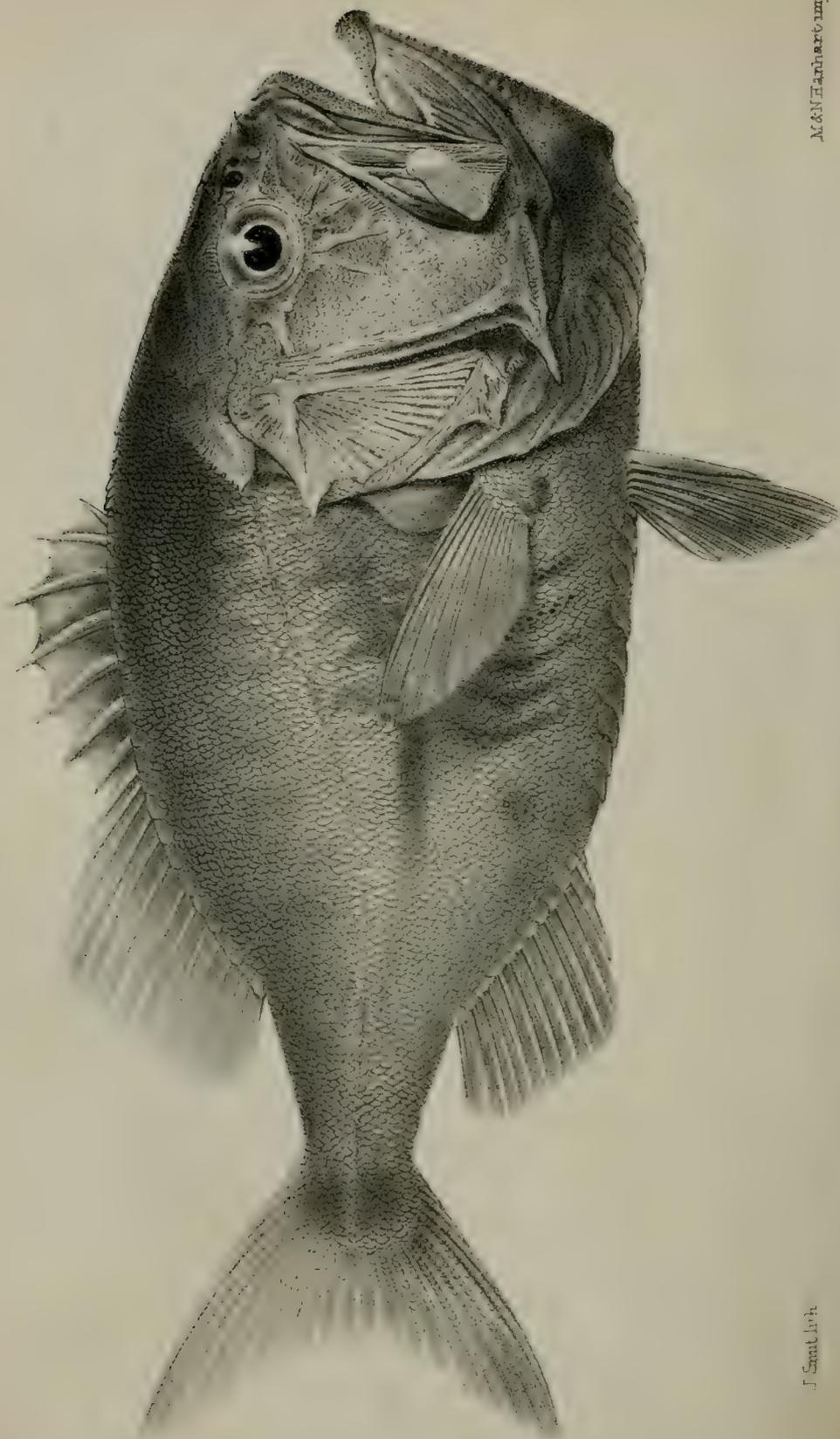
Hab. India, Nepal (*Hodgson*).

There are two stuffed specimens and four skulls of the species in the British Museum.

** *Nasal bones moderate, to the front edge of the orbits.*
Acantherium.

2. ACANTHION JAVANICUM, F. Cuvier, Mém. Mus. ix. t. 1. f. 3, 4;
Gray, P. Z. S. 1847, p. 102.





J. Smith del.

TRACHICTHYS DARWINII.

M. & N. S. Ashmole & Co. del.

Hystrix brevispinosus, Wagner.

H. javanica, Waterh. ; Blainv. Ostéogr. t. 2 (skull).

Brown; throat whitish.

Hab. Java; a stuffed specimen and skull in the British Museum.

This animal was regarded as the male parent of the "Hybrid Porcupine."

3. ACANTHION FLEMINGII, Gray, P. Z. S. 1847, p. 103.

From a skull in the British Museum, perhaps the same as the former. Mr. Bartlett called it "the square-spined, not crested, Porcupine." This makes me more doubtful of the history of the former specimen.

Mr. Waterhouse, in the observations on this skull in his 'History of Mammalia,' vol. ii. p. 468, seems to have confounded it with the skull of the "*Hybrid Porcupine*," said to have been bred in the Surrey Zoological Gardens; but both these skulls are in the Museum, and they appear to be distinct. The "Hybrid Porcupine" has a distinct nuchal crest; and this is said distinctly to be the skull of an animal without any crest; so I do not see how they can be the skulls of the same species and the result of the same interbreeding.

Unfortunately Mr. Gerrard, in the 'Catalogue of Bones in the British Museum,' p. 199, has copied and adopted Mr. Waterhouse's observation.

The *Hystrioidæ* have been generally characterized by being destitute of any clavicle or collar bone; but this is true only as far as the genera belonging to the eastern hemisphere. The skeletons of the other genera have not been described, but they are contained in the British Museum Collection.

The skeletons of the genera *Erethizon*, *Sphiggurus*, and *Chætomys* each have a well developed clavicle, attached to the keel of the scapula and to the front of the chest-bone. The bones vary in thickness and strength in the different genera.

Professor Brandt calls one of the species of *Hystrix* *H. hirsuti-rostris*; but I have not seen any Porcupine that has not a hairy muzzle.

3. Description of *Trachichthys darwinii*, a new species of Berycoid Fish from Madeira. By JAMES YATE JOHNSON, C.M.Z.S.

(Plate XXXII.)

Family BERYCIDÆ.

TRACHICHTHYS DARWINII, sp. n. (Pl. XXXII.)

D. 8.14. P. 14. A. 3.12. V. 1.6. C. 11+10. M. B. 8.

Sq. lin. lat. 27.

Body elliptical, compressed, high, clothed with broad scales somewhat irregularly disposed, the exposed surfaces and margins of which

are rough with spinulæ, giving a frosted appearance to the fish. The head and all the fins are of a bright-red colour; the back is brownish red, passing into grey on the sides; the belly is white. Compared with the length between the snout and the base of the caudal fin, the height is as 1 to $2\frac{1}{2}$.

The *head* is obtuse truncate and arched between the eyes; the muzzle short, rounded, and protrusile. Compared with the total length, the head is as 1 to $3\frac{1}{2}$. The *mouth* is very large and nearly vertical; its superior border is formed by the styliform premaxillary, which is widely notched at the symphysis. The stouter and longer maxillary is much dilated below, where it is furnished with a large supplementary striate plate, as in *Beryx*. The maxillary reaches backwards to the vertical from the middle of the eye. The lower jaw fits inside the upper one, and its bones are strongly and deeply striate; there are two bony knobs at the chin. The premaxillary and mandibular bones are armed with narrow bands of villiform *teeth*, those of the innermost row being a little longer than the rest. The greater part of the band on the upper jaw remains outside the mouth when it is closed. The band on the lower jaw is interrupted at the symphysis, and is there much broadened, this part of the band being also left outside of the mouth when it is closed. The bands of villiform teeth on the palatine bones are recurved in front, and there is a very small round patch of similar teeth on the vomer. The toothless black *tongue* is adherent throughout. The floor and sides of the mouth and the inner sides of the gill-covers are black, or marked with black patches, whilst the palate is red. From the chin there extends along the throat a broad band of corrugated scales, and this band forks behind.

The *nostrils* are close together near the upper anterior part of the orbit, the hinder one being larger. The nearly round and moderate-sized *eye* is placed high up, but does not take part in the profile; its diameter is to the head as 1 to $4\frac{1}{2}$ nearly. The suborbital bones carry several broad radiating crests, which are less prominent than in *Hoplostethus*. The scales of the nape do not quite reach to the posterior part of the orbit. On the top of the head are several flat roughened bony crests, two of which extend from the nape to the front of the snout, where they terminate in short stout blunt spines in front of the anterior nasal orifice; and here each sends off a short transverse crest. The former crests converge in front of the middle of their length, and include posteriorly to the point of convergence an elongated subtriangular depression, and anteriorly another triangular depression. In the nasal region, between these and other crests lying near the superciliary margin, there is a lozenge-shaped depression on each side. The superciliary margin is formed of a similar crest.

The cheeks are scaly, and the preopercle bears a striate crest near to, and parallel with, its serrulate posterior border, which inclines obliquely downwards and forwards. The under border of the preopercle is straight and serrulate; and at the angle a long stout striated spine, with spinulose edges and a crest along a portion of its middle, projects backwards, across, and beyond the interopercle, but

not so far as the edge of the branchiostegal membrane. The height of the *opercle* is not quite twice its width; its surface is traversed with strong roughened crests, radiating for the most part from a point high up near the anterior margin. A higher and broader crest crosses the upper part of the opercle, and projects beyond the border as a strong but short spine. Above this transverse crest is another series of smaller radiating crests. The edge of the opercle is irregularly serrate or sinuous. The *subopercle* is narrow, and closely applied to the lower and hinder edge of the opercle; its border is entire, and its surface is set with numerous serrulate crests, except at the upper part, where it is clothed with small scales. At the lower end there is a spine projecting backwards and forming the lower side of a sinus. The large *interopercle* is very rough with serrulate crests, and has a deep and wide sinus, which is covered by the great spine of the preopercle. Between the anterior extremity of the interopercle and the posterior angle of the lower jaw there intervenes a stout membrane, in which are implanted some rough bony plates, which seem at first sight as if they formed part of the interopercle.

All the branchiostegal rays, eight in number, are exposed, and the lowest three rays carry a serrulate crest. Pseudobranchiæ are present.

The hinder border of the *suprascapula* is serrulate, and its lower part is obliquely crossed by a low crest, which terminates in a very short spine. The *scapula* is narrowly elliptical, and wider above than below; its surface is striate, but it is destitute of a spine. The strong *humeral* bone is broad above, and its surface is striate.

The large imbricated striate bony plates (ten in the specimen) forming a *ventral keel* extending from the root of the ventral fins to the vent, increase in size from each end of the series to the middle; and each plate consists of a broad wing with spinulose edges, bent down upon each side so as to embrace the abdomen, and of a central elevated ridge, which projects backwards as a sharp spine.

In front of the *dorsal* fin there is a row of glossy scales along the ridge of the back from the occiput to the fin; they have something of the shape of, but are much smaller than, those of the ventral keel; each has a short spine at the middle of the exposed margin. The dorsal fin rises from a groove, is much longer than high, and commences behind the root of the pectoral fins, but nearer to the snout than to the base of the caudal fin. The spinous portion is a little shorter than the soft part, and it falls in posteriorly as far as the seventh spine, which is shorter than the eighth. The fourth is the longest spine. The soft portion of the fin, which has all its rays branched, is higher anteriorly than the spinous part, the third and fourth rays being the longest. At each side of the base of both the dorsal and anal fins there is a series of large rough scales, which are somewhat trapezoidal in shape.

The *pectoral* fins are inserted in the same horizontal line as the lower ends of the maxillary, and considerably below the middle of the height. They are ovato-lanceolate in shape, and they do not reach nearly to the vent, not extending beyond the vertical of the

seventh dorsal spine. They are much longer than the *ventral* fins, which are inserted under their roots. These fins, which have rounded apices, are supported by a long stout and striated spine and six branching rays. The space between and in front of their roots is flat. The vent is placed a little in advance of the anal fin, about three-fourths of the total length behind the snout. The trapezoidal *anal* fin commences under the seventh soft ray of the dorsal fin, and terminates at some distance from the base of the caudal fin, a little behind the end of the dorsal. The first of its three stout spines is very short; and the third, though much longer than the second, is only half as long as the soft portion of the fin is high. The lobes of the deeply forked *caudal* fin are rounded at the tips, and the membrane between the rays is clothed with rows of small scales. At both the upper and under edges of the tail, and supplementary to the caudal fin, is a series of six glassy spines, which become gradually larger backwards.

The spines of the fins are striate but not roughened, whilst the exposed sides of the rays are strongly echinulate. The *lateral line* is a slightly elevated and oblique ridge on the upper part of the body, not following the curve of the back. It is formed of twenty-seven perforated and rather distant scales, which are somewhat larger than those clothing the body.

Only a single specimen of this interesting addition to the marine fauna of Madeira has been hitherto obtained. It was taken in the month of April of the present year; and, from the protruded stomach and inflated membranes about the eyes, it may be inferred that it came from a great depth. I have named it in honour of that accomplished man of science, Charles Darwin, Esq., to whom naturalists are greatly indebted, amongst many other labours, for an excellent monograph on the Cirripedia. The fishermen from whom I procured the specimen stated that they had never previously seen anything similar; the name of "Serra do alto," or Sawfish, alluding to the ventral keel, was therefore merely an impromptu appellation.

From *Hoplostethus mediterraneus*, C. & V. (of which I have obtained a few specimens at Madeira), it is distinguished generically by the possession of vomerine teeth. Even if it were congeneric with that fish (and some ichthyologists may think that *Hoplostethus* should not be separated from *Trachichthys*), several well-marked differences would point it out as a distinct species: *e. g.*, 1, the possession of eight spines and fourteen rays in the dorsal fin in place of six spines and thirteen rays, and of three spines and twelve rays in the anal fin in place of three spines and nine or ten rays; 2, the scaly cheeks; 3, the absence of a series of oblong cells near the posterior border of the preopercle; 4, the exposure of the whole branchiostegal membrane, which in *Hoplostethus* is entirely concealed by the gill-covers; 5, the shortness of the pectoral fins, which do not reach, as in *Hoplostethus*, to the vent.

With the two known species (both of them Australian) of the genus *Trachichthys* it agrees in having teeth on the vomer; but

from *T. australis*, Shaw, it may be distinguished, 1, by differences in the fin formula—viz. D. 8.14 and A. 3.12 in place of D. 3.12 and A. 2.10; 2, by the scales of the ventral keel being ten in number instead of eight; 3, by the height of the body, compared with the length from the snout to the base of the caudal fin, being as 1 to $2\frac{1}{2}$, not as 1 to 2; 4, by the smallness of the suprascapular spine. Again, from *T. elongatus*, Günther (Cat. Fishes Brit. Mus. i. 10), it is abundantly distinct: *e. g.*, 1. In that species the formula of the dorsal fin is 4.11, and of the anal fin 3.9. 2. In the species now described the dorsal fin is much longer than high, whereas in *T. elongatus* its height equals its length. 3. The spines of that fin become shorter backwards; in the case of *T. elongatus*, longer. 4. The ventral fins are much shorter than the pectoral, whereas in *T. elongatus* these fins are of equal length. 5. The anal fin commences under the middle of the soft portion of the dorsal fin, whereas in *T. elongatus* it begins under the end of that fin. 6. The spine at the upper angle of the opercle is large, but in the case of the Australian species it is scarcely visible. 7. The lateral line has 27 in place of 65 scales.

The following are the dimensions of the individual upon which the species is founded:—

	inches.
Total length (the mouth being closed)	19 $\frac{1}{4}$
Height in the pectoral region	6 $\frac{1}{2}$
Thickness in the same region	2 $\frac{1}{2}$
Head (mouth closed)	5 $\frac{1}{2}$
Eye, diameter	1 $\frac{1}{4}$
Distance from eye to eye over the arched head	2
Upper jaw, length	3 $\frac{2}{3}$
Width of open mouth	3 $\frac{2}{3}$
Snout, length of	1
Dorsal fin, distance from snout	6 $\frac{3}{4}$
—— —, length	6 $\frac{3}{4}$
—— —, length of fourth spine	1 $\frac{1}{2}$
—— —, length of third and fourth rays	2 $\frac{1}{4}$
Pectoral fins, length	3 $\frac{1}{2}$
—— —, width of base	$\frac{9}{10}$
—— —, distance behind snout	5 $\frac{1}{2}$
Ventral fins, length	2 $\frac{1}{2}$
—— —, width of base	2 $\frac{3}{4}$
—— —, length of spine	2 $\frac{1}{8}$
Vent, distance of its vertical from snout	10 $\frac{1}{4}$
Anal fin, length	2 $\frac{9}{10}$
—— —, height	2 $\frac{1}{4}$
Tail, lowest height	1 $\frac{3}{8}$
Caudal, length	3 $\frac{3}{4}$
—— —, expanse	5
Ventral keel, length	4 $\frac{2}{5}$
—— —, width of middle plates	1

4. Descriptions of Fifteen New Species of Land and Fresh-water Shells from Formosa, collected by Robert Swinhoe, Esq., Consul at Taiwan in that Island. By HENRY ADAMS, F.L.S.

(Plate XXXIII.)

1. NANINA (ACUSTA) ASSIMILIS, H. Ad. (Pl. XXXIII. fig. 1.)

N. testa aperte umbilicata, depressa-globosa, tenui, irregulariter striata et confertissime leviter decussata, subpellucida, nitida, pallide fulva; spira subconica, obtusa; anfr. $5\frac{1}{2}$, convexiusculis, ultimo ventricoso; apertura lunato-circulari; perist. simplici, acuto, margine columellari arcuato, dilatato, ad umbilicum reflexiusculo.

Diam. maj. 22, min. 18, alt. 15 mill.

Hab. Takow, Formosa (*Mus. Brit.*).

This species much resembles *N. sieboldiana*, but is more widely umbilicated, more depressed, and of a lighter colour.

2. HELIX (PLECTOTROPIS) FULVICANS, H. Ad. (Pl. XXXIII. fig. 2).

H. testa umbilicata, trochiformi, tenuiuscula, oblique leviter striata, et liris spiralibus tenuissimis decussata, breviter pilosa, pallide fulva; spira conoidea, acutiuscula, sutura simplici; anfr. $6\frac{1}{2}$, subplanatis, ultimo subacute carinato, antice descendente, basi convexiore; apertura obliqua, subrhombea; perist. tenui, marginibus convergentibus, dextro expanso, antrorsum subsinuoso, columellari peracuto, reflexo, umbilicum non claudente.

Diam. maj. 11, min. 10, alt. 9.

Hab. Tamsui, Formosa (*Mus. Brit.*).

3. HELIX (CAMÆNA) BAIRDI, H. Ad. (Pl. XXXIII. fig. 3.)

H. testa umbilicata, turbinato-depressa, solida, oblique plicato-striata, fulva, fascia peripherica nigro-castanea luteo-marginata ornata; spira breviter conoidea; anfr. 6, convexiusculis, lente accrescentibus, ultimo antice descendente, umbilico mediocri profundo; apertura diagonali, auriformi-lunari; perist. fusco-carneo, expanso et breviter reflexo, marginibus remotis, utrinque in medio flexuoso et obsolete tuberculato, externe indentato; margine columellari dilatato.

Diam. maj. 41, min. 36, alt. 23 mill.

Hab. Tamsui, Formosa (*Mus. Brit.*).

4. HELIX (CAMÆNA) SUCCINCTA, H. Ad. (Pl. XXXIII. figs. 4, 4a.)

H. testa umbilicata, conoideo-depressa, solidula, oblique striata, lineis spiralibus rugosis irregulariter decussata, luteo-fulva, fascia peripherica pallido-marginata ornata; spira conoidea; anfr. 6, convexiusculis, ultimo antice vix descendente, obtuse carinato, basi compresso; umbilico angusto, interdum intus cas-



NEW FORMOSAN SHELLS

M. & N. Hanhart imp.



taneo; apertura obliqua, lunato-elliptica, intus pallidior; perist. albedo, expanso, breviter reflexo, margine columellari dilatato.

Diam. maj. 30, min. 26, alt. 30 mill.

Hab. Takow, Formosa (*Mus. Brit.*).

5. *BULIMUS* (*AMPHIDROMUS*) *FORMOSENSIS*, H. Ad. (Pl. XXXIII. fig. 5.)

B. testa umblicata, ovato-turrita, solida, oblique leviter striata, striis spiralibus confertissimis decussata, pallido-rufa, strigis castaneis irregularibus et fasciis spiralibus ornata; spira convexo-turrita, apice acuta; anfr. $7\frac{1}{2}$, vix convexiusculis; apertura obliqua, elongato-ovali, $\frac{2}{5}$ totius longitudinis adæquante, intus pallido-cærulea; labro crasso, breviter reflexo, purpureo; columella brevi, albida, late reflexa, umbilicum fere obtegente.

Long. 55, lat. 25 mill.

Hab. Tamsui Mountains, Formosa (*Mus. Brit.*).

6. *CLAUSILIA* (*LACINIARIA*) *EXILIS*, H. Ad. (Pl. XXXIII. fig. 6.)

C. testa vix rimata, fusiformi, tenuiuscula, confertim striata, sericea, rufo-fusca; spira sensim attenuata, apice obtusa; anfr. 10, convexiusculis, ultimo latere subcompresso; apertura subovali; lamellis parvis, supera tenui; lunella distincta, angusta, arcuata, extus conspicua; plica palatali 1, tenui, marginali, elongata, subcolumellari inconspicua; perist. continuo, reflexo, albedo.

Long. 28, diam. 7 mill.

Hab. Tamsui, Formosa (*Mus. Brit.*).

7. *CLAUSILIA* (*PHÆDUSA*) *FORMOSENSIS*, H. Ad. (Pl. XXXIII. fig. 7.)

C. testa vix rimata, ventricosofusiformi, solida, subtiliter costulato-striata, sericea, albida; spira ventricosa, sursum attenuata, apice obtusula, sutura impressa; anfr. 10, convexiusculis, ultimo angustiore, basi rotundato; apertura verticali, ovata; lamellis fortibus, supera marginali, infera validiore oblique ascendente; lunella imperfecta; plicis palatalibus pluribus, suprema elongata, subcolumellari emersa; perist. continuo, superne breviter soluto, undique expanso et reflexo.

Long. 26, diam. 7 mill.

Hab. Takow, Formosa (*Mus. Brit.*).

8. *ENNEA* (*ELMA*) *SWINHOEI*, H. Ad. (Pl. XXXIII. fig. 8.)

E. testa cylindræca, anguste umblicata, tenui, albida, nitida, leviter striata; spira oblongo-turrita, apice obtusa, sutura conspicua; anfr. $8\frac{1}{2}$, vix convexiusculis; apertura parum obliqua, semiovali, $\frac{1}{4}$ totius longitudinis adæquante, antice arcuatim ascendente, plica parietali nulla; perist. tenui, breviter reflexo, marginibus remotis, dextro flexuoso, ad insertionem subito attenuato et sinuato.

Long. 16, lat. 5 mill.

Hab. Tamsui, Formosa (*Mus. Brit.*).

This species appears to be the type of a new group, possessing a strong sinus at the insertion of the outer lip, the aperture being edentulous. It may be designated *Elma*.

9. *CYCLOTUS SWINHOEI*, H. Ad. (Pl. XXXIII. fig. 9.)

C. testa umbilicata, subdiscoidea, tenuiuscula, irregulariter striatula et elevatim spiraliter lirata, fulvida; spira parum elevata, apice acuminata, purpurea, sutura profunda; anfr. 4½, convexis, ultimo rotundato, descendente; umbilico conico, profundo; apertura obliqua, subcirculari, superne leviter angulata; perist. simplici, continuo, expansiusculo, ad anfractum penultimum breviter adherente.

Diam. maj. 11, min. 9, alt. 7 mill.

Hab. Takow, Formosa (*Mus. Brit.*).

10. *CYCLOTUS MINUTUS*, H. Ad. (Pl. XXXIII. fig. 10.)

C. testa umbilicata, depressa, tenuiuscula, minutissime striata, luteo-fulva, nitidula; spira parum elevata, apice acuta, fusco-cornea; anfr. 4, convexis, ultimo cylindrico, parum descendente; apertura subverticali, circulari; perist. simplici, recto, continuo, breviter adnato.

Diam. maj. 7, min. 6, alt. 4 mill.

Hab. Takow, Formosa (*Mus. Brit.*).

“This species appears to grow larger further south.”—*Swinhoe*.

11. *ALYCÆUS (DIORYX) SWINHOEI*, H. Ad. (Pl. XXXIII. figs. 11, 11 a.)

A. testa anguste umbilicata, globoso-turbinata, tenuiuscula, dense oblique tenuissime striata; pallide fulva; spira turbinata, apice acutiuscula, sutura profunda; anfr. 4½, convexis, ultimo ventricosus, ad aperturam valde constricto, e strictura canalem elongatam in sutura retrocedentem emittente; apertura verticali, spira brevior, circulari; perist. continuo, vix adnato, undique expanso.

Diam. maj. 6½, min. 5, alt. 6½ mill.

Hab. Takow, Formosa (*Mus. Brit.*).

12. *PUPINELLA (PUPINOPSIS) SWINHOEI*, H. Ad. (Pl. XXXIII. figs. 12, 12 a.)

P. testa perforata, pupæformi, solida, sub lente subtilissime striata et lirulis spiralibus distantibus sculpta, fulvo-cornea; spira convexo-conica, apice acutiuscula, sutura simplici, conspicua; anfr. 7, summis convexiusculis, sequentibus planioribus, ultimo infra medium sulcato, circa perforationem valde cristato; apertura subverticali, circulari, ¼ totius longitudinis æquante, callo parietali prominente, arcuato; columella profunde incisa; perist. incrassato, expanso, reflexo, albo, margine externo sulco superficiali circulatim bipartito, superne subito attenuato, cum callo juncto.

Long. 14, diam. 5½ mill.

Hab. Tamsui, Formosa (*Mus. Brit.*).

This species is allied to *P. mindorensis*, *humilis*, &c., included by

my brother and myself in the genus *Pupinella*, from which, however, on further consideration, I think it would be well to separate them. These species form a natural group having the texture of *Pupinella*, but with a posterior sinus in the aperture as in *Pupina*, and for which I would suggest the name *Pupinopsis*.

13. *LIMNÆA SWINHOEI*, H. Ad. (Pl. XXXIII. fig. 13.)

L. testa ovata, fragili, irregulariter striata, pallide cornea; spira acuminata; anfr. 4, convexiusculis; apertura oblongo-ovata, $\frac{2}{3}$ totius longitudinis æquante; columella valde sinuata; labro flexuoso, in medio subsinuato.

Long. 21, lat. 12 mill.

Hab. Takow, Formosa (*Mus. Brit.*).

14. *SEGMENTINA SWINHOEI*, H. Ad. (Pl. XXXIII. figs. 14, 14 a.)

S. testa depressa, orbiculari, concavo-convexa, nitida, luteo-cornea, late umbilicata; anfr. 5, apicalibus arctissimis, excavatis, ultimo declivi; sutura impressa; apertura obliqua, lunata, fauce in fundo dentata.

Diam. maj. 10, min. 9, alt. 4 mill.

Hab. Tungkang (fifteen miles below Takow), also in ponds and rice-fields at Takow, Formosa (*Mus. Brit.*).

15. *UNIO SWINHOEI*, H. Ad.

U. testa tenui, ovali-elongata, inæquilaterali, convexiuscula, antice circulari, postice dilatata, subrotundata; epidermide fusco-castanea induta; margine dorsali subrecto; umbonibus parvis, undulatis, erosis; dentibus exilibus, rectis, ad marginem parallelis; margarita argentata.

Long. 60, alt. 39, lat. 22 mill.

Hab. Formosa (*Mus. Brit.*).

DESCRIPTION OF PLATE XXXIII.

- Fig. 1. *Nanina (Acusta) assimilis*, p. 316.
 2. *Helix (Plectotropis) fulvicans*, p. 316.
 3. ——— (*Camæna*) *bairdi*, p. 316.
 4, 4a. ——— (*Camæna*) *succincta*, p. 316.
 5. *Bulimus (Amphidromus) formosensis*, p. 317.
 6. *Clausilia (Laciniaria) exilis*, p. 317.
 7. *Clausilia (Phædusa) formosensis*, p. 317.
 8. *Ennea (Elma) swinhoei*, p. 317.
 9. *Cyclotus swinhoei*, p. 318.
 10. *Cyclotus minutus*, p. 318.
 11, 11a. *Alycæus (Dioryx) swinhoei*, p. 318.
 12, 12a. *Pupinella (Pupinopsis) swinhoei*, p. 318.
 13. *Limnæa swinhoei*, p. 319.
 14, 14a. *Segmentina swinhoei*, p. 319.

5. Descriptions of Six New Species of American Oscines.
By P. L. SCLATER, M.A., Ph.D., Secretary to the Society.

1. *TURDUS SUBCINEREUS*, sp. nov.

Supra obscure cinereus, alis caudaque fuscis, extus cinereo marginatis: subtus albo-cinereus, gutturis et pectoris plumarum rachidibus fusco-cinereis, crisso fulvescente lavato; subalaribus cinerascenti-albis fulvo vix tinctis: rostro corneo; mandibula inferiore pallida; pedibus obscure fuscis: long. tota 8·2 poll. Angl., alæ 4·6, caudæ 3·8, rostri a rictu 8·5, tarsi 1·15.

Hab. (ut dicitur) in rep. Chiliana.

Mus. P. L. S.

Obs. Affinis *T. chiguanco*, Lafr. et D'Orb., et fere ejusdem formæ, sed statura valde minore, pectore obsolete striato et subalaribus non cinnamomeis distinguendus.

I have a single skin of this Thrush in my collection, purchased of M. Verreaux of Paris, and marked "Chili." I have not met with other specimens. The species is not very closely allied to any other that I am acquainted with, but seems to go best in the series allied to *Turdus chiguanco*. The first (or spurious) primary is rather large, measuring 1·5 inch from the insertion. The fourth and fifth primaries are equal and longest, slightly exceeding the third and sixth. The bill is rather short and more compressed than in most species of the genus.

2. *CINCLOCERTHIA MACRORHYNCHA*, sp. nov.

Supra obscure cinerea, fere unicolor, capite præcipue ad latera nigricantiore: subtus lactescenti-alba, pectore et crisso cum lateribus et subalaribus fusco-cinerascens: rostro paulum incurvo, nigro; pedibus corylinis: long. tota 10·5, alæ 4·1, caudæ 3·3, rostri a rictu (lin. dir.) 2·0, tarsi 1·15.

Hab. in ins. S. Lucia, Antillensium (*Bonnecourt*).

Mus. Parisiensi.

Obs. Species a *C. ruficauda* corpore supra omnino cinereo, a *C. gutturali* colore corporis inferi dilutiore, ab utraque rostro elongato incurvo distinguenda.

This bird forms a very distinct third species of the Antillean genus *Cinclocerthia*, of which two species are given in my "Synopsis of the *Turdidæ*" (P. Z. S. 1859, p. 338). As we should have expected, it comes from a different island from those which the other two species inhabit. While *C. ruficauda* is found in Nevis and Guadeloupe, and *C. gutturalis* in Martinique only, as far as we know, the present species is from the island of Santa Lucia. I am indebted to my friend M. Jules Verreaux, Aide-Naturaliste to the Museum of Natural History at the Jardin des Plantes, for the opportunity of describing this species—the only specimen I have yet met of it occurring in that collection, to which it was transmitted by M. Bonnecourt in 1850.

At the same time I may remark that I was already aware of the existence of a species of this form in Santa Lucia, from its being represented in some drawings of the birds of that island by Lieut. Tyler, which are in the Society's Library, and which I now exhibit. It will be remarked that the bird is called "The Trembler" in Lieut. Tyler's MS., "La Merle Trembleuse" being the name applied in Martinique to its representative species.

There is little difference in general form, except in its more elongated and incurved bill, between *C. macrorhyncha* and its two allies. The first (spurious) primary is large as in the other two species, measuring 1.5 inch from its insertion, and being rather more than half the length of the second primary. The third is slightly shorter than the fourth, fifth, and sixth, which are equal and longest. The present specimen of *C. macrorhyncha* has the tarsus covered anteriorly with a continuous horny sheath, the divisions of the tarsal scutes having become obsolete. In specimens of *C. ruficauda* and *C. gutturalis*, which I now exhibit, these divisions are distinctly indicated and the scutes are five in number, which is probably the normal form of the genus.

3. THRYOTHORUS MARTINICENSIS, sp. nov.

Supra murino-brunneus, uropygio et lateribus capitis rufescentibus, alis et cauda saturate fuscis, extus subobsolete nigro transfasciatis: subtus fulvus, fere unicolor; tectricibus subalaribus pallide fulvis: mandibula superiore cornea, inferiore flavida; pedibus pallide fuscis: long. tota 4.3, alæ 2.2, caudæ 1.4, rostri a rictu 0.8.

Hab. in insula Martinicensi.

Mus. Parisiensi et P. L. S.

Obs. Similis *Troglodyta furvo*, quoad colores corporis supèri, sed rostro multum longiore, et subtus unicolor rufescens.

I have had specimens of this Wren in my collection for several years; but as they were purchased of the dealers in Paris I was never certain of their true *patria*. I was first induced to believe that they were from Martinique, from seeing similar examples in the small collection of birds from that island exhibited by M. Belanger, Director of the Botanical Gardens of St. Pierre, in the International Exhibition in 1862*. I have been recently confirmed in this opinion by having had the opportunity of examining specimens of the same bird from Martinique in the collection of the Jardin des Plantes, obtained by M. Alexandre Rousseau in 1842, and by M. Plée in earlier years. I have little doubt also that this Wren, or a form closely allied to it, is likewise found in Santa Lucia, as among Lieut. Tyler's drawings alluded to above is an unfinished one marked "*Le Rossignol*," which has every appearance of having been intended for the present species.

4. HYLOPHILUS PECTORALIS, sp. nov.

Olivaceus, capite cinereo, subtus albus, pectore hypochondriis et subalaribus limonaceo-flavis: alis caudaque fuscis olivaceo

* See *Ibis*, 1862, p. 288.

marginatis: rostro pallide corneo, pedibus dilute corylinis: long. tota 4·3, alæ 2·3, caudæ 1·9, tarsi 0·7.

Hab. in Brasil. merid. prov. Matto Grosso et Rio de Janeiro (Natterer, sp. no. 152).

Mus. Vindob. et P. L. S.

Obs. Similis *H. thoracico*, Temm. (Pl. Col. 173. f. 1), sed fronte cinerea nec flavicante et colore pectoris saturatius flavo, pedibus quoque pallidioribus distinguendus.

I obtained a single example of this species in exchange from the Vienna Museum in 1864, through the kind offices of Herr von Pelzeln. The only described *Hylophilus* which resembles it is *H. thoracicus*, from which it is easily recognizable by the differential characters given above. The first (spurious) primary in the present species measures about 0·8 inch from the insertion, and is 0·7 inch shorter than the second. The third is rather shorter than the next four following, which are nearly equal and longest.

Natterer's MS. notes upon this species (his no. 152), as obligingly communicated to me by Herr von Pelzeln, are as follows:— "Sapatiba, 28 March, 1818, adult female, found on low trees in the forest: Iris light reddish grey; bill blue grey; feet bright reddish-blue grey or dirty liliac; feet strong and, like the bill, very *Parus*-like. A male, which had moulted all its tail-feathers, was of the same colours." At Rio de Janeiro, in February 1821, Natterer obtained another example of this species from trees in a garden, out of a flock of three, and further remarks, "Nostrils round, uncovered; tongue fleshy and pointed."

5. HYLOPHILUS BRUNNEICEPS, sp. nov.

Olivaceus, capite toto cum cervice brunneis; alis obscure fuscis olivaceo limbatis: subtus albus, gutture et pectore brunneo parum tinctis: subalaribus flavicantibus: rostro et pedibus fuscis: long. tota 4·0, alæ 2·2, caudæ 1·6.

Hab. in Brasil. merid., Ypanema (Natterer).

Mus. Vindob. et P. L. S.

I am not acquainted with any species of *Hylophilus* nearly resembling the present bird, for an example of which I am again indebted to Herr von Pelzeln and the authorities of the Imperial Cabinet. The first (spurious) primary in this species measures about 0·8 inch from its insertion. The second is about 0·65 longer. The third is slightly shorter than the four next following, which are nearly equal and longest.

Natterer's notes on this species (his no. 371) are as follows:— "Ypanema, April 1819, in the underwood, on middling-sized trees, out of a little flock—male; irides dark brown; beak above dark grey, below bluish grey; nostrils oval, exposed; feet strong, light lead-colour." Other localities for the same species are Curytiba, Ytararé, and Jaguaraiba.

6. SPODIORNIS JARDINII, gen. et sp. nov.

Spodionis, genus novum ex familia Cerebularum, affine generi

Conirostro, sed rostro valde crassiore, alis caudaque brevioribus et pedibus fortioribus distinguendum. Remex primus longus, longior quam quintus, et secundum tertium et quartum fere æquales et longissimos subæquans: cetera fere ut in genere Conirostro.



Spodiornis jardinii.

Typus et sp. unica *S. jardinii*.

Grisescenti-plumbea, alis caudaque nigricantibus, dorsi colore limbatis: subtus vix dilutior, crisso albicante striato: rostro nigricanti-plumbeo tomis pallidis, pedibus corylinis: long. tota 4.7, alæ 2.85, caudæ 1.9, rostri a rictu 0.5, tarsi 0.65.

Hab. in sylvis reipubl. Æquatorialis.

Mus. P. L. S. et Gul. Jardine, Baronett.

I am greatly indebted to my friend Sir William Jardine for allowing me to abstract from his collection a skin of this interesting bird, which must, I think, be referred to a new form of the family *Cærebidae*, distinguishable by its thickened, almost Conirostral bill. A second example of the same species, obtained, like the former, by Professor Jameson in the Quitian Andes, remains in Sir William's possession.

The whole plumage of *Spodiornis* is plumbeous or dark cinereous, the wings and tail being blackish, edged, except in the primaries and outer rectrices, with plumbeous. The colour below is rather paler, especially on the crissum, where there are faint whitish striations. The general appearance of the bird reminds one at once of the very similarly coloured Finch found in Bogota collections, which in my 'American Catalogue' I have called *Phrygilus geospizopsis* (*op.*

cit. p. 110), though it is perhaps hardly distinct from the Peruvian *P. unicolor*. But looking at the bill of *Spodiornis*, with its perfectly straight culmen and gonys, it would, I think, be impossible to place this little bird otherwise than in the neighbourhood of *Conirostrum*. There can be no doubt, however, to my mind, of the close connexion of the *Cerebidæ* with the *Tanagridæ*, and through them with the *Fringillidæ*.

June 12, 1866.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

Mr. A. D. Bartlett made some observations on the singular bird of prey described by Mr. J. H. Gurney on the 14th of November, 1865, before the Society under the name *Stringonyx anderssoni**, and suggested its identity with the *Machaerhamphus alcinus* of Westerman, Bijdr. t. d. Dierk. i. p. 29. Mr. Westerman had given the locality of this bird as "Malacca," which had, no doubt, prevented Mr. Gurney from recognizing it in a specimen coming from Damaraland.

The following papers were read:—

1. Synopsis of the Birds of Ilha do Principe, with some Remarks on their Habits and Descriptions of New Species.
By Dr. H. DOHRN, C.M.Z.S.

(Plate XXXIV.)

Two of the islands in the Bight of Benin have been pretty well explored by ornithologists. Mr. Fraser has given large accounts of the birds of Fernando Po; and during several years' stay in San Thomé, Mr. Weiss has collected a number of birds sufficient to show the peculiarities of the ornithological fauna of that island. During six months' stay in Ilha do Principe I have collected birds, and notes upon their habits, which, I hope, will not be without interest, the more because this island forms an intermediate link between the two above-mentioned localities.

It seems to me the most remarkable feature in the fauna of Ilha do Principe is that not a single bird of prey exists on the island, whilst they are abundant on the two other islands and on the nearest part of the continent. I saw hundreds of *Milvus parasitus* in San Thomé; *Gypohierax angolensis* and some other species are not uncommon in Fernando Po; but the whole tribe avoids Principe. The inhabitants

* See P. Z. S. 1865, p. 618.



Smith

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OLPHOCCORUS DOHRNI



of the latter place and of San Thomé assert that there is a deadly hatred between the Grey Parrots (*Psittacus erythacus*) of Principe and the Kites of San Thomé, and that, if ever a *Milvus* visits the neighbouring island, hundreds of Parrots fall upon him and kill him, and that the Kites take revenge if perchance a Parrot should venture a trip to their kingdom. There must be some family reason for this strange degree of enmity, for they seem to live in tolerable peace together on the coast.

I observed and collected the following birds:—

1. *CYPSELUS ABYSSINICUS*, Licht.

Common in the neighbourhood of the town.

2. *COTYLE EQUUS*, Hartlaub, n. sp.*

Notæo toto cum alis et cauda fuscis; tetricibus caudæ superioribus pallidioribus: subtus alba, abdomine subflavescente; fascia pectorali lata dorso concolore; subalaribus albidis; rectrice extima pallida, apice late albo, macula pogonii interni brunnea notato; rostro nigricante, pedibus plumbeis; iride nigra.

Long. circa 0·14, rostr. a fr. 0·09, alæ 0·12, caudæ 0·06, tars. 0·013 m.

Very rare; I saw only a few specimens near the sea-shore, and got one female for my collection.

3. *HALCYON DRYAS*, Hartlaub.

The manner of life of this bird reminded me of our Owls. I often observed them in the daytime sitting motionless on a branch, as if they were fast asleep, in dark shady localities. The small birds strongly dislike them; I suppose that sometimes their children are not refused by the *Halcyones* for a meal. As soon as they are discovered in their retreat, lots of *Nectarineæ*, *Zosteropes*, &c., are around them and amuse themselves with abusing them; finally the *Halcyon* leaves the place with a short shrieking outcry. If not annoyed, he has a soft melancholic tune, which sometimes appeared to me like soft and weeping cries of a child. They usually feed upon big insects; and I found often in their stomach pieces of snails, especially of *Columna flammea*.

They live in the woods, in the neighbourhood of small streams. Their name on the island is "Chocho."

4. *ALCEDO CÆRULEOCEPHALA*, Gmel.

Common on the shore; in a few instances I saw single specimens flying about in the interior of the island. The colour of the young bird is little different from that of old specimens; the bill is black, and the white spots on the throat and on the sides of the neck are very small.

This species is as lively as *H. dryas* is indolent. The native name is "Pica-peixe."

* Dr. Hartlaub, our first authority for African birds, has had the kindness to send me descriptions of the new species which I collected.—H. D.

5. NECTARINIA HARTLAUBI, Vieireaux.

Not uncommon; the male birds seem to occur more frequently than the females. The colouring of adult birds is known; young birds are very much like old females; by-and-by the yellow feathers of the throat and breast are changed into grey, and soon after begin to show blue metallic spots. Having observed these different stages of growth at the same time, I think that the time of hatching and breeding of these birds must be very irregular. According to the assertion of the natives they keep their nests during the whole year. I found great difficulty in getting a specimen; they build it in well-protected spots, hidden among bushes; it hangs down from a branch; and it is egg-shaped, with a small circular aperture on one side somewhat above the centre. It is 7-8 inches long, the diameter of the centre about 4 inches, of the aperture only $1\frac{1}{2}$ inch. Its outside is woven of grass and pieces of dead leaves; inside it is well fitted with a thick and soft layer of cotton collected from different plants.

I doubt if this species has been found in Angola, mistakes in locality in these parts being very common; for cruisers and merchant vessels usually touch at several places of the coast and the adjacent islands, and, if special care be not taken, collections from different places are easily mixed up together.

6. NECTARINIA FRASERI, Jard.

This species lives in higher regions than *N. hartlaubi*, and frequents the branches of trees. The male bears a strong resemblance to the female of the former species, with the exception of the yellow axillary feathers, the greyish-brown legs, and the rather grey breast. Also the iris is less dark than in *N. hartlaubi*. The female is smaller, without the yellow feathers. I have not seen the nest, nor young birds, nor eggs.

The name for these two species in the island is "Beixa-flores."

7. CUPHOPTERUS DOHRNI, Hartl., nov. gen. et nov. sp. (Pl. XXXIV.)

Char. gen. *Rostrum mediocre, subrotundatum, carinatum, vix emarginatum, tomis pallidis, subpellucidis; culmine apicem versus arcuato, deflexo, gonyde ante apicem adscendente; vibrissis vix ullis. Alæ breves, caudæ basin parum superantes; remige primo spurio, quarto longissimo, quinto vix brevior. Cauda longiuscula. Pedes satis robusti; tarsus longiusculus, scutellatus; digitus externus et internus subæquales; ungues parvi, debiles.*

Char. spec. *Supra obsolete olivaceo-cinerascens, pileo magis cinerascente; uropygio subolivascens; alis et cauda dorso concoloribus, subalaribus et flexura alæ albis; remigum marginibus internis basin versus albis; gutture circumscripte albo; loris obscurius tinctis; abdomine albido-flavescente; hypochondrium maculis nonnullis longitudinalibus fasciæque pectorali medialiter angustatu cinerascentibus; rostro brunnescente, man-*

dibula pallidiore; pedibus brunnescentibus; iride obscure castanea.

Long. 0·16–0·17, rostr. a fr. 0·013, alæ 0·071, caudæ 0·068, tars. 0·025 met.

No difference in the colour of the sexes.

These birds build their nests in the beginning of June, among bushes, about 4 to 8 feet high above the ground, like those of some of our *Sylviæ*, about 0·1 in diameter and 0·07 met. deep. The female lays two eggs, dirty white, brown-spotted, 0·025 m. long, 0·016 m. large. Their song is like that of *Sylvia cinerea*, but louder and somewhat sharper; when quarrelling they make a noise like *Parus major*.

The native name is "Sibi fixe."

8. PARINIA LEUCOPHÆA, Hartl.

No difference between male and female. The bill of the living bird is uniform dark grey; the feet are greyish brown; the iris sepia-coloured. The nest, composed of fine grasses and attached to two branches with the silk of moths, is comparatively small, no more than 0·09 m. in diameter and 0·06 m. deep. They hatch in June and July; the eggs are two in number, white, 0·019 m. long and 0·016 m. wide.

They live in small flocks in restricted localities.

9. ZOSTEROPS FICEDULINA, Hartl., n. sp.

Supra dilute olivaceo-virescens, uropygio et supracaudalibus flavioribus; subtus dilute flavida, subcaudalibus lætius flavis, loris pallide flavis; remigibus et rectricibus fuscis, dorsi colore fimbriatis; subalaribus albidis, flavido tinctis; pedibus pallide brunneis; rostro brunnescente, mandibula pallida; iride bruno-flavescente.

Long. 0·13, rostr. a fr. 0·09, alæ 0·052, caudæ 0·04, tars. 0·014 m.

Very different in colour from all congeneric species; its colour and voice bear some resemblance to *Phylloperneuste trochilus*. Lives in the hilly parts of the interior.

10. DICRURUS MODESTUS, Hartl.

Young specimens are uniform black, without a white spot on the abdomen; the older they grow the more the tops of the feathers of the abdomen and breast are white-bordered. They build their nest in September, when the rainy season sets in. Its shape is like that of *Oriolus galbula*.

The native name is "Maria Palu, feiteiceira" (translated, Maria Palu, the sorceress). The bird is black, with red eyes; seems very indolent in daytime, and shows a great ability in the imitation of some other birds' voices. Of course there must be some "feiteiceira" in it: therefore, sitting on the roof of a house and singing in its melancholy manner, it prophecies the death of one of the inhabitants; and this, of course, takes place, but often a long time after this prophecy.

11. LAMPROCOLIUS IGNITUS, Nordm.

The female is about 2 or 3 inches smaller than the male, and a little less brilliant in colour. The metallic lustre in the plumage of the young bird begins at the tips of the feathers on the back, the breast and abdomen being greyish brown; the upper side being nearly finished, the feathers of the throat and the breast begin to change, but not in the same way as those of the back. These feathers change from the base up to the tip.

These birds live in high trees, and are very common in the high parts of the interior, where they are seldom disturbed. They are said to hatch in January and February, which I suppose to be true, judging from the development of young birds which I got.

12. LAMPROCOLIUS SPLENDIDUS, Vieill.

Very rare, in the same localities with the last species.

13. BUSERINUS RUFILATUS, Hartl., n. sp.

Supra in fundo fulvo-rufescente, longitudinaliter fusco varius; capitis maculis minoribus; uropygio et supracaudalibus vix maculatis; remigibus et rectricibus fuscis, illis dorsi colore limbatis: subtus lætius fulvo-rufescens, pectore indistincte maculato; subalaribus et subcaudalibus concoloribus; pedibus et rostro brunnescentibus, mandibula pallidiore; iride brunnea.

Fœm. vix diversa, minus nitide tincta.

Long. 0.14, rostr. a fr. 0.014, alæ 0.08, caudæ 0.038, tars. 0.016 m.

I found a few specimens of this rare bird in a very restricted locality of the large western bay, living in bushy uncultivated places. The wings cover half the tail. They are very nice singers.

14. NIGRITA BICOLOR, Hartl.

Uncommon. The iris is red. My female specimens do not quite agree with Dr. Hartlaub's description, the throat, breast, and abdomen being slightly brown, and not whitish. I suppose that Dr. Hartlaub has been misled by a young specimen; at least one of those I collected, which begins to change its plumage, exhibits, besides chestnut-brown feathers on the breast, many which are greyish white.

15. SYMPLECTES PRINCEPS, Bonap.

Adult males are olivaceous on the back, with some darker spots; the head is brownish orange, less dark at the sides, with a yellow ring round the eyes; throat, breast, and abdomen light orange; the feathers of the wing blackish, bordered with yellow, those of the tail olivaceous, with a straight yellow border; the bill is black; the feet light brown.

Adult females differ in the olivaceous colour of the head and the yellow colour of the throat and breast; their abdomen is dirty white, and their bill of the colour of the feet. The iris of both sexes is yellow.

Young males are very much like the females; but as soon as the bill is full-grown it is much darker than that of the other sex, and from that moment they begin to change in plumage.

They are very zealous for the multiplication of their race; I observed them building nests and hatching in May and again in June, and I conclude from my specimens that they are also occupied with the propagation of their family in February. Their nest is always attached to the end of long and thin branches, or leaves of a palm tree. It forms a cone, 15 to 18 inches long and about 9 or 10 inches in diameter at the base; the small aperture is underneath, and just large enough for the old bird. It is very thick, and constructed of a flat kind of grass in such a manner that not a drop of rain can pass through the roof. The eggs are two in number, light blue.

16. *FOUDIA ERYTHROPS*, Hartl.

Swarms of from thirty to eighty specimens of this widely spread species are common. They usually live together with

17. *AMADINA CUCULLATA*, Swains.

This species hatches from May to July; builds a large nest between the branches of small trees, 6–8 inches in diameter and 5–6 inches deep; the eggs (four to seven in number) are white, very oblong, of the size of the eggs of *Sylvia trochiloides*.

18. *PSITTACUS ERYTHACUS*, L.

Exceedingly common; usually flying about in odd numbers, sometimes three or five together. When in town I observed them daily about half an hour before sunset crossing the northern part of the island in a southern direction; and early before sunrise they used to return to the northern district, I do not know for what purpose, large quantities of food as well as of trees, well fitted for sleeping-places, being in every part of the island.

19. *PSITTACULA PULLARIA*, L.

Said to occur on the island. I never observed it.

20. *CHRYSOCOCCYX SMARAGDINEUS*, Swains.

These birds live during the dry season (from April to September) in the southern mountainous parts. They vary in size and in the colour of the tail. It seems to me that *C. intermedius*, Verr., is not different from this species.

Their name in San Thomé and Principe is "Sobo."

21. *TRERON CALVA*, Temm.

Very common all over the island. Hatches in September. The young bird exhibits no remarkable difference. The iris of this species is light blue.

22. *COLUMBA CHLOROPHÆA*, Hartl., n. sp.

Supra obscure nigricanti-virescens, nitore viridi; nucha, collo
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postico et interscapulio pulchre viridi-smaragdineo resplendentibus; sincipite dilute cinereo; cauda ardesiaco-nigricante: subtus unicolor cinerea; subcaudalibus ochraceo irroratis; collo antico nitore nonnullo virente; subalaribus ardesiacis; capitis lateribus cinereis; rostri dimidio basali nigricante, apicali flavido; pedibus carneis.

Long. 0·30, rostr. a fr. 0·02, alæ 0·18, caudæ 0·10, tars. 0·02 m.

Very rare; I saw only a few specimens, the skins of which were with one exception spoiled by humidity and insects.

23. PERISTERA PRINCIPALIS, Hartl., n. sp.

Supra brunnea, nitore cupreo-rubente et virescente; sincipite cano; nucha vinaceo-purpurascente; remigibus fuscis, 2^o-5^m valde emarginatis; subalaribus ardesiacis; mento niveo; pectore vinaceo-rubente; abdomine sensim albicante; subcaudalibus canis; colli lateribus late rubentibus; rectricibus, 2 mediis exceptis, nigris, apice late et dilute cinereis; rostro nigro, pedibus nitide rubris.

Long. 0·26, rostr. a fr. 0 018, alæ 0·156, caudæ 0·08, tars. 0·03 m.

Uncommon; nearly allied to *P. simplex* from San Thomé.

24. GLAREOLA NORDMANNI, Fisch.

One specimen, not different from Russian specimens.

25. ARDEA GULARIS, Bosc.

Common on the rocks of the shore. Breeds in March and April. Young birds are not white, as Hartlaub asserts, but dark grey; their head is adorned with a crest of hairy feathers, which disappear in older specimens. Adult birds exhibit white feathers on their wings, varying sometimes on the right and left wings of the same bird, and show a tendency to grow white. I got one specimen, a very old one, nearly quite white; in some parts of the body the colour is somewhat greyish and dirty white, and some feathers are as dark as usual in this species.

26. ARDEA ATRICAPILLA, Afzel.

Less common than the preceding species; not different from coast specimens.

27. GERONTICUS OLIVACEUS, Dubus.

Soon after my arrival on the island I was informed by some natives that there was a very remarkable bird in the island called "Corvaõ." One told me that it was a kind of raven with splendid metallic wings; another described the bird "with the head of an owl and the feet of a duck, climbing up and down trees;" and others gave me other extravagant descriptions of it; but all of them agreed that the bird lived in almost inaccessible rocky and wooded localities of the southern district, and that if ever a specimen passed over the town it was a bad omen for the white inhabitants, who in such case were exposed to heavy disease or death. Of course I was very curious

to see this species, and settled for a fortnight in a negro's hut in those desert parts of the island. Whoever has visited those large tropical forests knows the difficulty of proceeding there. I enjoyed the special favour of heaven in arriving there when the rains set in a month before they usually do, and it was very hard work to run after these birds. I saw them daily at great distances, and heard them crowing like a Raven; but as soon as I entered the forests the monkeys made so much noise, barking and howling, as to alarm all the animals in the neighbourhood. Thus I was finally very glad when one of my native hunters appeared with a female specimen of the *Corvaõ*, which turned out to be *Geronticus olivaceus*.

My specimen is not different from those described by Dr. Hartlaub; the naked parts of the head are black; the feet are dirty yellowish; the long feathers of the head are not metallic; under the eye is a spot with very light-brown feathers; the iris is dark brown. The measurements are—Long. circa 0·60, rostr. a fr. 0·95, alæ 0·37, caudæ 0·17, tars. 0·07 m. They feed upon snakes, snails, and large worms and insects.

28. NUMENIUS ARQUATUS, Linn. }

29. TOTANUS GLOTTIS, Linn. }

30. ACTITIS HYPOLEUCUS, Linn. }

31. TRINGA SUBARQUATA, Gm. }

These four species all live in the swamps in the neighbourhood of the town. They are not common; the last, killed in June or July, exhibits winter plumage.

32. STERNA MELANOPTERA, Swains.

Rare. I observed this species in Bahia d'Oeste, and never saw it in any other part of the island.

33. PHAËTHON ÆTHEREUS, L.

I saw this bird a few times flying about the coast of the island.

34. SULA FIBER, L.

Common on the west coast of the island, where some rocks are quite white with their excrement.

These are the birds which I observed during my stay (from April to September 1865) in the island. A typical collection of all my birds is in the possession of the Museum at Stettin. I have no doubt that there are a few more species, especially *Sylviadæ*, *Turdidæ*, and water birds; but I am sure that the following birds mentioned by Lopez de Lima and Erman do not occur in Prince's Island. These are—

Neophron pileatus, Burch. (Lopez de Lima.)

Nectarinia splendida, Shaw. (Erman.)

— *senegalensis*, Linn. (Erman.)

Lamprotornis æneus, Linn. (Erman.)

Pogonias vieillotii, Leach. (Erman.)

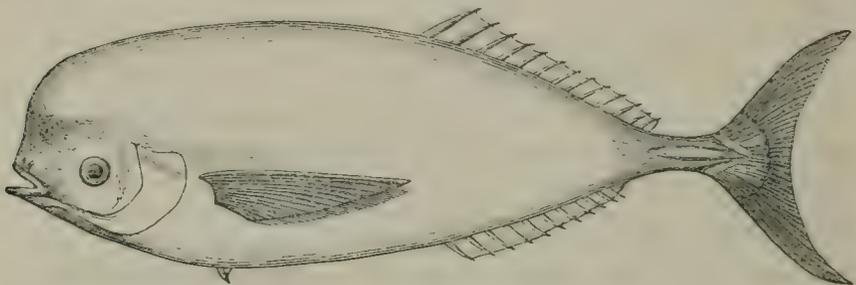
Lopez de Lima has written a book on the statistics of San Thomé and Principe, in which he gives a short account of the natural history of the two islands; but he never visited them. Erman received some skins of birds from Bissao and Principe from a Brazilian, and ran the risk of mentioning those from Bissao as having been collected in Principe, and *vice versá*. Their notes are therefore without value.

2. On the Occurrence on the Coast of Cornwall of an Example of the Fish called Cuvier's *Ausonia* or Luvaru. By JONATHAN COUCH, F.L.S., C.M.Z.S., &c.

Ausonia cuvieri, Günther's Catalogue of Fishes in the British Museum, ii. p. 414.

Luvarus imperialis, Rafinesque, Caratteri di alcuni Nuovi Generi e Specie di Animali della Sicilia, p. 22.

Proctostegus, Nardo, Inaugural Dissertation in Prodomus Observationum Ichthyologiæ, Patavii, 1827.



Ausonia cuvieri.

This fish is now for the first time known in the British islands; and it is of the rarest occurrence even in the districts where it has been met with, as may be seen from the scattered notices we have of it in the writings of the Italian naturalists above referred to, as also in the volume of Dr. Günther, where we find a description, communicated by the Rev. R. T. Lowe, of an example, supposed to be of the same species, obtained in Madeira.

The circumstances under which our example of this fish was met with in Cornwall appear to include a portion of its natural history, since something similar is related of one which formed the subject of Nardo's observations; and as our specimen has been added to the collection in the British Museum, after it had incurred considerable risk of being lost to science, it may be of some interest to relate a portion of the particulars, the more especially as they will account for the injury which it received at the time of its capture, and which would have been greater but for the skill bestowed on its preservation by Mr. William Laughrin, A.L.S.

On the last day of April in the present year (1866), whilst the

wind was strong from the east and waves rough, this fish was thrown on shore alive, on a small beach near the Dodmen, on the south coast of Cornwall; and besides some bruises which it then received, and wounds from the attack of a Gull, a further and more formidable danger was encountered from a fisherman who offered a price for it, that it might furnish bait for his crab-pots—an ignoble fate, from which the Sturgeon has not always escaped, and which I have reason to believe that other things of no small esteem to naturalists have not unfrequently suffered. It happened, however, in the present instance that a fisherman of greater intelligence was able, in my behalf, to offer a higher price; and I had the gratification of receiving this fish in a condition in which I was able to perceive that it had suffered nothing in its shape, its general condition, or colour.

The length of this example was, in a straight line to the fork of the tail, 3 feet 9 inches, which may be regarded as about the usual length of this fish, since, while the specimen described by Rafinesque is said to have measured 5 feet, that which is described by Nardo did not exceed $2\frac{1}{2}$ feet, with a weight of 20 pounds, and that of Rafinesque 110 rotuli. Of our fish, the depth where greatest was 14 inches; the body and head much compressed, smooth, without the slightest appearance of scales; and where portions of the surface have been described as rough, as if sprinkled with bran, nothing like it appeared, except slightly on the underside near the tail; but the absence of this may have been produced by the rough usage it had received when thrown on shore by the waves. No mark of a lateral line; the gape restricted, but for its size the mouth capacious within; the jaws injured by violence, the lower a little protruded; mystache short and wide; teeth none, either in the jaws or palate. Eye large, round, low on the side of the head, in a line with the opening of the mouth; nostrils close to the front, near the upper jaw, and above them a falling in of the outline; a shallow depression running backward from it along the border of the gill-covers, and continuous with it a depression on the side, in which the pectoral fin may be received. Gill-covers smooth, firm, shutting close, the hindmost border elliptical, and not reaching to the root of the pectoral fin. Above the falling in of the front the outline rises steeply in a circular form, and is carried back in a moderately thin ridge to the dorsal fin, which is behind the middle of the body, and opposite the anal. The line of the belly is also firm and thin; the vent far forward from the anal fin and under the pectoral, where it is covered with a valve which moves on a hinge. Behind the dorsal and anal fins the body becomes narrow and broader; and on each side of this, near the root of the tail, is a prominent carination, and slightly beyond this a lower elevation on each side of it, resembling what is found on the tail of the Mackerel. The termination of the body is a little expanded, and at the insertion of the caudal fin slightly crenated. The dorsal and anal fins have each thirteen stout rays; the pectoral, whose origin is at a foot from the front, measures 10 inches in length, narrow towards the end, with twenty rays, of which the lower are short and slight; caudal fin forked, with twelve rays above and

below, and between these portions a pair widely apart and more fan-shaped.

Colour along the upper line of the head and body dark, with a cast of blue; all besides bright silvery; and I was informed that when first obtained, as the sun shone upon it, the brilliancy was such as to dazzle the eyes. Pectoral fins, caudal, and for the most part the anal brilliant red, the first ray with its membrane of the latter thicker than the others; the dorsal also a brilliant red, but the first three rays of this fin, with their membrane, firmer and redder than the others; the membrane between the other rays of this fin bordered with dark. The upper pharyngeal bones were numerous, hooked, slender, sharp, projecting, in, as usual, two pair of beds. Air-bladder large. Nothing in the stomach; but its inner surface studded over with projecting fleshy processes. I was not able to ascertain the weight of this fish; but while by the fisherman who obtained it it was judged to be about forty pounds, by others it was believed to be at the least double that weight.

In the account which Rafinesque gives of his example of this fish he makes the absence of a lateral line to be a character of the genus, with the vent situated under the pectoral fin, and having on its anterior border a valve to cover it. His specimen was obtained in the middle of June, in the year 1808, near Solanto, in Sicily; and in describing it he especially notices the absence of teeth and the limited extent of the mouth; the branchial rays four; rays of the dorsal and anal fins fourteen, of the pectoral twelve, in which probably he did not count such as were of small size, or they might have been lost. And he adds that it was called by the people "Luvaru Imperiale," from the resemblance of its colour in some particulars to that of the fish Luvaro, which is the local name of the *Sparus pagellus*; but whether this name was imposed on it at the moment or from long usage he does not say.

Dr. Gulia, in his enumeration of the fish of his native island Malta, says nothing of this species, except in a MS. note written in a copy of the work kindly presented to me by himself (Tentamen Ichthyologiæ Melitensis); but in another work (Repertorio di Storia Naturale, 1864) he mentions it on the authority of Professor Terafa, who appears to have seen even more than one example in that island.

But it is to Nardo, in his Inaugural Thesis, that we are indebted for a more extended account of this fish, as well of its external as of its internal structure, together with a figure, which, if not in the best style of art, is sufficiently exact to assure us of the form of the species. It appears, however, to have been drawn after the specimen had passed under the hands of the preserving artist; but in referring to his description I shall notice only those prominent particulars which throw some light on my own description and observations. It was in September 1826 that his example was caught, by some boys with their hands as it wandered among some rocks close to the shore in the harbour of Palestrina; and at the time when he wrote, it was preserved in a private museum at that

place. As it was entirely unknown (as far as he could learn) to all naturalists, he assigned to it the generic and specific name of *Proctostegus*, from Greek words which are expressive of the remarkable valve that covers and conceals the vent—a character which seems to be singular in this family of fishes. It was observed that this valve or covering was raised or let down by a voluntary action of the fish. The shape of the fish he compares in some degree to that of the *Coryphæna*, which is the Dolphin of sailors: the body without scales, but with some roughness on the surface; the mouth small and half circular, and without teeth; branchial rays three or four. He assigns to it, both in his description and figure, a lateral line, which became more distinct when the skin was dry; and he notices a rosy tinge on the lower surface of the body. The anal fin had fourteen rays, pectoral sixteen, and the vertebræ were counted as twenty. The inner surface of the stomach was studded with fleshy processes such as I have described; and in its cavity was found seaweed mingled with slime, a circumstance which explains the nature of its food. The substance of this fish is said to resemble beef, and to be of delicious flavour.

In Dr. Günther's 'Catalogue,' already referred to, there is a lengthened description of a species of this genus, which is supposed to be the same as that described by the Italian naturalists, and consequently as the Cornish example; but between the latter and that which had come under the observation of Mr. Lowe there are some important differences, which appear to point to a difference of species. Thus in the fish of Madeira, in front of the dorsal fin a separate spine was seated in a groove, into which it could be received, and there is also mention of a spine in front of the anal; but neither separate spine nor groove existed in our fish. Also, instead of a single and somewhat thickened cover, which, perhaps, in its ordinary condition lay flat on the vent (which portion of its body, from its apparent tenderness, seemed to require protection), in Mr. Lowe's fish this covering was double, being formed of "two short bony triangular prismatic spines, covering the vent like a pair of folding-doors." There were also "perfectly distinct" teeth in a single row in both jaws, and the hindmost rays of the dorsal fin were feebly branched.

Variation of colour is less to be regarded when occurring in fishes from different regions; but in this case the specimen is described as of a uniform iridescent pale steel or lead, reflecting rosy, lilac, or purple tints towards the back, silvery towards the belly and about the head; the dorsal and anal fins black in the membrane, with vermilion rays; pectoral fin 7 inches long, bright vermilion, as also the caudal; ventrals, as they are termed, flesh-coloured; the spine in front of the dorsal and anal fins whitish. The patches of the crust of the body were of a pale pink or dirty white tint; inside of the mouth purplish or dark mulberry-red. In none of these particulars did it resemble our fish.

3. Remarks on the Skeleton of *Ausonia cuvieri*.

By ALBERT GÜNTHER, M.A., M.D., Ph.D., F.Z.S.

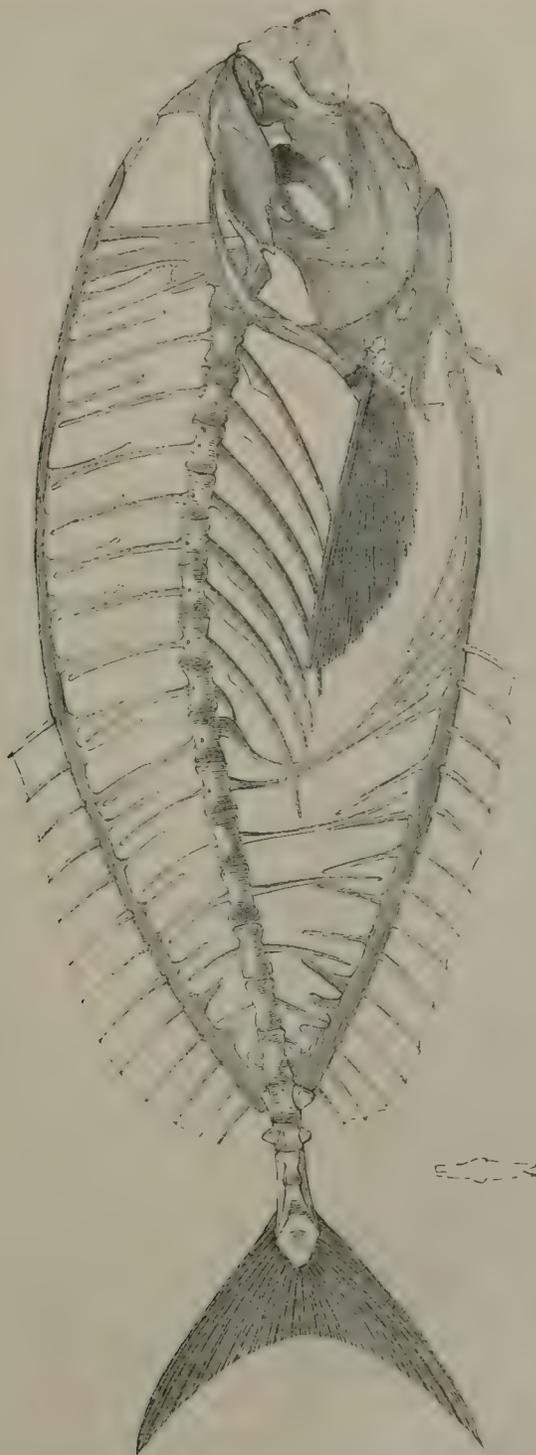
Several years ago, when on a visit at Frankfort to examine typical specimens of the Senckenbergian Museum, my attention was directed to a skeleton of *Ausonia cuvieri*, perhaps the only osteological example of this fish existing in a Museum of Natural History, for which, as for most of its zoological treasures, Frankfort is indebted to the indefatigable zeal of Rüppell. Not only did Dr. Rüppell allow me to make notes from the specimen, but gave me, besides, a drawing of the skeleton, which is reproduced in the accompanying woodcut, and his notes on the splanchnology. The latter, however, do not contain anything not previously observed in Nardo's memoir "De Proctostego."

As I am not aware that any notice of the osteology of this unexpected visitor to the British seas has been published, I think it right not to pass by this occasion of appending my notes to the preceding paper of Mr. Couch.

I infer, from the feeble development of the whole osseous structure, and particularly from the relatively small quantity of inorganic substance, that *Ausonia* is a deep-sea fish, inhabiting not that deeper zone in which *Plagyodus* (Steller, = *Alepidosaurus*, Lowe) and other carnivorous fishes live, and where a vegetable-eater, such as *Ausonia* evidently is, could not subsist, but a zone at a depth of perhaps a hundred fathoms, perhaps in company with *Centrolophus* and *Pomatomus**.

The configuration of the bones of the skull will be seen from the accompanying figure. The prefrontal is elongate, straight, extending from the upper margin of the orbit to the extremity of the snout, where it terminates in a slight swelling which is the union with that of the other side. The fronto-parietal crest is subtriangular, and commences immediately behind that swelling; it is slightly thickened. Maxillary extremely feeble. Vertebrae 11/11. The first interneural spine is very strong, much longer and stronger than the others (which are thin and styliform), flat, sabre-shaped, and descends to above the occipital foramen, in front of the first neural spine, which is still stronger than the bone just described. The second neural spine has a broad basal portion which passes abruptly into the upper thin and styliform portion. One interneural generally corresponds to a neural. All the interneurals are so much dilated above that their upper extremities appear to be united by one semiossified ligament, which extends from the parietal crest to the end of the dorsal. The first rib is attached to the third vertebra, the tenth vertebra is without rib; all the ribs are anchylosed with the centra of the vertebrae, opposite to the base of the neural spines. The hæmal of the eleventh vertebra is extremely long and slender, arched forward, and passing into a semiossified ligament

* Dr. Rüppell has also presented to the Senckenbergian Museum a skeleton of *Pomatomus telescopium*; it has 13/13 vertebrae.



Skeleton of *Ausonia cuvieri*.

which, similarly to that on the dorsal outline of the skeleton, unites the extremities of the interhæmals, extending from the end of the anal to the pubic bones, and forming a complete but feeble ring round and supporting the abdominal cavity. The pubic bones are very short and coalesced, but slightly divergent behind, so as to leave a narrow opening for the vent, which can be entirely closed by the rudimentary and coalesced but ossified ventral fins, which serve in this fish as a sphincter ani.

The formula of fin-rays of this specimen are:—D. 13. A. 14. C. 7+16+6. P. 15.

4. Notes on the Habits of *Gonodactylus chiragra*. By Lieut. O. F. T. ANNESLEY, R.A. (Communicated by Dr. J. E. GRAY.)

In May 1865, while stationed at Aden, I caught by a small hand-dredge in a rock-pool an animal which I have since learnt is most probably the "*Gonodactylus chiragra*," and for rather more than a month I kept it, sometimes in a small tumbler, sometimes in a large glass lamp, one of those which are occasionally used in halls, hanging from the ceiling, and which when arranged form by no means a bad aquarium.

The colour of the animal, which was of a brownish yellow, has greatly faded since its death.

Perhaps what strikes one most is the two curious prehensile claws with which the creature is provided. These are, I believe, used as instruments of defence and offence, and are really most powerful weapons. The animal seems to possess the power of darting them forward with very great force; and so beautifully are they constructed that they appear never to suffer any injury, however hard may be the substance against which they are driven.

I have not forgotten how I first became acquainted with the fierce propensities of the animal. I was moving one of the objects in the aquarium with a long pencil; in doing so I passed the pencil along the bottom near the animal, which, without further provocation, darted at it, nearly striking it out of my hand and astonishing me not a little. And afterwards, whenever the pencil was moved towards it, the animal invariably attacked it furiously; in fact I think his temper grew worse from our continually provoking him.

Frequently when sitting at the end of the room I have heard repeated knocks against the sides of the glass, occasioned by the attacks of this animal against the harmless *Ophiuri*, who, when travelling round the sides of the aquarium, inadvertently touched him with one of their curious rays, which, though composed of hard calcareous matter, were always severed by a single blow from the claw of the *Gonodactylus*.

For the sake of experiment I enclosed an *Ophiurus* (each of whose rays measured about 4 inches) and the animal in a tumbler, when the

former had no means of escape, and in a short time it was literally cut to pieces by the repeated attacks of the animal.

I do not believe he fed upon any portion of the *Ophiurus*, but merely destroyed it because it came in its way.

Though possessing a voracious appetite, feeding greedily on *Actinia* and similar forms, it can live very well upon animalcula in the water, as I have kept it without food for days together.

When swimming about, the fins or gills, five rows of which are placed under the belly of the creature, present a most beautiful appearance, resembling the finest feathers.

The *Gonodactylus chiragra's* death was caused by the poisonous gases evolved from a *Holothurium* which died one night in the aquarium.

5. On a Collection of Coleoptera from Formosa, sent home by R. Swinhoe, Esq., H.B.M. Consul, Formosa. By H. W. BATES, F.Z.S.

Mr. Swinhoe having kindly forwarded to me a collection of Coleopterous Insects made by himself in different parts of the island of Formosa, with a request that I would report upon its contents to the Zoological Society, I now proceed to give the results of my examination. The collection, although consisting of a very large number of specimens, contains only 285 species; the materials therefore cannot afford us so ample an illustration of the Coleopterous Fauna of the island as could be wished, seeing that a region so varied in its physical conditions and lying partly within the tropics must nourish many thousand species of this order of insects. The following is an enumeration of the representatives of the different families;—

<i>Cicindelidæ</i>	8	<i>Histeridæ</i>	1	<i>Rhynchophora</i>	27
<i>Carabidæ</i>	18	<i>Lamellicornes</i>	47	<i>Anthribidæ</i>	3
<i>Dyticidæ</i>	6	<i>Lucanidæ</i>	7	<i>Longicornes</i>	34
<i>Gyrinidæ</i>	1	<i>Serricornes</i>	16	<i>Phytophaga</i>	62
<i>Brachelytra</i>	1	<i>Malacodermes</i>	7	<i>Languriæ</i>	1
<i>Dermestidæ</i>	2	<i>Cleridæ</i>	4	<i>Coccinellidæ</i>	7
<i>Bostrichidæ</i>	1	<i>Heteromera</i>	32		

In a first collection made by a person not especially occupied with entomology there must necessarily be a considerable proportion of common and widely distributed species, as these, in tropical countries, are such as are found in the neighbourhood of dwellings and plantations, and therefore are the first to attract attention. This is so in the present case, about one-half of the species sent being already known as inhabiting the neighbouring continent or the islands of the Malay archipelago. The other half are probably new; but many of them belonging to difficult and hitherto unworked groups, cannot be at present satisfactorily decided upon. I do not find in the collection, what I had hoped for, any traces of great peculiarity in the

Formosan fauna as regards the Coleoptera. Of thirty-eight new species which I have to describe (excluding for the present the obscure groups as already mentioned), sixteen are closely allied to known Chinese specific forms, fourteen to species more widely distributed over Eastern Asia, two to Philippine Island forms, and six only are not very closely allied to any known species; these latter, however, are not strikingly peculiar, and have their nearest allies in Tropical Asian forms. The relations of the known species are not very different from those of the new ones. Thus, out of the sixty-nine known species which I have determined with the help of a few entomological friends who study special groups, no less than forty-seven are Chinese, twenty-six of wider distribution, or found in other parts of Tropical Asia, but not in China, and three Japanese or Japanese and Chinese. It must be borne in mind that we are at present very imperfectly acquainted with the insects of China; and consequently the relations of the two faunas may be still more intimate. In the letter which accompanied the collection, Mr. Swinhoe mentioned a species of *Damaster*, a highly peculiar Japanese generic form, as contained in the boxes. I have not succeeded in finding this insect in the collection, and am afraid it is lost, as the boxes were opened in transit. The discovery of a *Damaster* in the island of Formosa would have been the most interesting fact to record in a paper on the Coleoptera of the island.

The friends who have assisted me in the determination of the new species are Major F. J. S. Parry in the *Lucanidæ*, Mr. J. S. Baly in the *Phytophaga*, and Mr. Janson in the *Elateridæ*. All these gentlemen kindly allowed me to examine the type specimens of described Chinese and Asiatic species in their collections.

CICINDELIDÆ.

CICINDELA KALEEA.

Gracilis, thorace angustato, subcylindrico, medio paulo latiore; capite thoraceque minutissime crebre punctatis, opacis, obscure cupreis; elytris nigris, opacis, leviter viridi-æneo tinctis, sparsim punctatis, macula parva humerali, tribus discoidalibus quarum duabus posterioribus interdum connexis, lineola marginali alteraque apicali virguliformi albis; capite inter oculos modice depresso, multistrigoso; labro testaceo (♂), medio producto et sinuato-truncato, dente parvo acuto; antennis modice elongatis; corpore subtus pedibusque elongatis, viridi-æneis.

Long. $4\frac{1}{2}$ lin., ♂.

A slender species, allied to the group to which *C. argentata* (Fab.) belongs, but of a more elongate form, with head more depressed between the eyes, and thorax more elongate and cylindrical. The colours are obscure, and the surface of the elytra very opaque. The labrum (in the male) is transverse, produced in the middle, with the front edge of the produced part sinuate truncate, and having a small tooth in the middle of the truncature; but the lateral angles of the truncature are not dentiform. The elytra have a sutural spine; their

surface is marked with a number of shallow scattered punctures, having a brassy greenish tinge. The white spots are sometimes more and sometimes less developed; the anterior discoidal spot is sometimes linear, and clavate at its posterior end; it is the hinder portion of what in other species is the humeral lunule; the lateral line is sometimes absent; the apical virgula narrows off, and does not reach the sutural angle.

CICINDELA PSILICA.

Gracilis, thorace cylindrico, angusto; capite thoraceque tenuiter strigosis, aureo-cupreis, late cyaneo marginatis; elytris obscure cupreis, sutura viridi, lateribus cyaneo limbatis, æqualiter distincte punctatis, lunula humerali brevi, macula parva transversa laterali apud medium alterisque duabus apicalibus albis; capite inter oculos valde depresso, utrinque multistriato; labro utroque sexu testaceo, medio dente valido, margine anteriore recto, angulis lateralibus distinctis; antennis gracilibus, elongatis; elytris dente suturali acuto; subtus pedibusque elongatis viridi-æneis.

Long. $4\frac{1}{2}$ lin., ♂ ♀.

Closely allied to *C. craspedota*, Schaum, from Celebes, differing in being rather more elongated, with the elytra opaque instead of shining, and in having a humeral lunule and a spot at the sutural apex of the elytra. The thorax is elongate, narrow, and almost perfectly cylindrical. The head is strongly depressed between the eyes; the labrum has in both sexes a longish central tooth, and its front edge forms a straight line from the tooth to the lateral angles, which are distinct. The antennæ are long and slender; the palpi pale yellow, with the terminal joints brassy green. The head and thorax are of a rather bright coppery hue with a golden tinge, and with their sides broadly margined with greenish blue. The elytra are dull copper, and uniformly covered with largish and distant punctures; the suture is shining green, and the lateral borders dark greenish blue; the humeral lunule is short and slender, the marginal spot in the middle is broader than long, the subapical marginal spot is small and reniform.

COLLYRIS FORMOSANA.

Cyanea, nitida, elytris viridi-cæruleis, capite et thorace læte violaceis, labro chalybeo; antennis subelongatis, articulis basilibus cyaneis, 3^o-7^m rufo-piceis (cætera desunt); capite pone oculos subquadrato, angulis rotundatis, fronte bisulcata, interstitio longitudinaliter elevato; thorace capite paulo longiore, prope apicem et basin modice strangulato, parte media rotundata; elytris æqualiter usque ad apices punctatis, apice (♀) flexuoso-truncatis, angulo suturali producto; femoribus anticis et intermediis rufis, geniculis cum tibiis et tarsis piceis; pedibus posticis nigris, femoribus basi rufis, trochanteribus omnibus rufis.

Long. 7 lin., ♀.

Similar in shape to *C. filiformis*, Chaud. (Ann. Soc. Ent. Fr. 1864,

pl. 8. f. 9); head distinctly longer behind the eyes, but similar in outline; thorax rather more abruptly narrowed anteriorly, smooth and glossy violet (together with the head), and having very few punctures, with sides greyish hirsute. Elytra gradually widening from base to apex, clear dark blue, becoming greenish towards the suture, uniformly closely and distinctly punctured; apex transversely sinuate truncate, rounded exteriorly and sinuated near the suture; sutural angle forming a distinct tooth.

The other species of *Cicindelidæ* in the collection are—

C. PUNCTATISSIMA, Schaum.

Found also at Amoy.

C. NIVEICINCTA, Chevr.

A Hong Kong species.

C. AURULENTA, Fab.

A widely distributed species in South-eastern Asia.

C. SEMIVITTATA, Fab.

Also widely distributed, from India to Celebes and the Philippines.

C. SXPUNCTATA, Fab.

Found also in India and the Philippines.

CARABIDÆ.

CHLÆNIUS (DIAPHEROPSOPHUS) SWINHOEI.

Robustus, supra niger opacus, creberrime punctatus; elytris singulis paulo ante medium macula magna transversa fulva, striatis, striis vix distincte punctatis; antennis medio dilatatis, articulis tribus basalibus rufis; tibiis anticis et intermediis basi extus flavo-testaceis.

Long. $8\frac{1}{2}$ lin., ♂.

Robust, and with stout, moderately short legs. Head large, contracted behind, the eyes (which are prominent) closely punctured, slightly shining, black; labrum, palpi, and antennæ, except the three rufous basal joints, black. Thorax quadrate, with the sides regularly rounded and hind angles indistinct, as wide in the middle as the base of the elytra, very closely and coarsely punctured, dull black; longitudinal line distinct anteriorly; basal depressions elongated and shallow. The elytra are striated, and the striæ scarcely perceptibly punctured, except near the base. The fulvous spot of the elytra has its posterior edge in the middle of the elytra, and extends from the eighth to the third interstice inclusive, widest on the sixth, and very narrow on the third. Body beneath shining black, coarsely punctured on the sides; legs black, basal half of anterior and middle tibiæ on the outside flavescent.

This species differs from *C. (Diaph.) mellyi* (Chaudoir), an Indian

species, in the striæ of the elytra being scarcely punctured; the punctures are visible only with a lens, and chiefly near the base. The elytra are also more elongated than in *C. mellyi*. I do not know whether it may not be the *C. planicornis* (Laferté), also an Indian species; but the author has never published its characters.

LAMELLICORNES.

ANOMALA CORRUGATA.

Oblongo-elongata, prope apicem paulo dilatata, supra viridi-ænea testaceo marginata, passim grosse creberrime conflenter punctata; clypeo marginibus elevatis, testaceo; thorace antice vix angustato, medio longitudinaliter impresso; elytris utrinque costis quatuor angustis lævibus; corpore subtus pedibusque rufo-testaceis; abdomine fusco-æneo; tarsiis piceis.

Long. $6\frac{1}{2}$ - $7\frac{1}{2}$ lin.

An elongate species, widest close to the apex of the elytra; above fine light brassy green and shining, notwithstanding the coarse confluent punctation with which the surface is covered, with the exception of the suture and ribs of the elytra. The borders of the clypeus, lateral margins of the thorax, and deflexed edges of the elytra are yellowish testaceous. The body beneath and legs are reddish testaceous, with the abdomen darker and brassy, and the tarsi pitchy.

ANOMALA INCONCINNA.

Oblonga, postice dilatata, sordide rufo-testacea æneo tincta, capite thoraceque medio æneis; clypeo reflexo-marginato, grosse conflenter punctato, marginibus rufo-testaceis, vertice minus dense conflenter punctato; antennis piceo-rufis, clava (♀) parva; thorace crebre punctato, nitido, linea dorsali leviter impressa; scutello lateribus grosse punctatis; elytris oblongis (♀), striis 13 fortiter impressis, grosse punctatis, stria secunda a sutura latiore multipunctata, striis 5^{ta} et 8^{va} minus profunde impressis, interstitiis punctatis, colore sordide rufo-testaceis, æneo leviter micantibus; corpore subtus pedibusque passim punctatis, sordide rufo-testaceis, parce pilosis; abdomine æneo micante; unguiculis majoribus, anticis et intermediis apice fissis.

Long. 6 lin., ♀.

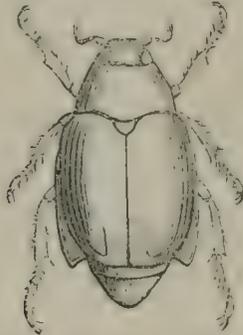
EUCHLORA EXPANSA.

Magna, ovata, convexa, supra viridis leviter aureo micans, minute punctata, glabra; infra viridi-ænea, lateribus tenuiter pubescens, pedibus violaceis, elytris utrinque margine postico in lobum foliaceum reflexum expansis. 12^{lin.}

Large, ovate, and convex; above green, with a slight golden tinge, finely punctulate, less densely so towards the suture of the elytra, and the longitudinal lines very faintly indicated. Beneath the colour is dark brassy green, glabrous, except a few hairs on the sides; legs

violet, tinged here and there with brassy. The hind margin of each elytron, before it curves to the apex, is expanded into a thin reflexed lobe, the underside of which is black.

Fig. 1.

*Euchlora expansa.***EUCHLORA CASTANEOVENTRIS.**

Oblonga, supra viridis paulo micans, infra cum pedibus fusco-castaneis; capite subrugoso-punctato; thorace crebre punctulato; elytris grossius punctatis, hic illic plicatis, lineis longitudinalibus distinctis.

Long. 8–9½ lin.

Distinguished from the allied species by the under surface of the body and legs being of a chestnut hue without any trace of metallic lustre, the tarsi and sometimes the tibiæ being darker. The shape of the body is more oblong than ovate; the pygidium is of the same green colour as the whole of the upper surface. The surface of the elytra is somewhat uneven, the punctures irregular and interrupted here and there with transverse wrinkles, the longitudinal lines of punctures and the ribs which they form are rather distinctly marked.

EUCHLORA TRACHYPYGA.

Elliptica, vix convexa, viridis paulo nitens, crebre æqualiter sed haud grosse punctata; thorace antice valde angustato; elytris a medio distincte angustatis, margine membranaceo latissimo; pygidio magno, fere plano, obliquo, densissime subtiliter punctato-rugoso, opaco; segmento dorsali penultimo nigro; corpore subtus cupreo, pectoris et abdominis lateribus tomentosis; pedibus supra viridibus, infra cupreis.

Long. 10½ lin.

Judging from the description, this species seems to be closely allied to *E. albopilosa* (Hope, Burm.), a Japanese insect; but this is represented as having distinct costæ on the elytra and a hairy pygidium: the remarkable form and sculpture of the pygidium, too, is not noticed. The general form is elliptical and flattened above; the elytra are narrowed from before the middle, and from this point commences the membranous border, which is very broad in this species.

MIMELA SIMPLEX.

Ovata, omnino æneo-olivaceo-viridis, nitidissima; clypeo creberrime, vertice cum thorace minus dense, elytris sparsim punctulatis; elytris interstitiis linearum punctorum lævibus, plicis nonnullis lateralibus; thorace lateribus trifoveolatis.

Long. $9\frac{1}{2}$ lin.

An ovate species, broader than *Mimela splendens*. The entire body and legs uniform olivaceous brassy green, brightly shining. The whole surface is minutely punctured; but the punctures are few and scattered on the elytra, and the spaces between the pairs of longitudinal lines of points are quite smooth; a few transverse wrinkles exist near the sides.

MIMELA IGNICAUDA.

Breviter ovata, supra viridi-ænea nitens, elytrorum marginibus præcipue apicalibus aureo-cupreis; clypeo maris angustissime, fæminæ late testaceo marginato, minute punctulato; thorace lateribus irregulariter late foveolatis, sulco utrinque basali profunde impresso, maris unicolori, fæminæ testaceo marginato; elytris grosse, parum profunde et subsparsum punctatis, interstitiis angustioribus lævibus, latioribus interdum transverse plicatis; corpore subtus obscure æneo-piceo; pedibus maris obscure æneis, femoribus testaceis, fæminæ pedibus testaceis æneo tinctis.

Long. $5-5\frac{1}{2}$ lin.

A small species, broadly ovate in the male, more elongate in the female, with the elytra, in both, dilated near the apex. The colour is dark brassy green, passing gradually into coppery on the sides of the elytra, and of a brilliant golden copper below the apical callus. The thorax is very minutely punctured; but the sides are occupied with a number of shallow irregular depressions, and there is a deep sulcus running obliquely near the hind margin on each side. The male has scarcely any trace of pale-testaceous margins; and, beneath, the femora are only sometimes of this colour; the female, however, has broadish pale margins to the clypeus and sides of thorax, and the under surface and legs are in large part of the same hue. The pygidium is brassy green and sparsely punctured.

MIMELA CHRYSÆIS.

M. splendenti colore similis, sed in utroque sexu oblongior, grossius punctata, oblonga, testacea; capite thoraceque viridi vel aureo-viridi micantibus, nitidissimis; elytris auratis; clypeo densissime rugoso-punctato; thorace grosse subsparsum punctato; elytris grossius punctatis, singulis sutura et costis (non dum elevatis) quatuor lævibus lineis punctorum marginatis; pygidio glabro, splendente, convexo, grosse distincte punctato, punctis rotundis; corpore subtus et pedibus testaceis, viridi-aureo micantibus, pectore lateribus coxisque posticis dense rugoso-punctatis, abdomine interdum cupreo.

Long. $7\frac{1}{2}-9$ lin.

Very similar in general colour and other characters to *M. splendens*, but much more oblong in figure and more coarsely punctured; the punctures of the elytra are large and distinct; the pygidium is convex and covered, but not closely, with large round punctures, its sides are distinctly sinuated, and its surface glabrous and brilliant. The male is relatively shorter and broader behind than the female.

I have compared this species with type specimens of *Mimela chinensis*, Kirby (= *splendens*, Sch.), in Major Parry's collection.

PECTINICORNIA.

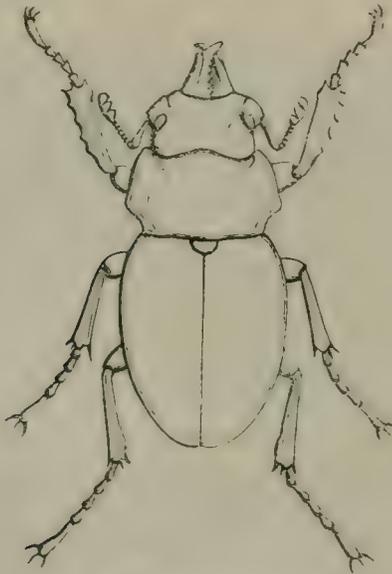
NEOLUCANUS SWINHOEI.

I am indebted to Major F. J. S. Parry for the following diagnosis and description of this fine insect:—

“*Latus, lævis, niger; mandibulis capitis longitudine arcuatis, interne irregulariter serratis, supra ante apicem dente parvo suberecto armatis; capite ad angulos anticos subquadrato; prothoracis angulis posticis subtruncatis; elytris castaneo-fulvis, basi extrema et scutello nigris; tibiis anticis latis, denticulatis, quatuor posticis inermibus.* ♂.

“Long. ♂ (mandib. excl.) 1" 4'''–1" 6'''.

Fig. 2.



Neolucanus swinhoei.

“Closely resembling *N. castanopterus* of Northern India; its general form, however, is somewhat broader, the elytra more elongated, of different convexity, and less rounded at their extremity. The prothorax is wider in proportion, more depressed; head broader, with subquadrate angles more produced, less polished; the form of

mandibles (in well-developed males) is totally different, the apical suberect tooth resembling that of other species found in China, such as *N. sinicus* and *N. championi*."

To this description I will add that the feebly developed males have scarcely any trace of the erect tooth, and therefore do not much differ from the same form in *N. castanopterus*; the side of the head before the eyes remains, however, always much more dilated laterally than in *N. castanopterus*. The convexity of the elytra culminates at one-third of their length, and then gradually slopes to the apex; in *N. castanopterus* the elytra are convex to about three-fourths of their length, and then dip rather abruptly to the apex.

The female resembles the male in colour and form; but the sides of the head are much more dilated exterior to the eyes, and angulated.

ÆGUS FORMOSÆ.

Ægo lævicollis simillimus, differt tantum (♂) elytris ad basin anguste et apud latera late crebre punctatis, interstitio tertio a margine etiam multo latiore.

This apparently common Formosan species is so closely similar to *Æ. lævicollis* of China that it can scarcely be considered more than an insular modification of it. In the punctuation of the elytra it is almost identical with *Æ. capitatus* of Malacca and Borneo; but it differs much from that species in the shape of the thorax, position of the mandibular teeth, and in other points, in which it agrees exactly with *Æ. lævicollis*.

NIGIDIUS PARRYI.

Oblongus, niger, nitidus; capite quam thorax paulo angustiore, lateribus ante oculos rotundato-dilatato haud angulato, fronte depressa sparsim minus grosse punctata; mandibulis (♂) porrectis, apice recurvatis, supra rugoso-punctatis absque dente erecto, intus obtuse dentatis; thorace angulis anticis obtusis, margine laterali antice incrassato, medio valde emarginato, angulis posticis late rotundatis, supra lævi, nitido, sulco dorsali abbreviato rugoso, plaga parva utrinque laterali punctata: elytris late punctato-sulcatis.

Long. (mand. excl.) $11\frac{1}{2}$ lin., mand. $1\frac{1}{2}$ lin. ♂.

A more elongated insect than the other two continental Asiatic species (*N. cornutus* and *N. obesus*), and differing from all the allied species in entirely wanting the erect tooth or horn-shaped dorsal apophysis of the mandibles. The sides of the head are rounded before the eyes, and not produced into a point. The thorax has the lateral margin excavated in the middle. The sulci of the elytra are wide and deep, and have a chain of foveæ, but are destitute of the lines of fine punctures seen in *N. lævicollis*; the interstices are narrow, polished, and impunctate.

NIGIDIUS FORMOSANUS.

Oblongo-elongatus, niger; capite ante oculos dilatato, angulis

acutis, supra lituris parvis curvatis impresso, lateribus rugosis; mandibulis brevibus, intus bidentatis, supra cornu suberecto curvato obtuso armatis, dense foveolatis; thorace lateribus medio emarginatis, supra passim punctato; elytris præsertim dorso minus profunde sulcatis, sulcis fundo serie punctorum ocellarium impressis, interstitiis punctulatis.

Long. (mand. excl.) 6 lin., mand. $\frac{1}{2}$ lin.

Much more slender and proportionally narrower than *N. lævicollis*; head very similar in shape, but the lateral dilatation not so much prolonged or retrocurved, the hind edge from the acute apex being transverse to the axis of the body; surface of the head covered with small semicircular impressions; mandibles thickly, coarsely, and deeply pitted; the dorsal apophysis is directed obliquely forward, curved inwards, and obtuse at the apex. The sulci of the elytra are wide and shallow towards the suture, the foveæ in their bottoms are ocellated and distinct one from the other; the sides of the interstices have a row of fine punctures.

The other species of *Lucanidæ* are:—

ODONTOLABIS CARINATUS, Linn.

A Silhet or North-east Indian insect.

CLADOGNATHUS INCLINATUS, Motschoulsky.

Hitherto known only from Japan.

EURYTRACHELUS PLATYMELUS, Saund.

A Chinese species.

SERRICORNES.

LACON FORMOSANUS.

L. bipapulato simillimus quoad formam et colorem; thorace antice latiore magis rotundato, ante basin magis sinuato angulisque posticis productis quasi lobatis; corpore toto brunneo, tomento fulvo-brunneo plagiatis vestito; capite thoraceque grosse crebre punctatis; elytris grosse striato-punctatis, interstitiis crebre punctulatis.

Long. $8\frac{1}{2}$ lin.

Much resembling *L. bipapulatus* (Candèze, Monogr. Elatér. Suppl. p. 11), a Chinese species, and differing almost solely in the form of the thorax, which is more rounded on the sides anteriorly, more sinuated towards the base, with the hind angles more produced; the latter form almost lobular projections, truncated at their apices.

LACON SETIGER.

Elongatus, postice subabrupte attenuatus, corpore supra setis brevibus erectis brunneis dense vestito; capite grosse et profunde punctato, nigro, fulvo squamoso; antennis rufis, articulis quatuor basalibus piceo-nigris, articulis 2° et 3° subæqualibus

quam 4^{tus} multo minoribus: thorace elongato-quadrato, medio vix dilatato, angulis anticis et posticis late truncatis, supra convexo, profunde punctato, nigro, fulvo-griseo squamoso, maculis duabus rotundatis et vitta abbreviata longitudinali nudis; elytris a medio subabrupte angustatis, striato-punctatis, interstitiis punctulatis, rufo-castaneis, fulvo-griseo nebulose squamatis; corpore subtus fuliginoso, rugoso, griseo squamato; pedibus piceis.

Long. 9 lin.

This species is remarkable in the genus to which it belongs for the setose clothing of the upper surface of the body. It is one of the most peculiar insects in the collection.

MELANOTUS UMBER.

Modice elongatus, convexior, fuliginosus, subnitens, pube aureo-fulva subdecumbente minus dense vestitus; capite parvo, supra convexo, crebre punctato, nitido, carina frontali fortiter curvata; antennis piceo-rufis; pedibus pallide rufis; thorace valde convexo, dense nec grosse punctato, lateribus antice modice rotundatis; elytris minus nitidis, aspere punctulatis, fortiter punctato-striatis; corpore subtus concolori.

Long. 7 lin.

MELANOTUS TAMSUYENSIS.

Elongatus, depressus, piceo-fuliginosus, subnitens, pube grisea suberecta minus dense vestitus; capite supra grosse crebre punctato, carina frontali late rotundata, epistomate cum labro fuliginosis, palpis piceo-rufis; antennis omnino fusco-piceis; pedibus piceo-rufis; thorace lateribus subrectis, antice paulo angustato, supra vix convexo crebre punctato; elytris striato-punctatis, interstitiis punctulatis; corpore subtus piceo-fuliginoso.

Long. $7\frac{1}{2}$ lin.

SILESES MUTABILIS.

S. absimili vicina, colore variabilis, testacea cum thoracis disco nigricante, vel brunneo-testacea, vel obscure fusca thoracis angulis posticis solum obscure testaceis, vel denique tota nigro-fusca; pube grisea decumbente vestita, nihilominus nitida; capite thoraceque dense punctatis; elytris punctato-striatis, interstitiis punctulatis; pedibus rufo-testaceis; antennis piceis, articulis basalibus rufis.

Long. $2\frac{1}{2}$ –3 lin.

Much resembles *S. absimilis* (Cand. Mon. Elatér.), a Hong Kong species; differs in being more slender and very variable in colour. There are a dozen specimens in the collection, no two of which are alike in respect of colour. The pubescence is not very dense; and the surface is shining, especially the disk of the thorax, which is very glossy.

The following Chinese species of *Elateridæ* are also contained in the collection :—

CAMPTOSTERNUS FULGENS, Fab.

AGRYPNUS POLITUS, Candèze.

AGONISCHIUS OBSCURIPES, Gyll.

All three found also in Cochin China, the Himalayas, &c.

HEMIOPS FLAVUS, Laporte.

Also Malay archipelago, Himalayas, &c.

MELANOXANTHUS MELANOCEPHALUS, Thunb.

Widely distributed over the tropical parts of the Old World.

LONGICORNES.

PHILUS PALLESCENS.

Elongatus, subcylindricus, pallide fusco-cervinus, pube pallida subdecumbente vestitus; capite pone oculos elongatulo et leviter angustato, supra creberrime punctato; oculis magnis; tuberculis antenniferis incrassatis; antennis leviter serratis, rufo-cervinis, articulis 3^{tio}-1^{imum} subæqualibus, maris corpore multo, fæminæ paulo, longioribus; thorace parvo, subrotundato, supra inæquali, crebre punctato; elytris subcylindricis, maris apice subacuminatis, supra minute crebre punctatis, carinulis indistinctis dorsalibus duabus; corpore subtus pedibusque obscure rufo-cervinis, articulo ultimo tarsorum tenui.

Long. 8-9 lin., ♂ ♀.

Differs from the North China *Philus inconspicuus* (Saunders) by its paler colour, much less hirsute body, and longer and slenderer antennæ, especially in the female.

ERYTHRUS FORMOSANUS.

E. championi simillimus, multo magis elongatus, scutello nigro; capite supra, antennis, corpore subtus (capite prothoraceque rufis exceptis) et pedibus nigris; thorace tuberculis duobus solum nigris; elytris elongatis, apice serratis, angulo suturali spiniformi, medio unicastatis.

Long. 9 lin.

Closely allied to *E. championi* (White, Cat. Long. Brit. Mus. p. 142, pl. 4. f. 4) of Hong Kong, but much more elongated, and the scutellum black instead of red. The face is clothed with reddish hairs.

PRAONETHA BINODOSA.

Elliptica, convexa, cinerea, fusco varia; capite dense cinereo-cervino tomentoso; antennis corpore multo brevioribus, obscure fuscis, articulis basi cinereis, articulis 3^o et 4^o elongatis infra curvatis; thorace cylindrico, elytris multo angustioribus; dorso

paulo convexo, punctato, cinereo, lateribus late fuscis; elytris subtrigonis, convexis, apice truncatis, supra lineatim grosse punctatis, bicostatis, prope basin tuberculo magno compresso apice cristato, fusco et cinereo variis, prope apicem macula magna communi cinereo; corpore subtus pedibusque fusco et cinereo variegatis.

Long. $4\frac{1}{2}$ lin.

The species which the present one most resembles in this extensive genus is *P. bigibbera* (Newman) of the Philippine Islands.

PRAONETHA KALEEA.

Elongato-elliptica, modice convexa, fusca, elytris lateribus plaga magna et disco pone medium macula transversa cinereo-albis; capite tomento fulvo vestito, vertice late depresso; antennis corpore multo brevioribus, cinereo et fusco maculatis, articulo basali infra valde planato, tertio et quarto rectis; thorace parvo, quadrato, fusco-cinereo nebuloso; elytris oblongis, prope apicem angustatis, apice ad suturam breviter oblique truncatis, supra grosse et crebre sublineatim punctatis, bicostatis, tuberculo basali paulo elevato nigro; corpore subtus pedibusque fuscis, cinereo variegatis.

Long. 3 lin.

ROPICA FORMOSANA.

Elongato-elliptica, capite et thorace elytris angustioribus, cinereo-fulva, passim punctata; thorace lateribus paulo rotundato, fulvo bivittato; elytris oblique breviter truncatis, pone medium utrinque macula discoidali pallide cinerea.

Long. 4 lin.

More elongate than the typical species, but of the same elliptical general outline; head and thorax of equal breadth and narrower than the elytra. Closely punctured; elytra more coarsely so, and clothed with dingy ashy-fulvous tomentum, with two clearer tawny stripes along the dorsal surface of the thorax, and a rounded discoidal ashy spot on each elytron, a little after the middle. The elytra are elongate-elliptical, and have the apical margins abruptly flattened out, with the apex obliquely truncated. Antennæ a little longer than the body; joints gradually diminishing in length from the fourth, and of a uniform ashy brown. Body beneath and legs dingy ashy. Claw-joint of the tarsi long and strong, with claws semidivergent.

SYBRA PUNCTATOSTRIATA.

Elongata, sublinearis, depressa, capite thoraceque grossissime subdense punctatis, elytris punctato-striatis, stria suturali valde impressa; sordide cinereo-fusca, thorace fulvo indistincte quadrivittato; elytris lateribus fulvo strigatis, apice valde oblique subsinuato-truncatis.

Long. $4\frac{1}{2}$ lin.

Belongs to the second section of the genus, as divided by Mr. Pascoe, in which the elytra have the apex "wedge-shaped, with the

sutural side concave." The body above is covered with very large punctures, which are irregular and rather close together on the head and thorax, and arranged in regular, slightly impressed rows on the elytra; the sutural row deeply sunk. The elytra are dingy ashy brown, with dull fulvous streaks along the interstices, and a few rounded scattered ashy spots. Body beneath, legs, and antennæ dull ashy brown.

SYBRA BACULINA.

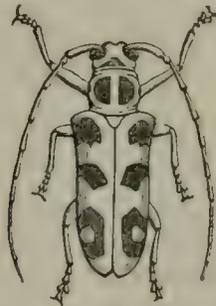
Elongata, apicem versus attenuata, depressa, fusco-cinerea, vittu lata thoracis alteraque suturali elytrorum obscure fuscis; capite sparse punctato, fulvo-cinereo tomentoso, tuberculis antenniferis elevatis intus acutis; antennis fuscis, articulis basi cinereis; thorace subcylindrico, supra postice depresso, grosse crebre punctato; elytris apices versus attenuatis, apice breviter oblique truncatis, supra regulariter striato-punctatis, cinereo-fuscis, vittu lata suturali a basi usque pone medium obscure fusca; corpore subtus pedibusque sordide fusco-cinereis.

Long. $2\frac{3}{4}$ lin.

PARAGLENEA, nov. gen.

A Glenea differt hoc genus novum elytris apice rotundatis, simplicibus. Typus Glenea fortunei, e China septentrionali.

Fig. 3.



Paraglenea swinhoei.

PARAGLENEA SWINHOEI.

Elongata, parallelogrammica, supra depressa, tomento late viridicinereo vestita, maculis duabus thoracis, et tribus elytrorum, scilicet una transversa laterali subbasali, altera obliqua ante medium alteraque magna annuliformi ante apicem, nigris; corpore subtus pedibusque late viridicinereis; antennis filiformibus, nigris, articulis basalibus viridicinereo maculatis.

Long. $6\frac{1}{2}$ –8 lin.

This species is very distinct from *P. fortunei* (Saund. Trans. Ent. Soc. 2nd ser. ii. pl. 4. f. 1), the only other as yet known of the genus, both in its form of body and markings, although there is a great general resemblance, and the colours are clear pale ashy green and

black in both. The antennæ in both sexes of *P. swinhoei* are longer than the body; the thorax is scarce perceptibly narrowed behind; and the elytra taper towards the apex extremely little in either sex; the spots on the disk of the thorax are large and nearly semicircular, being separated by a narrow line; the deflexed margins of the elytra have a black streak between the second and third black spots. There is a small black patch on the occiput; otherwise the head is wholly light green.

PHYTOPHAGA.

LEMA POSTREMA.

Oblonga, ferrugineo-flava; antennis (articulo basali excepto), tibiis apice et tarsis nigris, elytris cæruleis; thorace medio valde angustato, sulco dorsali obsoleto, foveola prope marginem posticum impresso, supra sparse distincte punctato; elytris oblongis, pone scutellum transverse depressis, lateribus subplicatis, punctis validis in seriebus decem ordinatis, interstitiis lævibus; corpore subtus nudo.

Long. $3\frac{1}{2}$ lin.

LAMPROSOMA ALIENUM.

Parvum, breviter ovatum, modice convexum, nigrum, nitidum, glabrum, supra regulariter haud profunde punctatum; occipite paulo convexo; fronte subplana, lævi, linea longitudinali impressa; antennis prothorace brevioribus, nigris, articulis duobus basalibus magnis, 3^{to}-6^{tum} tenuibus, cæteris gradatim incrassatis; thorace ante scutellum producto acuto, scutello latiusculo triangulari; corpore subtus pedibusque nigris nitidis, prosterno medio angustato.

Long. $1\frac{1}{3}$ lin.

This is one of the most interesting insects in the collection, being the only Asiatic species at present known of a genus almost peculiar to America. The only exception to the purely American range of the genus hitherto made known was the European *L. concolor*. The present species is more nearly allied to the typical forms of *Lamprosoma* than that insect, having the median projection of the hind margin of the thorax more pronounced and pointed. The scutellum, however, is broader than in the *Lamprosomæ*, forming nearly an equilateral triangle, and plane on the surface. The antennæ are shorter than the prothorax, and gradually clavate from the sixth joint. The prosternum is formed as in the *Lamprosomata*, but is much narrower than is customary.

CHLAMYS FORMOSANA.

Parva, breviter oblonga, castanea, corpore subtus nigro opaco; capite crebre grosse punctato, fulvo; antennis basi fulvis; thorace elevato, elevatione simplici, rotundata, utrinque a limbo postico-laterali distincte separata, crebre grosse punctato, disco antice lineis nonnullis brevibus elevatis, colore nigro, fulvo et rufo-castaneo variegato; scutello nigro; elytris grossissime punctato-rugulosis, costis transversis flexuosis irregularibus utrinque circa 8, colore rufo-

castaneis, partibus depressis obscurioribus, sutura nigra; corpore subtus nigro opaco, creberrime foveolato; abdomine castaneo maculato; pedibus rufo-castaneis; pygidio vage punctato, lineis elevatis longitudinalibus tribus.

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

CRYPTOCEPHALUS SWINHOEI.

Breviter oblongus, niger, parum nitidus, subtus pilis brevibus argenteis subsparsum vestitus, antennarum articulis tribus basalibus, labro et palpis rufo-testaceis nitidis; capite punctis grossis sparsis, ad margines densioribus et in rugis confluentibus, medio fovea oblonga; thoracis marginibus antico et lateralibus stria profunda impressa, angulis posticis longe productis, dorso lævi, limbo laterali leviter punctato; elytris striato-punctatis, punctis postice subobsoletis, interstitiis planis lævibus.

Long. 2 lin.

AORIA QUINQUEMACULATA.

Subquadrata, convexa, castaneo-rufa, pilis cinereo-argenteis vestita; capite thoraceque grosse et dense punctatis, hoc medio macula magna nigra; elytris striato-punctatis, interstitiis (maculis posticis exceptis) punctatis, maculis quinque (scilicet una utrinque medio basis, altera communi medio suturali alteraque utrinque subdiscoïdali pone medium) nigris; pedibus valde elongatis, rufis; antennis pallide rufis; pectore, lateribus, coxis posticis et maculis abdominis nigris.

Long. $2\frac{3}{4}$ lin.

Mr. Baly has received this species also from the north of China.

LINA FORMOSANA.

Oblonga, postice vix dilatata, paulo convexa, late viridi-ænea, antennis (articulis apicalibus fuscis exceptis) pedibusque flavis; capite medio late depresso, irregulariter subruguloso-punctato; thorace supra inæquali, irregulariter (lateribus grossius) punctato; elytris dense punctatis; corpore subtus æneo, nitido, lævissimo, abdominis margine testaceo.

Long. 3 lin.

Allied to the European *L. ænea*; but distinguished by the yellow legs and base of antennæ.

HISPA CALLICANTHA.

Oblonga, nigra, elytris chalybeo-nigris subnitidis; capite subtiliter ruguloso, opaco, medio canaliculato; antennis subclavatis, nigris opacis, articulo basali supra prope apicem spina longa flexuosa armato; thorace crebre fortiter ruguloso, medio sulco longitudinali brevi sublævi, postice transverse impresso, antice spinis duabus a basi furcatis, lateribus spina antica furcata alteraque posteriore simplici; elytris foveolis magnis seriatim ordinatis, marginibus spinis acutis porrectis in serie regulari ordinatis, disco spinis

utrinque circa 25 a tuberculis orientibus; corpore subtus pedibusque nigris opacis.

Long. $2\frac{1}{4}$ lin.

ADORIUM CHRYSOMELOIDES.

Ovatum, flavum, antennis pedibusque piceis, capite maculisque quatuor thoracis transverse ordinatis nigris; elytris viridi-cæneis nitidis, dense punctatis.

Long. 4 lin.

Ovate, yellowish shining; middle of breast and abdomen darker, reddish; the abdomen with a row of black spots down each side; femora and base of antennæ pitchy red; the rest of the antennæ, tibiæ, and tarsi darker and blackish. Head shining black, with a very few punctures in a depression between the eyes. Thorax glossy and very faintly punctured, with four large black spots arranged in a row across the middle, and having a smaller spot behind between the two middle ones. Scutellum glossy, dark red. Elytra ovate, not much wider than the thorax at the base; epipleuræ narrow and plane, thickly but not coarsely punctured, shining dark brassy green.

SEBÆTHE BALYI.

Breviter ovata vel suborbicularis, testacea, glabra; elytris macula supra callum humeralem, altera prope scutellum alteraque majore subapicali nigris (macula scutellari interdum majore et per suturam continuata, vel absente); antennis longitudine corporis, nigris, articulis duobus basalibus rufo-piceis; capite sulco transversali inter oculos; thorace impunctato, limbo laterali explanato; margine reflexo, ad angulos anticòs incrassato; elytris subtilissime punctulatis.

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

The genus *Sebæthe* (subfam. *Halticinae*) was described by Mr. Baly in the 'Annals and Magazine of Natural History' for December 1864.

6. List of Lepidopterous Insects collected at Takow, Formosa, by Mr. Robert Swinhoe. By ALFRED R. WALLACE, F.Z.S., and FREDERIC MOORE.

This small collection comprises forty-six species of diurnal, and ninety-three of nocturnal Lepidoptera, and bears internal evidence of having been chiefly formed in a cultivated district. It cannot, therefore, be taken as furnishing any adequate idea of the productions of the island of Formosa in this order of insects. The large majority of the species are those which are widely spread over the Eastern Tropics, and they generally present no striking differences from specimens collected in India or the Malay islands. There are not wanting indications, however, that a rich harvest of these beautiful insects could be obtained in the forests of the interior; for the only two

species which occur in the collection belonging to the forest-haunting genera *Euplœa* and *Pontia* appear to be quite distinct from any yet described. There is also a *Pieris* which exhibits sufficient departure from the allied Indian and Malayan forms to deserve a separate specific name, and a small *Lycæna* which seems quite new. It is probable that at least four times as many species as are here given exist in Formosa; and it is to be hoped that Mr. Swinhoe may yet have an opportunity of continuing his researches. Some notes on the habits of the various species sent by that gentleman have been incorporated in the accompanying list; and the five new species of Butterflies which the collection contains have been described as a first instalment towards the insect-fauna of a new and most promising region. The new species are *Pontia niobe*, *Pieris formosana*, *Terias vagans*, *Euplœa swinhoei*, and *Lycæna nisa*. Mr. Frederic Moore, who has paid much attention to the nocturnal Lepidoptera (*Heterocera*), has furnished the list of that part of the collection, in which, however, it has not yet been possible to determine all the obscurer species.

Section RHOPALOCERA.

1. PAPILIO DIPHILUS, Esper (*polydorus*, Bd.).

A common Butterfly in India, the Philippines, and the Malay islands. The Formosan specimens most nearly resemble the Indian form.

Mr. Swinhoe says, "Found near villages; I have not observed this species in China."

2. PAPILIO ANDROGEUS, Cr.

The Formosan specimens of this very variable species are nearly the same as some from India and China.

"Very variable; two seldom seem alike. Some females have no tails."—*Swinhoe*.

3. PAPILIO PAMMON, L.

"Found in gardens; not common."—*Swinhoe*.

4. PAPILIO ERITHONIUS, Cr.

Agrees with Chinese specimens.

"Very common."—*Swinhoe*.

Mr. Swinhoe mentions seeing a tailed species like this, which he supposes to be *P. machaon*. It is more likely it would be *P. demolion*, Cr., or perhaps a new species altogether.

5. PIERIS FORMOSANA, n. s.

Male. Above, exactly as in *P. hippo*, Cr. (*eleonora*, Bd.). Beneath, the apical spot on the upper wings is larger; the disk of the lower wings is white washed with yellow, which is deepest at the base and outer angle; and the marginal dusky band is narrower.

Female. Above, like *P. hippo*, Cr., but the hinder wings dusky,

with diffused whitish stripes, and powdery yellowish marks between the nervures along the hinder margin. Beneath, differs from *P. hippo* in the under wings being white, with dusky nervures and band on outer margin, and a yellow edging at the base and the outer angle.

This is a local modification of the Indian *P. hippo*.

Expanse $2\frac{1}{2}$ – $2\frac{3}{4}$ inches.

Hab. Formosa.

“Frequents banyan trees.”—*Swinhoe*.

6. PONTIA NIOBE, n. s.

Form and size of *P. nina*. Wings whiter; the apical patch entirely absent; the discoidal spot very small, as in some specimens of *P. nina*. Beneath paler and less irrorated, and the transverse posterior band interrupted and less distinct than in the allied species. Extreme tip of the antennæ orange.

Expanse $1\frac{5}{8}$ inch.

Hab. Formosa.

“Found in the dark shade of groves and lanes. Flies low, with a slow dodging flight.”—*Swinhoe*.

7. CALLIDRYAS PYRANTHE, L.

“Abundant among rank overgrown herbage.”—*Swinhoe*.

There is one specimen of a very small form of this species ($1\frac{3}{4}$ inch expanse), which Mr. Swinhoe seems to consider distinct. It is, however, identical in form and marking with the larger specimens.

8. CALLIDRYAS ALCMEONE, Cramer.

“Scarcer than the last, wilder flight.”—*Swinhoe*.

9. TERIAS HECABE, L.

“Common among grass.”—*Swinhoe*.

A variety occurs much smaller than usual, and in which the black margin of the upper wings is hardly sinuated, indicating a transition to *T. drona*, Horsf.

10. TERIAS VAGANS, n. s.

Wings with the anterior angle nearly square, but slightly rounded; hind wings subangular. *Male*: pure yellow, with a black border on the uppers, nearly as in *T. lata*, stopping abruptly before reaching the outer angle; hind wings with a very faint mark at the outer angle; beneath yellow, with an indistinct dusky transverse band across the middle of the hind wings. *Female*: pale yellow, faintly powdered with dusky scales; dark border as in the male; a very minute dark mark at the end of the discoidal cell of the uppers, a dusky patch at the outer angle of the lower wings, and the ends of the nervures between it and the anal angle each with a transverse black mark; beneath nearly as above in colour, but without markings, except the mark at the end of the cell of the uppers, a black

dot near the base between the costal and subcostal nervures of the hind wings, and a very minute black dot at the end of each nervure on the hind margin.

Expanse $1\frac{1}{2}$ inch.

Hab. Formosa; North India.

A single female specimen of this insect was sent from Formosa, and one male exists in the British Museum Collection from India, showing it to be a very distinct species, which is probably widely distributed, but rare and local. It comes very near *T. venata*, Moore, from Northern India.

11. *DANAIS PLEXIPPUS*, Godart.

“Scarce in Formosa.”—*Swinhoe*.

12. *DANAIS CHRYSIPPUS*, Linnæus.

Mr. Swinhoe notices the resemblance of this species in appearance and habits to the female of *Diadema bolina*, L.

13. *EUPLÆA SWINHOEI*, n. s.

Above—brown black, velvety, with a dark purple gloss; hind wings near the anterior margin and anal angle browner; upper wings with a submarginal row of six white oval spots edged with blue, the second from the top largest and nearly touching the first; two dead-black stripes parallel to the lower margin. Hind wings with the anterior margin ashy white; a row of eight small round white spots close to the hinder margin, not reaching the anal or outer angles, and a submarginal row of four blue-edged spots, the largest near the outer angle. Beneath—deep brown; upper wings with three spots on the disk, the two upper ones blue (the smallest in the cell), the lowest larger and ashy white; a marginal row of eight small round white spots beginning at the outer angle, and within it a row of five spots, commencing opposite the space between the third and fourth of the marginal row; the four first very small; the last elongate, situated below the apex. Hind wings with the marginal row as above, but of nine or eleven spots; the submarginal row of three small white spots, and four small bluish spots arranged in a curve outside the extremity of the cell. Wings all finely white-edged between the nervures. The body beneath is white-spotted, and there are five white spots on the base of the wings, close to it, on each side. Abdomen blue black, with a group of bluish-white scales at the base of each segment.

Expanse $3\frac{1}{4}$ inches.

Hab. Formosa.

A single specimen was taken by Mr. Swinhoe at the foot of a hill a few miles inland. It most resembles a new species from Celebes, near *E. doleschali*, Felder.

14. *MESSARIS ERYMANTHUS*, Drury.

“A solitary species: frequents flowers.”—*Swinhoe*.

15. JUNONIA LEMONIAS, Linnæus.

This agrees in markings with Indian specimens, but in form makes an approach to the Malayan species, *J. aonis*, L.

“Common in grassy places and hedgerows.”—*Swinhoe*.

16. JUNONIA ORYTHIA, L.

This more resembles the Malayan than the Indian form of the species.

“Common where stones abound and the grass is short.”—*Swinhoe*.

17. JUNONIA ASTERIA, Linnæus.

“Most abundant in rank and marshy places.”—*Swinhoe*.

18. DIADEMA AUGÉ, Cramer.

“Suns itself about hedges, and has a stately sailing flight.”—*Swinhoe*.

19. DIADEMA BOLINA, Linnæus.

“The male is a very lively creature, basking on plants and stones, flitting about and taking long excursions, and fighting with all Butterflies that come near its beat. The female appears to be much scarcer, or rather perhaps shows herself less. In habit she is quite distinct, lazing all day about bushes, and seldom flying far. When a female is observed, several males rush at her at once. Before I learnt the sexes I was sorely scandalized to see a blue-black and a red *in copulâ*. I thought I had discovered a libertine among Butterflies. But I have seen the thing so frequently now that I am convinced the two are merely sexes of the same species. I have never observed the males on flowers, though I have seen some hundreds.”—*Swinhoe*.

20. HESTINA ASSIMILIS, Cramer.

“Not uncommon, but very local and difficult to capture.”—*Swinhoe*.

A Chinese species.

21. NEPTIS ACERIS, Esper.

A widely distributed species.

“Common about tall grass and sides of grass-grown streams.”—*Swinhoe*.

22. ATHYMA LEUCOTHOË, Linnæus.

“Common on bushes and grassy places, fluttering and sailing through the air. Suck the sap of wounded trees. Males fight for the females.”—*Swinhoe*.

23. MELANITIS UNDULARIS, Fabricius.

“Loves shaded lanes, sluggish and never flies far.”—*Swinhoe*.

24. *ERGOLIS CORYTA*, Cramer.

"Frequents hedgerows and places overgrown with rank herbage. Has a slow floating flight."—*Swinhoe*.

25. *CYLLO LEDA*, Linnæus.

"Common; frequents trunks of trees and the ground in dark shady places."—*Swinhoe*.

26. *DEBIS EUROPA*, Fabricius.

"Loves to cluster on bamboo joints."—*Swinhoe*.

27. *MYCALESIS DRUSIA*, Cr. (? *mineus*, L.).

28. *MYCALESIS SAMBA*, Moore, Cat. Mus. E. I. C. p. 233 (*lallasis*, Hew.).

29. *MYCALESIS OTREA*, Cramer.

This differs from Cramer's figure in having a whitish band on the underside; but these insects vary so much that it would not be safe to describe it as distinct. Mr. Swinhoe says the species of *Mycalesis* are common about grassy places in Formosa.

30. *LYCÆNA ELPIS*, Godart.

One specimen only of this species was sent by Mr. Swinhoe.

31. *LYCÆNA CNEJUS*, Fabricius.32. *LYCÆNA KANDARPA*, Horsfield.33. *LYCÆNA PLUTO*, Fabricius.

"Rather plentiful; very desultory and dodging in flight."—*Swinhoe*.

34. *LYCÆNA PLINIUS*, Fabricius.

"About long grass."—*Swinhoe*.

35. *LYCÆNA PARRHASIUS*, Fabricius.

36. *LYCÆNA VARUNANA*, Moore, Proc. Zool. Soc. 1865, p. 772, pl. XLI. f. ♂. 6

37. *LYCÆNA SANGRA*, Moore, Proc. Zool. Soc. 1865, p. 772, pl. XLI. f. ♀. 8

38. *LYCÆNA KARSANDRA*, Moore, Proc. Zool. Soc. 1865, p. 505, pl. XXXI. f. 7.

39. *LYCÆNA NISA*, n. s.

Small; wings rounded; in the male violet-blue, with broad dusky margins; in the female pale ash-colour, with faint golden and violet iridescence and a few traces of azure scales; the upper wings with dusky, the lower wings with white ciliated fringe. Beneath, in both

sexes, ashy white with a golden gloss; a fine dark line on the edge of the outer margin, and within it an obscure band of very faint brown lunules; on the lower wings a small round black spot on the lunulate band between the second and third median nervules. Antennæ black-and-white ringed.

Expanse 10 lines.

Hab. Formosa.

A pair only of this species was sent by Mr. Swinhoe.

40. *PTERYGOSPIDEA FOLUS*, Cramer (*cicero*, Fab.).

41. *ISMENE LADON*, Cramer.

42. *HESPERIA DIVODASA*, Moore, Proc. Zool. Soc. 1865, p. 791.

43. *HESPERIA AGNA*, Moore, Proc. Zool. Soc. 1865, p. 791.

44. *HESPERIA CINNARA*, Moore, MS.

This species will, I believe, shortly be described by Mr. Moore. It is closely allied to the last, but has larger and more numerous transparent spots, eight on the upper and three on the lower wing. Like all the other *Hesperidæ* in this list, it is a common Indian species.

45. *PAMPHILA AUGIAS*, Linnæus.

46. *PAMPHILA MÆSA*, Moore, Proc. Zool. Soc. 1865, p. 509.

Sect. HETEROCERA.

This section is represented in the collection by examples pertaining to 72 genera, all the species of which that have been determined being found also either in China, North-eastern India, or Ceylon. The total number of species is 93, these occurring in the several tribes as follows:—

<i>Sphingites</i>	3 genera	3 species.
<i>Bombycites</i>	9 „	13 „
<i>Noctuities</i>	23 „	31 „
<i>Pyralites</i> ..	15 „	22 „
<i>Geometrites</i>	9 „	10 „
<i>Crambites</i>	2 „	3 „
<i>Tortricites</i>	7 „	7 „
<i>Tineites</i>	4 „	4 „
	<hr/>	<hr/>
	72	93

Sect. HETEROCERA.

Tribe SPHINGITES.

1. *LOPHURA HYAS*, Walker, List Lep. B. M. Het. pt. viii. p. 107.

2. *ACHERONTIA SATANAS*, Boisd. Spéc. Gén. Lep. i. pl. 16. f. 1 (*Acherontia lethe*, West. Cab. Orient. pl. 42. f. 2).

PROC. ZOO. SOC.—1866, No. XXIV.

3. *CHÆROCAMPA SWINHOEI*, Moore, n. sp.

Male. Ochreous brown: fore wing suffused with greenish ochreous, and slightly black-speckled, with a greyish-brown exterior band, which is minutely black-speckled and with an inner speckled border and a slight posterior black spot, an indistinct small black discal spot; cilia alternate ochreous and black. Hind wing dull cupreous black, slightly ochreous along the exterior border; cilia ochreous. Abdomen ochreous at the sides, and with a series of subdorsal paler short streaks. Underside of the wings reddish testaceous, minutely black-speckled; base and exterior band of fore wing dusky brown.

Exp. $2\frac{1}{4}$ inches.

Tribe BOMBYCITES.

Fam. LITHOSIIDÆ.

4. *HYPsa ALcIPHON*, Cram. t. 133. f. E.
5. *HYPsa EGENS*, Walk. Cat. Lep. Het. B. M. ii. p. 453.
6. *HYPsa PLANA*, Walk. ib. p. 450.
7. *HYPsa INTACTA*, Walk. ib. p. 451.
8. *UTETHESIA PULCHELLA*, Linn. (Cram. t. 109. f. E).

Fam. CHALCOSIIDÆ.

9. *CLELEA SAPPHIRINA*, Walk. Cat. Lep. Het. B. M. Suppl. p. 465.
10. *PHALANNA POLYMENA*, Linn. (Cram. t. 13. f. D).
11. *SYNTOMIS ATEREUS*, Cram. t. 400. f. A.
12. *NYCTEMERA VARIANS*, Walk. Cat. Lep. Het. B. M. ii. p. 400.
13. Gen. undetermined.

Fam. LIPARIDÆ.

14. *LYMANTRIA*, sp.

Fam. ARCTIIDÆ.

15. *ALOA LACTINEA*, Cram. t. 133. f. D.
16. *ALOA BIFRONS*, Walk. Cat. Lep. Het. B. M. iii. p. 705.

Tribe NOCTUITES.

Fam. GLOTTULIDÆ.

17. *CHASMINA CYGNUS*, Walk. Cat. Lep. Het. B. M. ix. p. 147.

Fam. XYLOPHASIDÆ.

18. *PRODENIA RETINA*, Guen. Noct. i. 163.

Fam. HELIOTHIDÆ.

19. *HELIOTHIS ARMIGERA*, Hübn. Noct. pl. 79. f. 370.

Fam. ACONTIDÆ.

20. *XANTHODES TRANSVERSA*, Guen. Noct. ii. p. 211.
 21. *XANTHODES INTERSEPTA*, Guen. ib. p. 212.
 22. *ACONTIA MACULOSA*, Walk. Cat. Lep. Het. B. M. xii. p. 795.

Fam. ANTHOPHILIDÆ.

23. *ANTHOPHILA ROSEIFASCIA*, Walk. Cat. Lep. B. M. Suppl. p. 803.

Fam. PLUSIDÆ.

24. *PLUSIA VERTICILLATA*, Guen. Noct. ii. 344.
 25. *PLUSIA FURCIFERA*, Walk. Cat. Lep. B. M. xii. p. 927.

Fam. CALPIDÆ.

26. *ORESIA EMARGINATA*, Fabr. (Guen. Noct. ii. 363).
 27. *ORESIA RECTISTRIA*, Guen. Noct. ii. p. 363.

Fam. GONOPTERIDÆ.

28. *ANOMIS FULVIDA*, Guen. ii. p. 397.

Fam. TOXOCAMPIDÆ.

29. *TOXOCAMPA METASPILA*, Walk. Cat. Lep. B. M. xiii. p. 1032.

Fam. HOMOPTERIDÆ.

30. *HOMOPTERA INFLIGENS*, Walk. Cat. Lep. B. M. xiii. p. 1068.

Fam. CATEPHIDÆ.

31. *ANOPHIA ACRONYCTOIDES*, Guen. Noct. iii. 47.

Fam. OPHIDERIDÆ.

32. *OPHIDERES FULLONICA*, Linn. (Cram. t. 77. f. C).
 33. *OPHIDERES CAJETA*, Cram. t. 30. f. A.
 34. *OPHIDERES SALAMINIA*, Cram. t. 174. f. A.

Fam. OPHIUSIDÆ.

35. *OPHIODES TRIPHENOIDES*, Walk. Cat. Lep. B. M. xiv. 1358.
 36. *OPHIUSA ARCTOTENIA*, Guen. Noct. iii. 272.
 37. *OPHIUSA STUPOSA*, Fabr. (Cram. t. 273. f. E).

38. *ACHÆA MELICERTA*, Drury, Ins. i. pl. 23. f. 1.
 39. *GRAMMODES AMMONIA*, Cram. t. 250. f. D.
 40. *GRAMMODES MYGDON*, Cram. t. 156. f. G.
 41. *TRIGONODES HYPPASIA*, Cram. t. 250. f. E.

Fam. REMIGIDÆ.

42. *REMIGIA ARCHESIA*, Cram. t. 273. f. F, G.
 43. *REMIGIA GREGALIS*, Guen. Noct. iii. p. 320.
 44-47. Four species undetermined.

Tribe PYRALITES.

Fam. HYPENIDÆ.

48. *HYPENA*, sp.

Fam. ASOPIDÆ.

49. *HYMENIA RECURVALIS*, Fabr. (Guen. Delt. et Pyral. 225).

Fam. HYPOCAMPIDÆ.

50. *OLIGOSTIGMA ORBITALIS*, Walk. Cat. Lep. B. M. xvii. p. 432.

Fam. SPILOMELIDÆ.

51. *LEPYRODES GEOMETRALIS*, Guen. Delt. et Pyral. 278.
 52. *ZEBRONIA PERSPICUALIS*, Walk. Cat. Lep. B. M. Suppl. 1347.
 53. *ZEBRONIA ABDICALIS*, Walk. ib. xvii. p. 480.

Fam. MARGARODIDÆ.

54. *GLYPHODES BIVITRALIS*, Guen. Delt. et Pyral. p. 293.
 55. *GLYPHODES ZELINCALIS*, Walk. Cat. Lep. B. M. Suppl.
 56. *MARGARONIA PSITTACALIS*, Hübn. Samml. exot. Schmett. iii. f. 523.

Fam. BOTYDÆ.

57. *BOTYS SELLALIS*, Guen. Delt. et Pyral. 330.
 58. *BOTYS THYASALIS*, Walk. Cat. Lep. B. M. xvii. p. 734.
 59. *BOTYS DAMASALIS*, Walk. ib. p. 668, ♂.
Botys adhæsalis, Walk. ib. p. 664, ♀.
 60. *BOTYS ILLISALIS*, Walk. ib. p. 653.
 61. *BOTYS ADMENSALIS*, Walk. ib. p. 652.
 62. *BOTYS DAMOALIS*, Walk. ib. p. 656.
 63-69. Seven species undetermined.

Tribe GEOMETRITES.

Fam. ENNOMIDÆ.

70. *DREPANODES SCITARIA*, Walk. Cat. Lep. B. M. xxv. p. 1488.
Syn. *Anisodes pyrinata*, Walk. ib. p. 1582.

Fam. PALYADÆ.

71. *EUMELIA AURELIATA*, Guen. Phal. i. p. 394, pl. 22. f. 6.

Fam. EPHYRIDÆ.

72. *EPHYRA MONOCHROMATA*, Walk. Catal. Lep. B. M. xxvi.
p. 1754.

Fam. ACIDALIDÆ.

73. *TIMANDRA AVENTIARIA*, Guen. Phal. ii. p. 3.
74. *ACIDALIA ATTENTATA*, Walk. Catal. Lep. B. M. xxii. p. 754.
75. *ACIDALIA LIGATARIA*, Walk. ib. p. 748.

Fam. MICRONIDÆ.

76. *MICRONIA ACULEATA*, Guen. Phal. ii. p. 26, pl. 13. f. 8.

Fam. MACARIDÆ.

77. *MACARIA DIVISARIA*, Walk. Catal. Lep. B. M. xxiii. p. 927.
78. *ORSONOBA RAJACA*, Walk. ib. xx. p. 219.

Fam. LARENTIDÆ.

79. *SAURIS REMODESARIA*, Walk. Cat. Lep. B. M. xxii. p. 1253.

Tribe CRAMBITES.

80. *CHILO*, sp.
81, 82. *CRAMBUS*, two species.

Tribe TORTRICITES.

- 83-89. Seven species undetermined.

Tribe TINEITES.

90. *ATTEVA NIVEIGUTTELLA*.
Corinea niveiguttella, Walk. Catal. Lep. B. M. xxviii. p. 542.
91. *AZINIS HILARELLA*, Walk. ib.
92, 93. Two species undetermined.

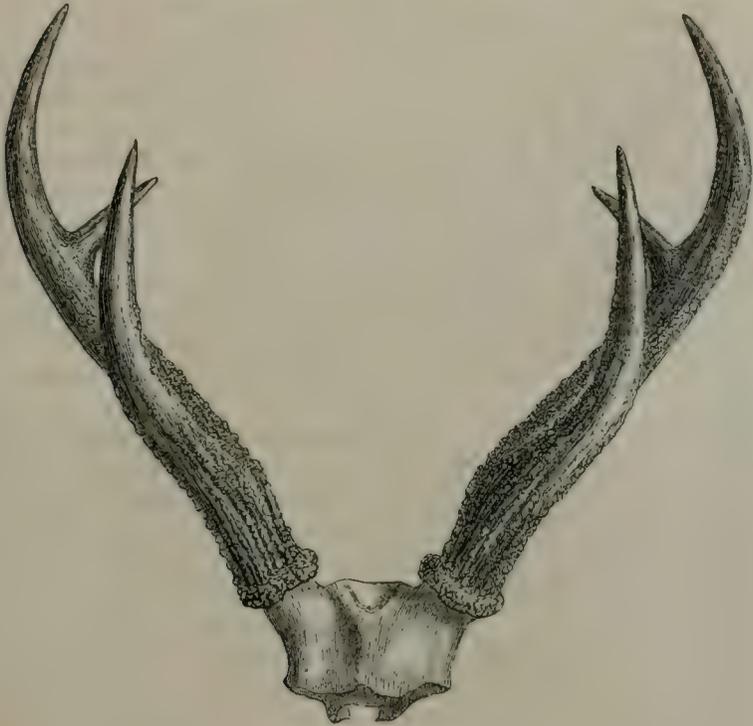
June 26, 1866.

Dr. J. Hamilton, F.L.S., in the Chair.

The Secretary called the attention of the Meeting to a fine specimen of the Californian Vulture (*Cathartes californianus*, Shaw), recently added to the Society's living collection. This scarce bird had been presented to the Society by Dr. Colbert A. Canfield, of Monterey, California, through the intervention of Prof. Baird of the Smithsonian Institution, Washington, and kindly assisted in its passage across the Isthmus of Panama by Capt. J. M. Dow.

*Cathartes californianus.*

Mr. Louis Fraser exhibited a pair of Horns of a Deer, which had been killed near the village of Bosa-Bosa, near Manilla, in the island of Luzon, one of the Philippine group, and stated that he considered them to belong to the *Cervus mariannus* of Desmarest, and that they were the first fragments of this species ever exhibited before the Society. The species had not been obtained by the late Hugh Cuming, Esq., during his sojourn in that country.



Cervus mariannus.

Quoy and Gaimard, the first discoverers of this animal, had stated that they found upwards of a thousand specimens of this Deer in the Island of Guam, one of the Mariannes Islands, into which place it had been imported from the Philippines, and was doing well.

Mr. Fraser could not help believing this animal to be very distinct from the *Cervus philippinus* of H. Smith, which is described as having the horns raised upon long peduncles like the Muntjac's, whilst the present species most certainly belongs to the *Rusa* group.

The references to the species were stated to be as follows:—

Cervus mariannus, Desm. Mamm. p. 436, 1820.

Cerf des Iles Mariannes, Quoy et Gaim. Voy. de l'Uranic, Zoologie, p. 33, 1824.

Cervus mariannus (Desm.), Cuv. Oss. Foss. iv. p. 45, pl. 5. figs. 30, 37, 38, 46, 1825; H. Smith, Griff. Anim. King. iv. p. 115, 1827;

Fisch. Syn. Mamm. p. 453, 1829; Desmoul. Dict. Class. iii. p. 384. 23; Sundevall, Pecora, p. 57; Gray, Proc. Zool. Soc. 1850, p. 232.

The following papers were read :—

1. On the Habitat of the Derbyan Crested Screamer (*Chauna derbiana*, G. R. Gray). By THOMAS J. MOORE, C.M.Z.S., Keeper of the Derby Museum, Liverpool.

The type specimen and one other example of this rare bird, both in this Museum, are, I believe, the only hitherto distinctly recognized specimens of *Chauna derbiana*. This species, which was named and figured in January 1845 by Mr. G. R. Gray, in his 'Genera of Birds,' from a specimen brought from Belize to England by Mr. J. Bates (not Mr. H. W. Bates of the Amazons), who had it some months alive, appears to have been unhesitatingly and not unnaturally looked upon as a native of Central America. And though Mr. Gray, in pursuance of his general plan, gives no locality to the species in his text, he is clearly speaking of this when in his notes on the *genus* he gives *Central* as well as South America as habitats.

Dr. Sclater, in February 1864, being specially desirous of ascertaining its native country, wrote to me for any information I could give him on this point, and my reply will be found in his paper on the *genus* in the Society's 'Proceedings' for 1864, p. 75. That reply endorsed the received opinion, notwithstanding that our second bird claimed to be from Bogota. I could, indeed, hardly have come to any other conclusion. I had no other evidence to bring forward in support of Bogota, while the type specimen, a stuffed bird, bore a label by the stuffer inscribed "J. Bates, Peten, Sept. 1843," and, far more important still, the following label in Bates's own handwriting:—"Kept this alive by cramming it with food upwards of four months. Died while I was at Peten."

Now Bates was sent by the late Lord Derby to Guatemala and Honduras to collect mammals and birds both living and dead. His first duty was, if possible, to procure living examples of *Meleagris ocellata*. He returned, after an absence of fifteen months, with a large collection living and dead, including one living female, and several skins of both sexes, of the *Meleagris*, and, greater prizes still, a skin of each of two previously unknown remarkable birds, the *Oreophasis derbiana* and this *Chauna*. The locality of "Peten" seems to have been at once accepted by Lord Derby for the latter, and it was so recorded in the 'Knowsley Catalogue.' I had seen no reason to doubt the localities ascribed to other specimens of Bates's collecting; and of the still more remarkable *Oreophasis*, inhabiting an exceedingly limited district, additional examples had been obtained in the same country by subsequent collectors.

And yet, in spite of all this strong circumstantial evidence in favour of the conclusion that the *Chauna derbiana* was a native, if

not of Peten, at least of Guatemala or Honduras, the conclusion is utterly erroneous. And the mystery is thus solved. Mr. Bates, some time since, passed through Liverpool on his way from Chicago, and he fortunately visited this museum. In reply to my eager inquiries on the subject he told me, to my great surprise, that the bird was *not* a native of that country at all, but that “*it was purchased alive by him at Belize, from a ship which had arrived from a port further south! though he thinks not very far south.*”

The only reason for considering the bird a native of Central America at all being thus exploded, there remains for more respectful consideration the locality given with our second specimen, that purchased from Mr. Leadbeater. This locality is “Bogota;” and, remarkably enough, the label bears the same date as that of Bates’s specimens, both having been received in September 1843, though there is no entry whatever of this second bird in the ‘Catalogue’ spoken of above. But neither Bogota, situate at the base of two lofty mountains and nearly 9000 feet above the sea-level, nor any district immediately subjacent to it, is likely to afford very suitable haunts for a bird of this kind; but that its true home will be found to be in low and swampy parts of New Granada may, I think, ultimately be proved to be true. This view receives countenance at least from the occurrence of the most closely allied, more recently discovered, *Chauna nigricollis* of Dr. Sclater, of which the four known specimens have all been received from the neighbourhood of Cartagena, New Granada. The description and figure of this species, as given in the ‘Proc. Zool. Soc.’ 1864, p. 75, pl. XI., are so applicable to *C. derbiana* that actual comparison is, I think, desirable satisfactorily to determine their identity or distinction,—the contrast between the black of the neck and the paler colour of the body of *C. nigricollis* being distinct enough in the specimens of *C. derbiana*, though not sufficiently brought out in the figure in Gray’s ‘Genera,’ owing doubtless to the allowance made for the dingy state of Bates’s specimen consequent on its long captivity and rough treatment.

2. Note on *Chauna nigricollis*. By P. L. SCLATER, M.A.,
Ph.D., F.R.S., Secretary to the Society.

Along with the communication which has just been read to the Meeting, Mr. Moore was kind enough to send up to the care of Mr. G. R. Gray the two original specimens of *Chauna derbiana* belonging to the Derby Museum. On comparing these with the typical example of my *C. nigricollis* in the British Museum, I at once came to the conclusion that the two species were identical; and I may state that Mr. Gray, who most obligingly requested my assistance in making the comparison, was of the same opinion.

As some apology for having made the error of constituting the *Chauna nigricollis* as distinct, I may urge, first, that, as Mr. Moore

has already shown, the locality heretofore assigned to it is quite incorrect; and secondly, that in comparing my bird with *Chauna derbiana* I had only the figure (Gray & Mitchell, Genera of Birds, pl. 161) to go by, no description ever having been published of this species, and that the figure is much too darkly coloured, particularly on the lower parts.

It follows, therefore, that there are only two known species of this curious form:—

1. *C. chavaria* of South-eastern Brazil and Paraguay.
2. *C. derbiana* (= *C. nigricollis*) of the northern littoral of New Granada.

3. Descriptions of Three Species of Snakes of the Genus *Hoplocephalus*. By GERARD KREFFT, Curator and Secretary of the Australian Museum, Sydney, N.S.W., C.M.Z.S.

1. *HOPLOCEPHALUS ATER*, sp. nov.

Scales in 17 rows. Anal entire. Subcaudals 47. Ventrals 162.

Coloration.—Black; chin-shields whitish on outer margin; beneath bluish black, clouded with a somewhat lighter tint on the posterior part.

Head scarcely distinct from trunk, high, quadrangular, obtuse in front; anterior frontals as large again as the posterior ones, vertical five-sided, just as long as broad; occipitals very large, widely forked; six upper labials, fifth largest, leaving but one narrow temporal shield above it; there are two more temporals behind this one, of which the upper one is the largest. The occipitals do not come into contact with more than three scales on each side; whilst one scale is wedged in between the fork, making seven scales in all. There are seven lower labials, one nasal, one anterior, and two postoculars; the pupil is rounded.

Hab. Flinder's Range, South Australia. Discovered by Mr. George Masters, who found but one specimen.

2. *HOPLOCEPHALUS MASTERSII*, sp. nov.

Scales in 15 rows. Ventrals 136. Subcaudals 40, or more.

Head triangular, distinct from trunk, and pointed in front; vertical three times as long as broad; all the scales of the head much elongate; six upper and seven lower labials, one anterior, two postoculars, the first (anterior one) grooved.

Coloration.—Dark olive-green above and below, with the exception of a yellowish-white elongate patch in the middle of each ventral scale; all the scales very finely striated or keeled (which is not observable to the naked eye), and more or less finely black-dotted. Head darker than the body, a whitish band crossing the nape, a

second white band spotted with black beneath the eye from the rostral to the last upper labial.

In young specimens the ventral scales in the middle of body are red.

Hab. Flinder's Range. Collected by Mr. George Masters, who found seven specimens.

3. HOPLOCEPHALUS GOULDII, Gray (var.).

Scales in 15 rows. Anal entire. Ventrals 148. Subcaudals 34; in others 26, 27, 33, 31, and 29.

Head depressed, scarcely distinct from trunk; vertical five-sided, with acute angle behind; occipitals large, not much forked; anterior frontals triangular; posterior frontals quadrangular, somewhat larger than the former. Seven upper and seven lower labial scales, smooth, rather short, six-sided, lighter on the outer margin.

Coloration.—Greyish brown above, yellowish white below; the marks upon the head vary in different individuals; rostral, nasal, and anterior part of first pair of frontals marked with black; remaining portion of anterior frontals and whole of posterior ones reddish, after which another black patch covers the vertical superciliaries and part of the occipitals, a faint star marking all the scales around the inner margin of the eye; pupil subelliptical, erect; a third black spot covers the nape of the neck, about four scales wide, but not reaching to the sides. In some of the specimens before me the second black patch is continuous, leaving only the tips of the occipitals and the scale between them reddish.

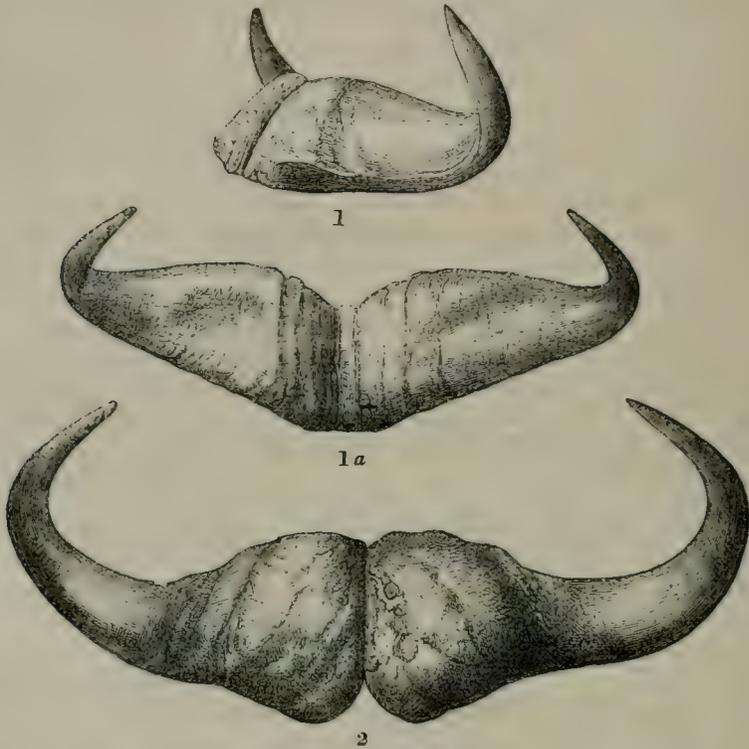
Hab. Port Lincoln. Collected by Mr. George Masters.

4. A Note on African Buffalos.

By EDWARD BLYTH, C.M.Z.S.

More than a quarter of a century ago, when the Society maintained its Museum in Leicester Square, it was in possession of the skin of a Buffalo from the Galla country south of Abyssinia, received from Dr. Rüppell, by whom the race was considered to be identical with the well-known *Bubalus caffer* of South Africa. To me it presented certain differences which seemed indicative of its being a distinguishable race, characterized by much smaller size and horns of greatly inferior development when fully grown; moreover the latter did not bend decidedly downwards and then curve upwards as in the Cape animal, but were nearly on a level throughout, approximating to those of the *B. planiceros*, nobis, figured in the Society's 'Proceedings' for 1863, p. 158. Although still possessing a carefully drawn figure of the frontlet of the Galla specimen, formerly in the Society's collection, I intentionally refrained from noticing it when exhibiting the frontlet of *B. planiceros*, figured in the Society's 'Proceedings' for 1863, in the hope and expectation, which has now

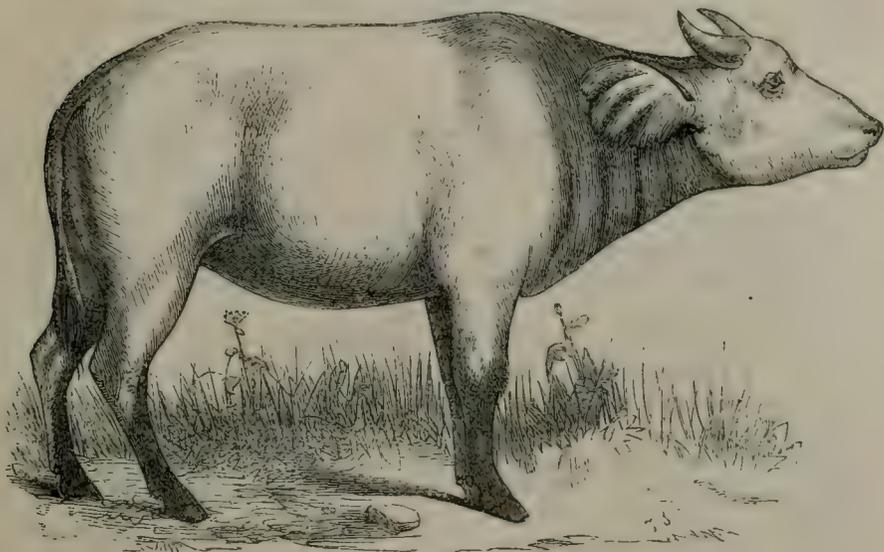
been realized, of confirming the impression founded upon that single specimen ; and I have now the pleasure of exhibiting two frontlets of mature growth, which were procured in Equatorial Africa by Mr. Petherick, and together with them two splendid heads of the southern *B. caffer* for comparison. Of the latter I have seen a very considerable number of skulls and frontlets, of all ages and stages of development, but never one that resembled the specimens from Equatorial Africa now exhibited ; and the living animal at present in the



Society's Menagerie is distinctly of the southern race as distinguishable from the other, as shown by the much greater elongation as well as thickness of that terminal portion of its horns which constitutes their upward curvature. The accompanying figures (1, 1a) of the two frontlets from Equatorial Africa and that (fig. 2) of the superb Cape specimen, one of the two exhibited before the Meeting, were photographed at the same focus, and therefore present exactly the relative size which the specimens bear towards each other ; and the difference is so very considerable, not only as compared with the noble example of *B. caffer* represented, but with all that I have ever seen of the latter from South Africa, that I think the equatorial race should at least be recognized as *B. caffer*, var. *æquinocialis*, if not more decidedly as *Bubalus æquinocialis*. By Mr. S. W. Baker, who possesses two fine skulls of the Equatorial Buffalo, I am informed that the species is not common on the banks of the White Nile, but

considerably less so than the true *B. caffer* with which it associates. He considers the two to be decidedly distinct; and one of his two specimens is from the Galla country, the other from the White Nile.

In my collection of drawings I have found a characteristic representation, taken from the living animal, of the cow of *Bubalus brachyceros*, Gray, the great-eared Buffalo of Western Middle Africa.



Bubalus brachyceros.

This animal was from the Foulah country, north of Sierra Leone, where the species is abundant. It was met with by Capt. Clapperton in the vicinity of Lake Tchad, and more recently by M. du Chaillu. The colouring of the species much resembles that of the Red River-Hog (*Potamochoerus penicillatus*, Gray) of the same region.

5. Characters of Six New Australian Land-Shells.

By JAMES C. COX, M.D., Corr. Memb.

HELIX PORTERI, mihi.

M.C.

H. testa profunde et subobtecte umbilicata, depresso-circulari, tumidiuscula, tenui, rubida, sub lente obsolete plicato-striata, minutissime granulata setisque brevissimis confertim bullata; spira obtusa; anfractibus quatuor et semisse ($4\frac{1}{2}$), convexiusculis, ultimo tumido, ad os constricto; apertura subquadrato-lunari; peristomate tenui, expanso, reflexo, intus albido, umbilicum semitegente.

Diam. maj. 0.75, min. 0.63, alt. 0.50 unc.

Hab. Upper Clarence River, at Guy Faux Station (*Porter*); Upper

Richmond River, at Cowlong (in cedar-brushes under logs) (*Macgillivray*).

This shell bears much general resemblance to specimens of *H. mansueta* from the Pine Mountain, Lismore, Richmond River (which are darker than Queensland specimens); but the pilose surface, the white lip, the narrower and more covered umbilicus are very distinctive characters in *H. porteri*, which is besides closely allied to the more diminutive *H. brevipila*, and occupies a place between it and *H. mansueta*.

HELIX CONSCENDENS, mihi.

M.C.

H. testa imperforata, globoso-turbinata, pertenui, pellucida, semi-vitrea, nitidiuscula, sub lente obsolete striata, albida, fascia plus minusve colorata ornata; spira conoidea, apice colorata; anfractibus sex, convexiusculis, ultimo peramplo, paululum deflexo, carina obsoleta; apertura lunato-ovata; peristomate tenui, margine externo subsinuato, columellari supra tenuiter reflexo.

Diam. maj. 0·60, min. 0·50, alt. 0·55 unc.

Hab. Lismore, Upper Richmond River (on trees in the pine-brushes) (*Macgillivray*).

The band varies in intensity of colour from deep black bordered with red to reddish brown or pinkish, and in old specimens is very faintly indicated.

HELIX FENESTRATA, mihi.

M.C.

H. testa minute umbilicata, globoso-conica, carinata, tenui, cinereo-fulva, lineis rugosis elevatis plurimis irregulariter costata cæterisque spiralibus decussata, speciem fenestratam formantibus præsertim versus apicem; spira conica, apice obtusa; anfractibus sex, convexiusculis, ultimo subacute carinato; apertura subangulato-lunata, intus margaritacea; peristomate tenui, acuto, ad columellam modice expanso et umbilicum subtegente.

Diam. maj. 0·33, min. 0·30, alt. 0·27 unc.

Hab. Pine Mountain, Lismore, Upper Richmond River (on trunks of trees) (*Macgillivray*).

HELIX CORTICICOLA, mihi.

M.C.

H. testa aperte umbilicata, depresso-circulari, nitidiuscula, epidermide fulvo-rufescente vestita, penicillis pallidioribus supra irradiata, irregulariter subcrasse costata, infra læviuscula, lineas spirales obsoletas sub lente exhibente; spira depressa; anfractibus quinque, declivi-convexis, pergradatim incrementibus, ultimo obtuse carinato, ad os obsolete; apertura lunato-subcirculari; peristomate tenui, simplici, non ad columellam dilatato.

Diam. maj. 0·30, min. 0·25, alt. 0·15 unc.

Hab. Lismore, north arm of Richmond River (under bark) (*Macgillivray*).

Closely allied to *H. urarensis*.

HELICINA DIVERSICOLOR, mihi.

M.C.

H. testa globoso-turbinata, obsolete subcarinata, solida, superne subconica, inferne depresso-convexiuscula, basi albida, gradatim anfractu penultimo violaceo tincta, postquam violacea, denique rubida, apice albido, sub lente transverse plicato-rugosa, anfractu ultimo pluribus lineis spiralibus obsoletis; spira obtusa; anfractibus quinque, planato-convexiusculis; apertura obliqua, lunata; peristomate incrassato, modice reflexo, albo, ad columellam angulo prominente.

Diam. maj. 0·23, min. 0·20, alt. 0·20 unc.

Hab. Pine Mountain, Ipswich, Queensland (*Masters*); Pine Mountain, Lismore, Upper Richmond River (on leaves and trunks of trees) (*Macgillivray*).

A somewhat variable shell in colour: it frequently has a dead and chalky instead of a porcellanous appearance; and the red and violet of the spire are sometimes greenish, or bluish, or wanting altogether. The throat is occasionally reddish or yellowish instead of white. Queensland specimens are not in general so brightly coloured as Richmond River ones.

PUPINA PINETICOLA, mihi.

M.C.

P. testa ovata, nitidissima, polita, solidiuscula, hyalina; spira obtusa; anfractibus quinque, ultimo maximo, plusculum quam dimidium testæ æquante, proximo latitudine æquali, cæteris celeriter decrescentibus; apertura modice obliqua, fere orbiculari; peristomate albo, crasso reflexoque, canalibus duobus interrupto, canali superiore externoque angusto, intus plica concava prominente alba formato, canali altero ad medium oris externe aperto et columellam separante; operculo corneo, paucispirali.

Long. 0·20, diam. 0·12, apert. 0·09 unc.

Hab. Pine Mountain, Lismore, Upper Richmond River (on the ground, burrowing in dry weather) (*Macgillivray*).

6. List of the Shells collected by Samuel White Baker, Esq., during his recent Explorations in Central Africa. By HENRY ADAMS, F.L.S.

1. LIMICOLARIA TENEBRICA, Reeve.

2. PLANORBIS, sp. ? *subundulatus*

This species was also brought by Capt. Speke from the Victoria N'yanza and White Nile, but I have not been able to ascertain whether it has been described.

3. VIVIPARA UNICOLOR, Oliv.

4. LANISTES, sp. ?

Too immature for the species to be determined.

5. BITHYNIA BADIELLA, Parr.

6. MELANIA TUBERCULATA, Müll.

7. CORBICULA RADIATA, Phil.

8. CORBICULA PUSILLA, Phil.

9. UNIO ÆGYPTIACUS, Caill.

10. UNIO CAILLAUDI, Fér.

11. UNIO BAKERI, H. Ad.

U. testa transversa, ovata, tenui, subinflata, inæquilaterali, antice rotundata, postice dilatata, subangulata, valde undulato-plicata, epidermide olivacea induta; umbonibus subprominentibus, ad apices nodosis; dentibus cardinalibus parvis, sulcatis, lateralibus subrectis, in valva sinistra duplicibus; margarita argentea et iridescente.

Long. 30, alt. 21, lat. 14 mill.

From the Albert N'yanza.

This species bears much resemblance to *U. aferula*, Lea, from the Victoria N'yanza, but is less inæquilateral, thinner, and more corrugated. I have much pleasure in dedicating it to Mr. Baker.

12. UNIO ACUMINATUS, H. Ad.

U. testa ovali-elongata, valde inæquilaterali, antice rotunda, postice subrostrata, ad umbones undulato-plicata costaque umbonali instructa, epidermide fulvo-viridi induta; umbonibus parvis; dentibus cardinalibus crassis, sulcatis, lateralibus subrectis; margaritacea et iridescente.

Long. 29, alt. 15, lat. 10 mill.

From the Albert N'yanza.

This is an elongate species partaking of the form of *U. caillaudi*, but the ventral margin is convex and not incurved as in that species, and the surface of the valves towards the umboes is corrugated.

With the exception of the last two species, viz. *U. bakeri* and *U. acuminatus*, which are new to science, the shells in the preceding list are not of peculiar interest. The other species of *Unio* and the *Corbiculæ* are well known Nile shells; the *Limicolaria* is found at Ibu and in Guinea; and the remainder are also met with in Asia and in Northern Africa.

7. Notes on the Breeding of the Booted Eagle (*Aquila pennata*). By H. E. DRESSER, F.Z.S.

On my return to England this year from a journey through Southern Europe I remained a few days at Madrid, chiefly with the view of obtaining the eggs of some of the rarer birds frequenting the neighbourhood of that town.

I obtained great assistance from Manuel de la Torr e, the chasseur who had accompanied Lord Lilford; and as I and Manuel became very friendly, I was soon made acquainted with the haunts of most of the rarer birds.

I was especially wishful to take the eggs of the Booted Eagle (*Aquila pennata*) with my own hands; and Manuel, on being applied to, at once agreed to act as guide, fixing an early day for the trip, and at the same time promised me that he would not think of returning to Madrid before we had obtained at least one nest of this Eagle.

Accordingly on the 15th of May, 1866, I was up early, and ready for a start by half-past six A.M., at which time Manuel, true to his appointment, came to my room fully equipped for the trip.

We left Madrid by rail, taking tickets to Aranjuez; but, meeting some of Manuel's friends in the train, with whom we talked matters over, it seemed from what they said that we should stand but a poor chance of success there, and we therefore determined to proceed to some station near Toledo. At Castellejo we left the train, and started off towards a belt of trees on the banks of the Tagus, some distance from the railway station. On our way we were stopped by one of the Royal keepers, who, however, on recognizing Manuel, apologized for stopping us, and, hearing on what errand we were, accompanied us for some distance. He told me that he had seen many Great Spotted Cuckoos (*Cuculus glandarius*), and had already found some of their eggs in a Magpie's nest, some miles distant from where we then were. I told him I would purchase any eggs he could procure for me; and he left us to seek for some, promising to meet me at the station in the evening if he could possibly get back in time.

On our way to the grove we saw not a few Bee-eaters and some Goldfinches, but nothing else. On entering the thicket we noticed several *Sylvia cetti* and a *Sylvia bonelli*, and found two or three colonies of *Passer hispaniolensis*. These Sparrows build their nests on the outer branches of the highest trees, quite out of the reach of any stray egg-collector who might take a fancy to their contents. In some trees I counted ten or a dozen of their nests, all built of light-coloured grasses and the cotton of the white elm tree.

Here seemed to be the very place for a naturalist; for he would certainly find no lack of specimens, and no small variety. We saw several Black Kites, Common Kites, and a Buzzard before we had walked any great distance, and on pressing through the underwood flushed a pair of Scops Owls, who, after taking a good look at

us from an old dead tree, flew noiselessly into a gloomy-looking thicket.

Manuel took me to the nest of *Aquila pennata* from which Lord Lilford procured his first eggs of this bird; but as it showed no signs of being tenanted we did not attempt to climb the tree.

Not far distant from this tree we found a nest of the Black Kite (*Milvus migrans*), from which we scared the bird, and therefore had reason to suppose that it contained something, probably eggs. However, the tree was one which promised such an amount of hard work that neither of us considered a couple of eggs of *Milvus migrans* a sufficient inducement to attempt to climb it. We therefore proceeded to force our way through the rank undergrowth, keeping a good look-out for nests, and before long were rewarded by seeing a large nest which Manuel thought looked like that of a Booted Eagle. I carried only a walking-stick gun, for the benefit of the warblers, sparrows, &c.; so Manuel posted himself close to the tree with his gun cocked, and I proceeded to kick the tree by way of giving the tenant of the nest notice to quit. I had not to kick long; for the next moment a large bird flew off the nest and was instantly knocked over by Manuel. It fell into a large bramble brake, into which we had some trouble to penetrate, but on doing so found a splendid female Booted Eagle, which, being only winged, showed fight, and gave us some trouble before we secured it.

Having secured our bird, we proceeded to examine the tree, which I had to climb, having agreed with Manuel that I should take the first and he the second. The tree was a huge and very high white elm, almost too thick to swarm up, and there was not a bough of any sort for a great height from the ground. Not getting much consolation from looking at the tree, I stripped to my shirt and trowsers and proceeded to go up. At first I mounted with great difficulty, the tree being so thick; but making use of the old knots, &c., I managed to get up until I could clasp the tree with some degree of ease, and was then soon at the first branch. The nest was placed nearly at the end of a stout limb at the top of the tree, and I had to rest several times before I reached it, but on doing so was delighted to find that it contained two eggs. These I carefully packed in a box that I carried fastened behind me to my belt; and, sitting down in the nest itself, proceeded to take notes; for I always make it a rule to take up my pencil and note-book with me.

The nest was firmly placed between three branches, was built entirely of thin sticks, twigs, and some dead bramble-branches, and was lined to the depth of about 2 inches with fresh green leaves off the tree itself. These must have been plucked that same morning; for some, which I put into my collecting-box, were quite hard and dry in the evening. This puzzled me not a little; for it looks as if the bird relined the nest every morning, as the leaves would not remain fresh over the day. In diameter the nest was two spans and a knuckle ($19\frac{1}{4}$ inches) outside, and just one span ($9\frac{1}{4}$) inside, not much depressed inside, and rather bulkily built. In the four-

dition of the nest itself were two nests of *Passer hispaniolensis*, neither of which, however, contained eggs, the one being only half finished.

In the branches close to the Eagle's nest were several more Sparrows' nests; and in a rotten limb a few feet below was a new nest of *Picus minor*, and close to it an old nest of the same bird.

The eggs of *Aquila pennata*, which now are (with the exception of the nest-stains) pure white, were, when quite fresh, white with a faint greenish tinge. In shape and size they much resemble the eggs of *Astur palumbarius*; but the shell is somewhat more coarse-grained. The above-mentioned eggs were quite fresh, one of them having probably been laid the previous day.

Having rested myself and scribbled down the above notes, I descended the tree, getting down with much greater facility and speed than I ascended. Manuel had gone off; so I sat and waited for him, and in the meantime noted down the colours of the cere, iris, &c. of the bird itself, which I copy as follows:—Cere and feet light wax-yellow; claws black; beak at cere light blue, darkening towards the tip into a dark horn-blue colour; iris light brown.

Having done this I sat down and watched what birds were to be seen. In the distance I could hear the "hoop, hoop" of the Hoopoe; and a Roller came and perched on a tree not far off.

Before long *Picus minor* made his appearance, and seemed not a little satisfied that his home had remained undisturbed. High above me the mate of the wounded Eagle was circling, keeping, however, so far off that there was no chance of obtaining a shot at him. After waiting a short time I heard some one pushing his way through the brambles; and soon after, Manuel appeared, bringing with him a nest and four eggs of *Fringilla carduelis* that he had found.

He proposed that we should skirt along the river-bank, and thought that he knew of a place where we might find *Caprimulgus ruficollis*. We were, however, not fortunate enough to find any, although we searched carefully for some time.

At one place on the river-bank we found a colony of *Merops apiaster*, numbering some 200 or 300, preparing their nests in a sandy bank, but we were too early to find any eggs.

After walking along the river-side for nearly an hour, and finding three nests of *Milvus migrans* and two of *Milvus regalis*, we saw, in a huge old white elm tree overhanging the river, a nest which Manuel assured me was that of a Booted Eagle, and which he thought probable might contain something. We pelted the nest for some time, but no bird left it; and getting tired of pelting, I at last fired a charge of dust-shot at the nest, with, however, no effect beyond that of driving out several Sparrows, which evidently had nests in its foundation. I therefore concluded that there was no bird on the nest, and proposed that we should search further; but Manuel refused, saying that he thought it worth while to climb up to the nest, it being his turn.

The tree was so bulky that he could not climb up the trunk ; but with my assistance he managed to reach the first branch, which was not far from the ground. Here he was again unable to climb up the trunk, and had to go to the end of a branch, and pulling down the branches above dragged himself up by them. However, to cut matters short, he succeeded after some time in climbing to the limb on which the nest was placed, and then, to my great astonishment, out flew the Eagle, which had sat quiet during the whole time we had pelted and fired at the nest.

Manuel soon reached the nest, and reported that it contained two eggs, and in structure &c. was similar to the last nest, being also lined with fresh green leaves off the same tree in which the nest was placed, some of which he threw down for me to examine. Just below, in a hollow hole, was a nest of *Strix flammea*, but Manuel could not get at it. The old bird flew out, and I shot it.

In the foundation of the Eagle's nest were three nests of *Passer hispaniolensis*, one of which contained five, and another six eggs.

Manuel had great difficulty in descending, and in one place slipped, unfortunately smashing one of the Eagle's eggs in such a manner that we had to throw it away. These eggs were slightly incubated.

During the whole time that Manuel was in the tree, the Eagles circled round above, far out of shot ; but as we were going away the female flew so close that Manuel shot her, which I was sorry for, as I did not wish her to be shot. As it was we did not get her, as she fell into the river and was carried down by the current.

It being now late in the afternoon we turned our faces towards the railway station, taking, however, another route back, in hopes of finding another nest of *Aquila pennata*, but met with nothing, excepting one nest of *Milvus migrans*. We saw a Black Stork (*Ciconia nigra*), several Kestrels, three or four Scops Owls, many Serin-finches and Goldfinches, Woodchats, Bee-eaters, and other common birds, but nothing of note.

8. Supplementary Notes on the Red-bellied Monkey (*Cercopithecus erythrogaster*, Gray). By JAMES MURIE, M.D., Prosector to the Society.

With the typical specimen of a species, as a matter of future reference, it is useful to collect and put on record all details concerning it. For this purpose I contribute the following additional slight data on the new species of West African Monkey (*Cercopithecus erythrogaster*), of which a notice was given by Dr. Gray in March last (P. Z. S. 1866, p. 168). His short graphic diagnostic characters well point out the external peculiarities, leaving nothing to be desired in that respect.

The admeasurements taken of the dead animal furnish the accompanying table:—

	inches.
Body: length from nose to end of tail (in a straight line)..	29 $\frac{1}{4}$
„ length from nape of neck to root of tail.....	11
„ girth of chest (at widest)	8
„ girth of abdomen (at widest).....	8
Tail, in length (its point being imperfect).....	16
Fore limb: length from shoulder to tip of middle digit ..	10
„ length from shoulder to elbow	4
„ length from elbow to wrist	4
„ length of manus	2
Hind limb: length in a straight line.....	12 $\frac{1}{2}$
„ length from hip to knee.....	4
„ length from knee to ankle.....	5
„ length of foot	4
Head: length from nose to occiput (following curve)	5
„ breadth between the ears	4 $\frac{1}{4}$
„ width between the malar bones	2
„ width between the outer angles of the orbits.....	1 $\frac{1}{2}$
„ width between the centres of the two orbits	0 $\frac{8}{10}$
„ distance from tip of nose to meatus auditorius	2 $\frac{3}{4}$
„ distance from top of skull to the inferior edge of the lower jaw (following the curve)	2 $\frac{3}{4}$
„ girth of head before ears, including mandible	7 $\frac{1}{2}$
„ ears in length	1
„ ears in breadth	0 $\frac{3}{4}$

To preserve the form of the head in the stuffed specimen (now deposited in the British Museum) the skull was retained in the skin; consequently the cranial bones were unable to be examined. The dentition, however, corresponds to the immature condition of the genus *Cercopithecus*, the canines (laniarii) being very moderately developed.

Dental formula:—Incisors $\frac{2-2}{2-2}$. Canines $\frac{1-1}{1-1}$. Premolars $\frac{1-1}{1-1}$.
Molars $\frac{3-3}{3-3}$.

The opportunity fortunately occurred of comparing its viscera, side by side, with those of a specimen of *Cercopithecus diana*, Linn., and of *C. cephus*, Erxl. There is a correspondence between the three; but the first two agree most closely in several particulars.

In *C. erythrogaster*, as in them, the right lung has four lobes, the left one only two, of which the upper lobe is deeply cleft. The heart presents nothing remarkable.

The stomach is ovoid in figure, with the fundus bulging slightly upwards. There are no sacculations as in the genera *Colobus* and *Semnopithecus*. The œsophagus enters nearly midway between the cardiac and œsophageal ends. The transverse diameter from the fundus to the cardiac extremity measures 3 $\frac{1}{4}$ inches—in a specimen of *C. diana* about the same age and size, 3 $\frac{1}{2}$ inches—and in the Moustache Monkey (*C. cephus*), with a body greater in dimensions, only 3 inches. The opposite diameter, viz. from the œsophagus to

the greater curvature, is $2\frac{1}{2}$ inches in *C. erythrogaster*, 2 inches in *C. diana*, and $1\frac{1}{2}$ inch in *C. cephus*, showing this organ to be comparatively the smallest in the last-named species.

The ductus communis choledochus enters into the small intestines an inch beyond the pylorus in the first of these three specimens. In it also the small intestines measure 73 inches in length, while in *C. diana* they have a length of 60 inches, and but 52 inches in *C. cephus*, although the last animal is the largest. The cæcum in each of the species is of the same simple cylindrical shape, but it is a quarter of an inch longer in *C. cephus* than in the other two, in which its length is $1\frac{1}{2}$ inch. The great intestines, including the cæcum, measure $22\frac{1}{2}$ inches in *C. erythrogaster*. For about 13 inches from their commencement they are of equal diameter, viz. an inch; then they diminish to half that diameter, which continues onwards to the anus. The sacculations formed by the constricting transverse fibres are narrow and not at all prominent. The differences observed in the great intestines of *C. diana* are these—their being half an inch shorter, and the commencing wide portion also correspondingly of less length than that already given of the new species. *C. cephus* has the great intestines even 1 inch shorter than the last mentioned, and their diameter is altogether somewhat greater than in either of these *Cercopithec*i; the more capacious portion towards the cæcal end is as much as a couple of inches shorter.

The liver in *C. erythrogaster* is composed of five distinct lobes, as in the two allied species. The right lobe is of moderate size, with a thickish lobus caudatus situated at its base. The cystic lobe is rather larger than the right lobe, and with the gall-bladder sunk into a sulcus in its substance. The fourth lobe lies between the cystic and left lobe; it has a deep cleft or pit for the insertion of the round ligament. The left lobe is rather smaller than the right, and is conjoined with the main part of the body of the liver by a narrow neck.

The kidneys are each $1\frac{1}{2}$ inch long. There is nothing peculiar in the other organs.

The point of interest in the comparison of the viscera of the three specimens referred to appears to be, that in some species of *Cercopithecus* there is a variation in the size and length of the alimentary canal; but whether this corresponds to the minor grouping of the species which some have adopted is a matter requiring more extended examination than the present imperfect observation affords.

The morbid appearances observed in this specimen of Red-bellied Monkey were miliary tubercles of the spleen, with hardening of the pancreas and enlargement of the mesenteric glands.

With respect to its habits during the two months it lived at the Gardens, the following may be said:—Its nature appeared mild and harmless, by no means grave or sedate, indeed rather inclined to be lively and playful, but with little disposition to be quarrelsome. The keeper noticed that it appeared timid, and somewhat distrustful of its more romping companions, but freely approached him, and when taking food out of his hand seemed pleased and gently played with his fingers without attempting to bite.

9. On the Anatomy of the Crested Agouti (*Dasyprocta cristata*, Desm.). By ST. GEORGE MIVART, F.Z.S., Lecturer on Comparative Anatomy at St. Mary's Hospital, and JAMES MURIE, M.D., Prosector to the Zoological Society.

The animal, the dissection of which forms the subject of the present communication, died lately in the Society's Gardens. It had lived above four years in the collection, having been originally presented to the Society by Captain M. D. Stewart in October 1861.

EXTERNAL CHARACTERS.

With reference to general appearance, our specimen corresponded to Mr. Waterhouse's* description of the variety of *Dasyprocta cristata*—the crest of the head being black, the loins and hinder portions of the body bright rust-colour, the hairs of the latter parts very slightly annulated with black.

Professor Rymer Jones† says that there are in the Agouti as many as from twelve to fourteen nipples; and Mr. Waterhouse‡ notes that, according to Desmarest, there are in *D. cristata* six mammæ, whilst *D. aguti* has twelve; but he himself found eight teats both in *D. punctata* and in *D. acouchy*. The specimen brought under our consideration confirms Mr. Waterhouse's observations, possessing as it does four pairs of teats, the foremost (as in *D. punctata*) being axillary, while the hindmost are situated in the inguinal region.

It may be interesting to note some of the outward differences exhibited by the feet of *Dasyprocta cristata* as compared with those of *Cavia aperia* and *Lepus timidus*, corresponding as they do to some extent with the distribution of the muscles and tendons.

In the first-named species the back of the fore foot is sparsely clothed with hair, which on the inner side is shorter, finer, and lighter in colour. The nails are nearly straight, solid, and broader than in the Hare. The sole, which is bare, has three pads (see fig. 1, *A*)—a large semilunar one posteriorly, a small roundish one at the base of the index, and another larger irregularly oval-shaped and slightly divided one (also proximally situated) between the third and fourth digits. There are likewise numerous wrinkles, running in the main transversely, producing on the toes somewhat the appearance of scales. The pollex is a mere tubercle hidden by a portion of the posterior pad, so that externally four toes only are to be observed.

The foot of the Guinea-pig, besides its smaller size, differs from that of *D. cristata* in the less wrinkled condition of the sole, in having four distinct pads, the anterior one being the largest, and in all of these having a thicker cushion of fat (fig. 1, *B*).

* Nat. Hist. Mamm. vol. ii. pp. 384, 385.

† Cyclopædia of Anatomy and Physiology (1852), vol. iv. p. 396.

‡ *Loc. cit.* p. 384 (footnote) and p. 393 (text).

Fig. 1.



A. Sole of left fore foot, and *C* of left hind foot, of Crested Agouti. *B.* Sole of left fore foot, and *D* of left hind foot, of Guinea-pig. Natural size.

In the Hare there are five toes visible, which are much longer and hairy; and there are no pads perceptible, even when the hairs are removed.

In the hind foot of the Crested Agouti, which has but three toes, the tarsus is long, narrow, and bare. On the sole are two small

oblong pads, situated at the base of the innermost toes, the smaller one being internal, having at a distance of less than half an inch behind it a trace of a third pad. Beneath the metatarsals there is a good deal of transverse wrinkling, and underneath the digits the same scaly appearance as in the digits of the fore foot (fig. 1, *C*).

The Guinea-pig has a hind foot in some respects very like this; but the pads are comparatively larger, and the external one much the larger of the two; the three toes also are of nearly equal length (fig. 1, *D*).

The Hare has four toes, with fur on the sole; and when the fur is removed neither pads nor wrinkles are to be distinguished. In the length and shape of the sole and toes the Hare's foot approaches that of the Agouti's; but the number of digits, with the other differences, are marks of the separation between *Lepus* and the two genera of the *Hystrioidæ*.

MORBID APPEARANCES.

Those exhibited on opening the visceral cavities were the following:—Congestion of the lungs, more particularly the lobes of the right one. In both lungs, moreover, were innumerable specks of melanotic deposit, each spot not above the size of a pin's head, but the whole giving to the pulmonary tissue the characteristic appearance of incipient melanosis. All the other viscera, as well as the brain, seemed healthy; but there was a more than natural effusion of serum in the cavity of the abdomen.

VISCERA AND GENERATIVE ORGANS.

A good account of the viscera of *Dasyprocta acuschy* (Illig.) has already been given by Professor Owen*; and, a few years later (1834), in some notes also read before this Society, Mr. Rymer Jones† described with considerable minuteness those of *Dasyprocta aguti*, Illig. A complete redescription may therefore be considered unnecessary.

Prof. R. Jones mentions that, in the specimen of *D. aguti* dissected by him, the stomach had a remarkable constriction between its cardiac and pyloric orifices, which gave it the appearance of consisting of two distinct cavities. Our observation of this viscus in *D. cristata* agrees with that of Prof. Owen, who found it in *D. acuschy* altogether simple and without such a contraction.

The shape and relative position of the intestinal tract in *D. cristata* resembles the description given by these authors of the species dissected by them. But we found in it that the small intestines were about 4 feet shorter than in *D. aguti*, namely 208 inches in total length. The large intestines, on the other hand, measured 45 inches, being thus almost double the length of the same in *D. aguti* according to Prof. R. Jones. The cæcum also differs from that of *D. aguti*, being both longer and wider—10 inches in length, and about 4 inches in circumference.

* P. Z. S. 1830-31, p. 75.

† P. Z. S. 1834, p. 82.

There is little difference in the liver, except that the posterior surface of the left lobe has several superficial sulci, possibly a mere individual peculiarity. The gall-bladder is $1\frac{1}{2}$ inch long, extending beyond the margin of the right division of the cystic lobe, and not deeply buried in a fissure as in *D. aguti*.

The heart* has the slight tendency to a double apex remarked by Prof. Owen in *D. acuschy*.

The lungs have the same number of divisions as in the allied species.

The kidneys answer Owen's description of these organs in *D. acuschy*, rather than that of Jones in *D. aguti*, not possessing the separated portion spoken of by the latter observer.

The external organs of generation and anus are closely approximated, indeed almost forming a cloaca. The urethra (p. 406. fig. 4, *U*) opens about $\cdot 2$ inch in front of the vulva. The latter (fig. 4, *V*) lies $\cdot 4$ inch in front of the anus, and its lips exhibit numerous folds. The anal opening (fig. 4, *A*) has immediately behind it a semilunar fold of skin, the convexity of which is posterior. On either side of the anus the fold of membrane forms a deep pouch lined with short hairs, and having numerous minute openings of muciparous glands, and others which give exit to the ceruminous secretion of the anal scent-glands (pp. 406, 410. figs. 4 & 5, *A. g*). These anal glands are two in number, and prominently situated one on each side of and rather behind the external genitals.

They are almond-shaped, and each about an inch in length, and their structure consists of many larger and smaller cavities divided by fibrous walls. The interiors of these cavities or loculi are lined by mucous membrane, which abundantly secretes the viscid yellow substance which is not unlike the cerumen of the ear†. Each gland opens, as above said, by numerous apertures into one of the pouches of the semilunar-like fold.

The figure (fig. 4) which we have given shows the appearance of these glands and the neighbouring parts in a partially dissected condition, and in a female specimen. Their outward or tegumentary aspect in the male animal is admirably depicted by John Hunter's artists, Bell and Rymseyk, in the fourth volume of the 'Illustrated Physiological Catalogue of the College of Surgeons,' plates 52 and 53.

The urinary bladder is a narrow elongated pyriform-shaped viscus, about 3 inches in the length of its cavity; but the distance from the fundus to the orifice of the urethra is altogether about 6 inches, the part, however, which may be regarded as the neck being comparatively wide: this at least was the case in our female specimen.

The ureters open on either side of the bladder, not far from the fundus.

The vagina is rather wide, and $3\frac{1}{2}$ inches in length from the os to the vulva. The mucous membrane is longitudinally plicated all this distance.

* Dr. Crisp states that this organ in the Hare is nearly five times the weight of that of the Rabbit, the lungs of the former nearly four times as heavy, and the calibre of the trachea nearly four times as great (P. Z. S. 1861, p. 86).

† As Prof. Rymer Jones has already remarked (P. Z. S. 1834, p. 82).

The uterus is nearly an inch long from the fundus to the os tinæ, and its cavity is divided by a median septum to within 0·2 of an inch of the latter part. Each cornu is continued from the fundus of the uterus for $1\frac{1}{2}$ inch, and is almost as wide as each of the divisions of the body of this viscus.

The ovaries are small. The broad ligaments as a whole are thin, but have a great number of parallel slightly contorted tubules running from each Fallopian tube towards the pelvic attachment of the ligament. These evidently represent the remnants of the Wolffian ducts.

VASCULAR SYSTEM.

The arch of the aorta is short and narrow, the arteria innominata, left carotid, and left subclavian arteries are given off close together, and they are of nearly equal size. The arteria innominata is 0·4 inch long to where it gives off the right carotid. About 0·25 inch from this is the vertebral artery, which is of narrow calibre; immediately beside it to the right, and from the same (anterior and inferior) side of the subclavian the inferior thyroid, supra- and posterior scapular branches are derived. These can hardly be said to spring from the thyroid axis, but diverge along with the vertebral artery from the main trunk. The internal mammary arises on the opposite (posterior or superior) side of the subclavian to those above mentioned, and it proceeds into the thoracic cavity behind the whole of the rib-cartilages.

The superficial femoral artery is given off from the larger and deeper femoral artery below the crural arch. It divides half an inch below this,—one, moderate-sized division going outwards, which at about an equal distance again divides into two—one of these last branches supplying the tensor vaginæ femoris, the other piercing the rectus muscle superficially and vastus internus beneath, also sending off slight twigs to the inside of the gluteus maximus.

The second, larger and longer division, accompanied by the saphenous nerve, passes quite superficially down the limb, crossing at an acute angle the shaft of the femur. It is adherent to the gracilis muscle opposite to the head of the tibia, and just where its fibres become aponeurotic (see fig. 4). Crossing the lower fifth of the shaft of the tibia it reaches the dorsum of the foot beneath the tibialis anticus tendon, and it then proceeds forwards between the inner and middle metatarsal bones. Previously to crossing the tibia a branch is sent to the inner side of the os calcis.

The deep femoral artery is much greater in calibre than the superficial femoral. There are numerous small muscular branches given off in the groin. As it continues downwards it lies upon the adductor magnus, but does not pierce the muscle; so that there is no Hunter's canal.

Twigs are given to the adductors and sartorius. At the lower border of the adductor magnus it sends a large off-shoot to the semi-membranosus, while the main trunk continues to the popliteal space close behind the femur.

The popliteal artery is but a series of branches of the femoral,—the main arterial trunk, the continuation of the femoral, being hardly distinguishable by size from the numerous usual muscular and articular branches. The divisions commence just above the origin of the gastrocnemius muscle.

Besides the (four) superior and inferior articular branches there is a middle or azygos artery of small size which pierces the fascia close to the tibia. The two larger branches, supplying the gastrocnemius and other muscles of the calf, are given off highest.

The posterior tibial, anterior tibial, and recurrent arteries are given off together from the popliteal, and about opposite the condyles of the femur. The first of these runs alongside the highest and deepest branch of the ischiatic nerve, and about the upper one-fifth of the shaft of the tibia it pierces the deep flexor muscles of the leg, and then proceeds downwards.

The second or anterior tibial artery passes deeply over the popliteus muscle and between the tibia and fibula, running down the anterior surface of the interosseous ligament to the ankle-joint.

The third or recurrent artery passes outwards beneath the external head of the gastrocnemius.

The continuation of the anterior tibial at the ankle-joint inosculates with the inferior extremity of the superficial femoral artery, and then proceeds between the two inner metatarsal bones from the dorsum of the foot to the sole near their distal extremities, and there supplies three digits on their plantar aspect. A branch at the malleolus comes from the above and dips between the cuboid and external cuneiform, forming a deep palmar arch of two branches. This communicates with the superficial plantar arch above described.

NERVOUS SYSTEM.

The great sciatic nerve, which is large, passes beneath the pyramiformis muscle. Emerging from below this and through the great ischiatic notch, it passes down the back of the thigh beneath the flexor muscles, but not close to the thigh-bone. Opposite the lower end of the shaft of the femur it divides into the smaller (external) and larger (internal) popliteal nerves.

The external popliteal is continued as the peroneal nerve, and goes beneath a small tendinous slip of the outer head of the gastrocnemius, and also the peroneal muscles just below the projecting processes of bone on the outer head of the fibula; thence it descends in front of the interosseous membrane alongside of the extensor muscles to the ankle, and onwards to the dorsum of the foot, branches being given off at the ankle-joint.

The internal (or posterior tibial) nerve divides into two branches:—one, the outermost, supplying the large superficial flexor muscles; the other dividing lower down opposite the joint into an internal deep branch going to the deep flexor muscles, and a more superficial one which proceeds to the inner side of the projection of the os calcis and then splits into smaller branches.

The lesser sciatic nerve is comparatively large, and is given off from the sacral plexus and great sciatic beneath the pyriform muscle. It lies upon the tuberosity of the ischium, and separates into several branches, which supply the conjoined gluteus maximus and biceps, the semitendinosus and semimembranosus, besides several other muscles.

MUSCULAR SYSTEM.

The anatomical structure of the genus *Dasyprocta*, in so far as the muscular system is concerned, has hitherto only been described in a somewhat fragmentary manner, principally by Meckel. Moreover, as the comparative relation of the myology in the Rodentia is interesting, we have thought this portion of the record of our dissection of *D. cristata* might be useful as helping to form a groundwork for further investigations with regard to that group; for which purpose we have more particularly compared it with dissections made by us of the Guinea-pig, Hare, and Rabbit, availing ourselves at the same time of the labours of other observers on certain species of the order.

We may remark *en passant* that the flesh of the body of the Crested Agouti has a resemblance to that of the Common Hare, both in colour and in the absence of interstitial fat.

Muscles of the Head and Neck.

The *temporal*, compared with some of the muscles of mastication, is small, as it is in most of the Rodents. Its origin and insertion present nothing remarkable, excepting in its perpendicular pulley-like position and action round the posterior base of the zygomatic process.

In the Guinea-pig it appears to be single and like the above.

In the Hare this muscle is also feeble, but somewhat divided into two bellies, as Meckel* has stated.

Masseter. This muscle in the Crested Agouti, as in many of the Rodents, is composed of more than one layer. We found it divided into three distinct portions, somewhat in the manner described in the notes to the French translation of Meckel†.

The first portion (jugo-maxillien) is the largest and most superficial. It arises from the whole length of the zygomatic arch, as far forwards as opposite the first molar tooth; and it is inserted into the outer surface or ridge and lower margin of the mandible, some of the fibres turning round and being fixed into the inner face of that bone. The anterior border of this portion has a very strong superficial tendon.

The second, smaller portion (mandibulaire) lies beneath the first, and is a muscular slip, also stretching from the zygomatic arch (its anterior end) to the mandible (its outer surface).

* Anat. Comp. traduit par MM. Riester et Alph. Sanson, Paris, 1829-30, vol. viii. p. 577.

† *Loc. cit.* p. 580 (footnote). At p. 328 in the same volume it is noticed that in its complete state the masseter is divisible into three muscles, viz. the jugo-maxillien, the mandibulaire, and the mandibulo-maxillien.

The third portion (mandibulo-maxillien of notes to Meckel) forms a flat muscular arch, with an anterior peak, attached to the side of the superior maxillary bone and partly beneath the orbit. The fibres converge and end in a very powerful glistening tendon, which is inserted into the anterior end of the external ridge of the mandible nearly opposite the first molar.

With regard to the action of this muscle, our observation corroborates Meckel's annotators, who state that the first portion produces both an antero-posterior and up and down movement of the mandible, while the third portion, from its pulley-like position and attachments, only raises the lower jaw.

Mr. Waterhouse* particularly calls attention to the constancy of the double arrangement of the masseter in the *Hystrioidæ*, and figures that of the Agouti and others; but he does not speak of the other, smaller slip mentioned in Meckel's work.

The *buccinator* is very largely developed, and extends from the mandible to the maxilla.

It is also large in the Guinea-pig.

The *digastric* muscle is large, normal in origin and insertion, and has a median tendon.

It is the same in the Guinea-pig, where it lies very deeply.

In the Hare this muscle is very remarkable, as it possesses no posterior fleshy belly, but its hinder half is merely a long tendon.

Cuvier† remarks that there is but one belly in the digastric of the Rabbit.

The *sterno-mastoid* arises from the outer side of the elongated manubrium, immediately beneath the third part of the pectoralis major (p. 396. fig. 2, *St. m*). Passing forwards and upwards‡ it is inserted by a strong tendon into the anterior aspect of the paroccipital process.

The *cleido-mastoid* is smaller than the preceding, and arises from about the middle of the clavicle (p. 401. fig. 3, *Cl. m*) §, being inserted broadly into the paramastoid process behind and beneath the sterno-mastoid.

In the Rabbit and Hare the sterno-cleido-mastoid is also separated into two distinct portions as in *D. cristata*. In the Guinea-pig, according to Meckel||, with whom we agree, the cleido-mastoid, or posterior half, differs from the above in being the larger portion of the two. Moreover he says, "elle se confond tout-à-fait avec le deltoïde dans sa partie inférieure;" but what he takes as part of the deltoid, we are inclined to consider a clavicular part of the pectoralis major.

The *sterno-hyoid* and *sterno-thyroid* muscles arise in common

* Nat. Hist. Mamm. vol. ii. p. 151 and pl. 6 a. f. 1-4.

† Leçons d'Anat. Comp. tome iv. première partie, p. 93.

‡ It must be understood that in our use of the terms "forwards," "upwards," "anterior," "inferior," &c., we describe the animal as in the horizontal position of a quadruped: therefore what in human anatomy would be spoken of as "superior" is here "anterior;" and in the same manner "posterior" becomes "superior," and *vice versa*.

§ Meckel, Anat. Comp. vol. vi. p. 164.

|| *Loc. cit.* p. 164.

from the inside of the sternum, opposite the cartilage of the first rib, and, continuing forwards (upwards) closely united in part, ultimately separate and have their usual insertions.

The same in the Hare and Guinea-pig.

The *omo-hyoid* is wanting.

The *levator claviculæ* is very remarkable in having an origin by tendon from the basis cranii, immediately to the inner side of the auditory bullæ and directly behind the tendon of the anomalous scalenus anticus. It is inserted into the clavicle, towards its outer end, immediately opposite the origin of the fourth part of the pectoralis major.

On the right side we found this muscle closely adherent to the cleido-mastoid above; but near the clavicle the external jugular vein and carotid artery separated them, after which the two muscles proceeded side by side to the somewhat rudimentary clavicle, the levator claviculæ being inserted outermost.

On the left side we found no such union with the cleido-mastoid above; but instead the muscle divided (at the anterior third of the distance between the atlas and clavicle), its broader portion, partly adherent to the trapezius, passing over the shoulder-joint onwards as far as the proximal end of the forearm, simulating a cephalo-humeral (figs. 2 & 3, *L. c.*). But we believe it cannot be a cephalo-humeral, because there is a distinct cleido-mastoid, as before described, entirely distinct and superficial to this abnormally enlarged portion of the levator claviculæ.

It is this portion which evidently has led Meckel* to consider this muscle to be represented by the anterior part of the trapezius in the Agouti.

Prof. Owen† makes mention of the levator claviculæ being present in two specimens of the *Dasyprocta acuschy* (Ill.) dissected by him.

We ourselves noted its existence in the Guinea-pig, Hare, and Rabbit,—in the former being inserted into the metacromion process of the scapula; in the two latter it is carried, along with the trapezius, over the shoulder-joint, fibres passing to the upper part of the humerus.

In the Hare the levator claviculæ is like that which we found on the left side of *Dasyprocta cristata*, but without the long descending portion to the forearm, rather stopping short at the metacromion process.

The *rectus capitis anticus major* is but indistinctly separated from the longus colli, unless what we have called the scalenus anticus should in reality be this muscle, the insertion‡ of which, however, it must be remembered, is into the first rib, therefore entirely different from that of the rectus capitis anticus major as it ordinarily exists in man. Should our interpretation be correct, the muscle in ques-

* *Op. cit.* vol. vi. p. 239.

† P. Z. S. 1830-31, p. 76.

‡ Speaking generally, the *insertion* is oftener to be relied on as indicative of homology than the *origin* of a muscle—although, perhaps, this rule is more strictly applicable to the limbs than elsewhere.

tion is probably represented by what has much the appearance of the most anterior (upper) part of the longus colli. This arises by tendon and muscular fibre from the transverse processes of the second and third cervical vertebræ, and is inserted partly into the hypapophysis of the atlas, and partly into the basis cranii in front of the tendon of origin of the scalenus anticus.

It is the same and strongly developed in the Guinea-pig.

The *rectus capitis anticus minor* is more easily defined than the preceding muscle. Its attachments of origin are the transverse process of the atlas and part of the body of that vertebra; it is inserted into the basis cranii, immediately behind the origin of the levator claviculæ, with which, moreover, it is more or less fused.

It is alike in the Guinea-pig.

The *rectus lateralis* is large and fleshy; it passes, as usual, from the transverse process of the atlas to the skull.

Longus colli. If we consider the muscular belly described as the rectus capitis anticus major to be really such, and not a part of the muscle now under consideration, then the longus colli extends between the transverse processes and bodies of the vertebræ from the seventh dorsal to the atlas—no fibres, however, being attached to the transverse processes of the dorsal or first three cervical vertebræ.

It is exactly the same in the Guinea-pig.

Scalenus anticus. This presents very interesting characters, both as to its form and origin. It is a very long thin band of muscle, tendinous on its lower surface, and arising by a strong tendon from the basis cranii, immediately in front of the origin of the levator claviculæ, but rather nearer the middle line. It is inserted upon the anterior margin of the first rib, between the subclavian vein and artery, and altogether beneath (in front of) the bronchial plexus.

Meckel* says that this muscle is absent in the Agouti.

This muscle is the same in the Guinea-pig; and here the tendon of origin from the basis cranii is very delicate.

In the Hare this muscle seems to be wanting.

The *scalenus medius* and *s. posticus* are one very large posteriorly expanded and conjoined muscle in the Agouti. It arises from the whole of the transverse processes of the cervical vertebræ, including the atlas, and not, as Meckel† says, from only the last five. It is inserted into the first five ribs.

In the Guinea-pig it is very similar, and strongly developed.

In the Hare there are two muscles, the external superficial one of which arises from the transverse process of the fifth cervical vertebra and is inserted into the three foremost ribs. The deeper and shorter one arises from the transverse process of the sixth cervical vertebra, and is inserted into the first rib, outside and superficial to the vessels and nerves.

Muscles of the Back and Abdomen.

Panniculus carnosus. The very lean condition of our specimen permitted this muscle to be well seen in its entire extent (figs. 2 & 3,

* *Op. cit.* vol. vi. p. 157.

† *Loc. cit.*

P. c.) It corresponds very nearly to our description of the same muscle in Hyrax*. It is also wonderfully strong in the Rodents selected for comparison, most so perhaps in the Guinea-pig.

The *latissimus dorsi* takes origin from the dorsal and lumbar vertebræ, and is likewise attached by a fascia to the surface of the infra-spinatus muscle. It has an insertion by tendon, as usual, in common with the *teres major* (figs. 2 & 3, *L. d.*). It sends off a small dorso-epitrochlear slip (figs. 2 & 3, *D. e.*) to the ulnar side of the olecranon. This last we noticed in the Guinea-pig, but not clearly in the specimens of Rabbit and Hare.

The *trapezius* is very extensive and elongated (fig. 3, *Tra.*). Muscular fibres come from the spines of the fourth to the eleventh dorsal vertebræ, covering the *latissimus dorsi*, and proceeding outwards and forwards are partially inserted into about the middle of the spine of the scapula.

A strong tendinous fascia continues onwards, joining the almost distinct anterior portion, which may be said to arise from the occiput and ligamentum nuchæ, to be inserted into the anterior edge of the spine of the scapula and metacromion process, a slip of fibres proceeding down the side of the limb as far as the middle of the humerus. In the neck the fibres join those of the *levator claviculæ*.

There is no characteristic difference in the Guinea-pig.

In the Hare the nuchal portion is very thin, and the dorsal portion goes as far backwards as the twelfth or thirteenth vertebra.

In the Rabbit this muscle appears to join the *latissimus dorsi* posteriorly. In neither of these three animals is the long humeral slip so strongly developed as in the Agouti.

Rhomboideus. There is no distinction between the *rhomboideus major*, *minor*, and *capitis*; but one continuous sheet of muscle arises from the paramastoid process of the occiput, the median line of the neck, and the dorsal vertebræ. Its insertion is into the vertebral border of the scapula.

Meckel says (*loc. cit.* p. 242), “*Le Porc-épic et la Marmote parmi les Rougeurs n’ont qu’un rhomboïde, mais il y est très-développé, il vient de l’arcade de l’occipital,*” &c.

In the Hare, Rabbit, and Guinea-pig we find a distinct *rhomboideus capitis* muscle, which arises by delicate narrow fibres from the occiput, and, broadening as it proceeds backwards and outwards, is inserted into the anterior end of the vertebral border of the scapula.

In them also the *rhomboideus major* and *minor* are interblended.

The *serratus magnus* and the *levator anguli scapulæ*, indivisibly united together, form another extensive layer of muscle. Origin: the transverse processes of all the cervical vertebræ and the first eight ribs. Insertion: the spinal border of the scapula beneath the *rhomboideus*.

In the Guinea-pig, Rabbit, and Hare there is a line of separation between the *serratus magnus* and *levator anguli scapulæ*, opposite the third rib; the last portion has the greatest amount of attachment to the scapula.

* P. Z. S. 1865, p. 335.

Serratus posticus. This is one single sheet of muscle and fascia, answering in all respects to the description given of that in *Hyrae**, with the exception that it reaches only to the fifth rib. Its fibres, moreover, have a uniformly oblique direction, and take origin from the ligamentum nuchæ by a strong tendon.

Meckel † avers that in some Rodents, principally the Agouti, Marmot, and Beaver, it goes to all the ribs except the first. It was not so in our specimen, and the alteration in the direction of the fibres was not so clearly shown as Meckel has described.

We have found it in the Hare and Rabbit very thin and delicate, almost like a fascia, except at the anterior part, where there are a few muscular fibres. It appears to go to most of the ribs in the Hare, indeed to all except the three anterior ones. In the very fleshy old male Guinea-pig examined by us it was distinct and strong from the third to the eighth or ninth rib.

The *sacro-lumbalis* has its usual attachments, and, emerging from the mass of the erector spinæ, is prolonged, as the cervicalis ascendens, to the transverse process of the sixth cervical vertebra. In the other three Rodents it did not seem to reach further than the seventh cervical.

The *longissimus dorsi* is very much larger and more fleshy than the preceding, but also has the ordinary attachments. It is prolonged into the neck as a transversalis cervicis as far as the atlas, strong tendons going to all the cervical vertebræ. It is the same in the Guinea-pig. In the Hare, only as far as the axis? But in the Rabbit it is, as Professor Huxley ‡ has observed, very powerful and attached to the large metapophysial processes.

The *external oblique* is a most extensive sheet of muscle, and almost of a uniform thickness from the median line of the abdomen nearly to the back. It springs by digitations as far forwards as the fourth rib, and its fibres blend with the rectus over the cartilages of from the fifth to the tenth ribs. Posteriorly it is fixed to the anterior spine of the ilium; and its insertion is by muscular and tendinous fibres into the brim of the pelvis from the ilio-pectineal prominence to the symphysis. It is in close connexion with the insertion of the rectus, which it covers; but the main part of its inguinal fibrous insertion proceeds down the median line of the symphysis to about its middle, and rather nearer to the posterior than to the anterior end of the origin of the very broad gracilis (figs. 4 & 5, *E. o.*).

The two most peculiar points of interest in this muscle are, 1st, its attachment and close adherence to the rectus; and 2nd, its having the aponeurotic semilunar fascia stretching from the anterior spine of the ilium to the ilio-pectineal eminence and symphysis so strongly tendinous as to form well-developed Poupart's and Gimbernat's ligaments.

It is altogether a thin muscle in the Hare; and neither in it, the Guinea-pig, nor Rabbit, notably differs from that of the Agouti in its attachments.

* P. Z. S. 1865, p. 335.

† *Loc. cit.* p. 107.

‡ Hunterian Lectures, Royal College of Surgeons, 1865.

The *internal oblique* and *transversalis* are so closely adherent as to seem but one. They have the usual attachments of the internal oblique, their only peculiarity being their relation with regard to the rectus muscle. In the Hare there is also a close relation between these two muscles, but in some parts the fibres are much more easily separated from each other.

Rectus abdominis. This muscle is nearly inseparable from the external oblique over the cartilages of the ribs, and is also conjoined to the serratus magnus at its anterior part. Its fibres, moreover, can be traced onwards as far as the first rib. It is distinct and well defined from the ensiform cartilage to about the umbilicus; but from this last point to the symphysis it is closely united with the internal oblique and transversalis, with fibres, however, which are clearly longitudinal.

At the pelvic attachment the muscles of the right and left sides cross each other precisely in the manner so well described by Prof. Owen* as occurring in *Capromys furnieri*, and afterwards by C. L. Martin in *Myopotamus coypus*† and *Octodon cumingii*‡.

The belly of the *psaos parvus* is small in volume, but it has a long tendon of insertion. It arises by muscular fibres from the bodies of the antepenultimate and penultimate lumbar vertebræ; its narrow, strong tendon expands just as it is inserted into the brim of the pelvis.

It is nearly alike in the Hare and Guinea-pig.

The *psaos magnus*, on the contrary, is exceedingly large, and is more or less separated behind (below) into distinct fleshy fasciculi, especially where the anterior crural nerve pierces it. It arises from the vertebral surfaces of the bodies of the whole of the lumbar vertebræ, and is inserted as usual.

This muscle has the same apparent division in the Guinea-pig; but the fleshy fasciculi are not so distinct in the Hare.

The *iliacus* takes origin from the inferior surface of the blade of the ilium, and, joining the *psaos*, has its ordinary insertion (figs. 4 & 5, II.). It is very thick and fleshy. It possesses the same characters in the Guinea-pig; but in the Hare it is very intimately united with the *psaos magnus*.

Quadratus lumborum. This is a remarkably elongated muscle, extending beneath the bodies of the vertebræ as far forwards as the eighth dorsal one. It gradually broadens backwards until its fibres reach the transverse process of the last lumbar vertebræ, whence it narrows, and, running upon the ventral surface of the sacrum, is inserted by a single tendon into its outer margin, namely on the surface of the sacro-iliac synchondrosis, a strong tendon extending to the posterior end of that surface.

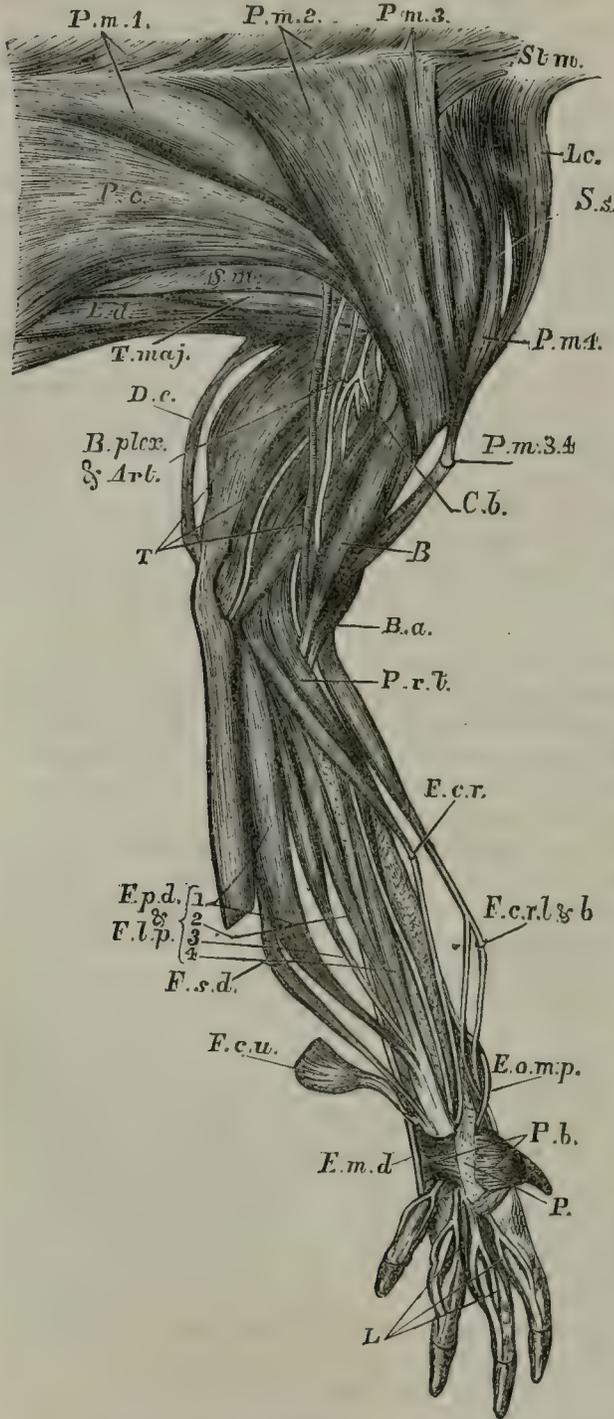
In the Hare, beautifully distinct tendons are sent to the ventral surfaces of each of the transverse processes of the lumbar vertebræ; they are present also in the Guinea-pig, but not so well defined, by reason of the colour of the flesh and diffused fat.

* P. Z. S. 1832, p. 68.

† P. Z. S. 1835, p. 173.

‡ P. Z. S. 1836, p. 70.

Fig. 2.



St. m. Sterno-mastoid. *L. c.* Levator claviculae. *P. c.* Panniculus carnosus. *L. d.* Latissimus dorsi. *D. e.* Dorsi epitrochlear. *S. m.* Serratus magnus. *P. m. 1, 2, 3, 4.* Pectoralis major, the first, second, third, and fourth parts. *S. s.* Sterno-scapular. *B.* Biceps. *C. b.* Coraco-brachialis. *B. a.* Brachialis anticus. *T.* Triceps. *P. r. t.* Pronator radii teres. *F. c. r.* Flexor carpi radialis. *F. c. u.* Lower, cut portion of flexor carpi ulnaris. *P. b.* Palmaris brevis. *P.* Palmar ossicle. *F. s. d.* Flexor sublimis digitorum. *F. p. d.* and *F. l. p. 1, 2, 3, 4.* Separate heads of combined flexor profundus digitorum and flexor longus pollicis. *L.* Lumbricales. *E. o. m. p.* Tendon of extensor ossis metacarpi pollicis. *E. m. d.* Tendon of extensor minimi digiti. *B. plcx. and Art.* Brachial plexus of nerves and brachial artery.

View of dissection of the left side of chest and inner aspect of fore limb in the Crested Agouti. (From a photograph by Dr. Murie.)

Muscles of the Fore Limb.

Pectoralis major. Perhaps the most striking difference between the posterior fibres of this muscle and that of the conjoined panniculus carnosus is the darker colour of the former. The pectoralis major is extensive, but on the whole of moderate thickness. Although peculiar, we did not find it to answer the description given by Prof. Owen of the same in *Capromys fournieri**; for it seemed to have four distinct origins, and as many insertions.

The first and largest portion consists of a very broad sheet of muscular fibre arising from the posterior two-thirds of the sternum, and, as already stated, is intimately blended with the panniculus carnosus (see fig. 2, *P. m.* 1); while it is also much adherent to the posterior portion of the sterno-scapular muscle. Its insertion extends from halfway down the deltoid ridge, upwards as far as the tendon of the coraco-brachialis; and a small slip of its fibres passes over this tendon to the surface of the fascia covering the subscapularis.

The second portion arises from the anterior fifth of the sternum, almost as far as the end of the manubrium. Its posterior border is closely connected with the anterior border of the first portion, so that these two together almost, if not quite, cover the sternal origin of the sterno-scapular. It is inserted into the shaft of the humerus, its whole length external to the insertion of the preceding portion (figs. 2 & 3, *P. m.* 2).

The third portion is a narrow band of muscle arising from the manubrium, and inserted into the lower end of the shaft of the humerus, immediately external to the second portion of this muscle (figs. 2 & 3, *P. m.* 3).

The fourth portion is a still narrower band, which arises from almost the outer end of the clavicle, and joining the third portion is inserted in common with it; and it is this junction and common insertion with an undoubted part of the pectoralis major which decides us to regard it as part of the pectoral, and not as a part of the deltoid (figs. 2 & 3, *P. m.* 4).

In the Hare, the Rabbit, and the Guinea-pig this muscle exists in a slightly modified condition from the above; and although the several portions spoken of are in them more adherent, nevertheless they are without much difficulty separable into nearly similar slips. What answers to the first and second portions in *D. cristata* may in them be regarded as but one sheet folded on itself at its sternal and humeral attachments. The insertion into the humerus of the third portion is neither so extensive nor so muscular in the three rodents in question.

In *Dasyprocta cristata* the *pectoralis minor* is wanting, or included in the *p. major*; the slip of the first portion of the latter muscle going to the subscapularis, possibly representing the insertion of the fused pectoralis minor.

Meckel†, in his description of a small muscle underneath the pectoralis major in the Marmot &c., says, "Il est possible, au reste,

* P. Z. S. 1832, p. 74.

† *Loc. cit.* p. 251.

que ces muscles allant à l'humerus, ne représentent pas le petit pectoral mais seulement certaines parties du grand pectoral, dans ce cas, ma manière de voir serait encore plus exacte."

This muscle, however, seems distinct in the Rabbit, Hare, and Guinea-pig, where it is seen as an elongated band, with an origin adherent to and intermediate between the first portion and the sterno-scapular. Its insertion, however, is quite separate, namely into the ulnar tuberosity of the humerus, fibres also proceeding to the sub-scapularis.

Sterno-scapular. This muscle has a double origin. The larger portion arises from the sternum, between the origins of the first and second portions of the pectoralis major, and is closely invested by them as before stated. As it passes upwards it becomes slightly connected with the distal end of the clavicle, about an inch beyond which it unites with the second and smaller portion of muscle, being inserted together with it close to the anterior vertebral angle of the scapula. Some fibres pass over the supraspinatus, and are attached by fascia to the spine of the scapula.

The second and rather smaller portion arises from the outer side of the base of the manubrium and from the cartilage of the first rib. Passing forwards it joins the first portion as already mentioned (figs. 2 & 3, S. s.).

The sterno-scapular is an exceedingly long and narrow muscle. The second, smaller portion resembles by its origin, and indeed may be, the subclavius, as Meckel* suggests; but it is the larger, and not the smaller part which is unmistakably connected with the outer end of the clavicle, the lesser part having only an aponeurotic attachment to that bone.

In the Hare there is but one, broad origin to this muscle, a small portion of its outer edge adhering firmly to the humeral extremity of the rudimentary clavicle as it passes beneath; while its insertion is very extensive, viz. from the vertebral angle of the scapula to the coracoid process, upon the surface of the supraspinatus. In the Rabbit and Guinea-pig there are two slips as in *D. cristata*.

The *deltoid* consists of two semidistinct portions—one arising from the inferior border of the metacromion process (tendinous superficially), the other investing the fascia of the infraspinatus immediately behind that process. These two portions have a common insertion into the lower half of the deltoid ridge, immediately external to the summit of insertion of the second part of the pectoralis major (fig. 3, D.).

This corresponds with our dissection of the same muscle in the Rabbit, Guinea-pig, and the Hare.

Meckel† considers the deltoid in the Agouti and Porcupine to consist of a clavicular as well as a scapular portion; but what he describes as the former is our fourth portion of the pectoralis major.

This may indeed be described as part of the deltoid; but, on account of its very different insertion from that of the ordinary clavicular part of the deltoid and its insertion in common with the third

* *Loc. cit.* pp. 259, 260.

† *Loc. cit.* p. 255.

part of the pectoralis major, we are led, as before stated, to regard it as a portion of the last-named muscle.

The *supraspinatus* is larger in bulk than the *infraspinatus*. There is nothing unusual in its attachments.

The *infraspinatus* stretches from the infraspinous fossa to the summit of the outer border of the great tuberosity of the humerus.

The *subscapularis* is normal, but does not occupy the whole of the subscapular surface of the bone. Its condition approximates very much to that found in Hyrax*.

The *teres major* arises from the upper half of the posterior margin of the scapula, and is inserted as usual, but in common with the *latissimus dorsi*.

The *teres minor* has an origin from the inferior third of the posterior margin of the scapula; and its insertion is into the base of the tuberosity of the humerus. It is altogether very small and closely adherent to the *infraspinatus*.

Meckel† seems to have failed in detecting this muscle in Rodents, possibly confounding it with the *infraspinatus*.

The last-mentioned five scapular muscles present no further difference worthy of mention, either in the Guinea-pig, the Rabbit, or the Hare.

The *biceps* has only a single head, and is inserted into the posterior border of the ulna by a strong tendon passing deeply between the muscles, and fixed to the ulnar side of the ridge immediately in front of the greater sigmoid cavity (fig. 2, B).

According to Meckel‡ this muscle also goes to the ulna in the Porcupine and Beaver; we have found this also to be the case in the Guinea-pig, Rabbit, and Hare; there is the usual attachment of the superficial fascia in the forearm; and in addition a strong fibrous band unites it to the neck and shaft of the radius.

The *coraco-brachialis* consists of two parts, the longer of which descends only to about the middle of the shaft of the humerus; the short part is inserted above the tendon of the *teres major*§ (fig. 2, C. b.).

In the Hare, Rabbit, and Guinea-pig this muscle does not descend so far down the shaft of the humerus as in *D. cristata*, and it is likewise less clearly, if at all, separable into two than in them.

Meckel|| considers it simple and short in the Hare, very long and strong in the Porcupine, and double in the Marmot.

The *brachialis anticus* (figs. 2 & 3, B. a.) is peculiar in being divided into two distinct parts, one of which arises at the back of the head of the humerus, much as in Hyrax¶, curving round the outside of the shaft. Its insertion is by a flattened tendon (much

* P. Z. S. 1865, p. 338.

† *Loc. cit.* p. 78.

‡ *Loc. cit.* p. 288.

§ Since the above was read, Mr. John Wood has published a paper in the first number of the 'Journal of Anatomy and Physiology,' published at London and Cambridge, 1866. He therein proposes three names for the three portions of the coraco-brachialis. The two parts in the Agouti answer respectively to his coraco-brachialis proprius and coraco-brachialis superior vel brevis (*loc. cit.* pp. 48 & 49).

|| *Loc. cit.* p. 280.

¶ P. Z. S. 1865, p. 339.

thinner than that of the biceps) into the radial side of the shaft of the ulna, lower than the insertion of the biceps, but higher than that of the biceps in the Hare, Guinea-pig, and Rabbit.

The second portion, which also exists in the Hare and Rabbit, is much smaller in size, and has a separate origin and insertion. It arises from the front of the shaft of the humerus, immediately within the first part of the brachialis anticus, and below the deltoid ridge; it is a laterally compressed band of muscle, and has an insertion immediately adjacent to and to the inner side of the first part.

In the Rabbit the two portions of the brachialis anticus (which are more equal in size than in *D. cristata*) are separated from each other by the insertion of part of the pectoralis major, which runs far down the humerus, this part in *Dasyprocta* being inserted between the inner portion of the brachialis anticus and the biceps.

In the Guinea-pigs examined by us there was no second and separate portion to the brachialis anticus.

The *triceps* consists of three heads as in Mau, and with the usual origin and insertions; the scapular head is large, and, moreover, has in addition a slight origin from the fascia investing the infraspinatus muscle (figs. 2 & 3, *T.*).

The other Rodents used for comparison do not vary from the above description.

The *supinator longus*, as Meckel observes, appears to be entirely absent, unless the inner parts of the brachialis anticus be considered a displaced supinator longus; but such can hardly be the case, on account of its very different insertion.

The Guinea-pig resembles the Agouti in this respect.

It is certainly wanting in the Hare.

The *supinator brevis* has an origin from the annular ligament of the radius, and is inserted as usual into the shaft of that bone (fig. 3, *S. b.*).

It is present and similar in the Guinea-pig.

In the Hamster, Agouti, Marmot, Beaver, and Rabbit, according to Meckel*, it is inserted entirely, or almost so, into the upper half of the radius.

In the Hare and Rabbit we found it very small.

The *pronator radii teres* (figs. 2 & 3, *P. r. t.*) arises from the internal condyle, and has an insertion into the middle of the shaft of the radius as in the Hare, Rabbit, and Guinea-pig—not, however, extending to the lower end of this bone, as Meckel† asserts is the condition this muscle assumes in the Rodents.

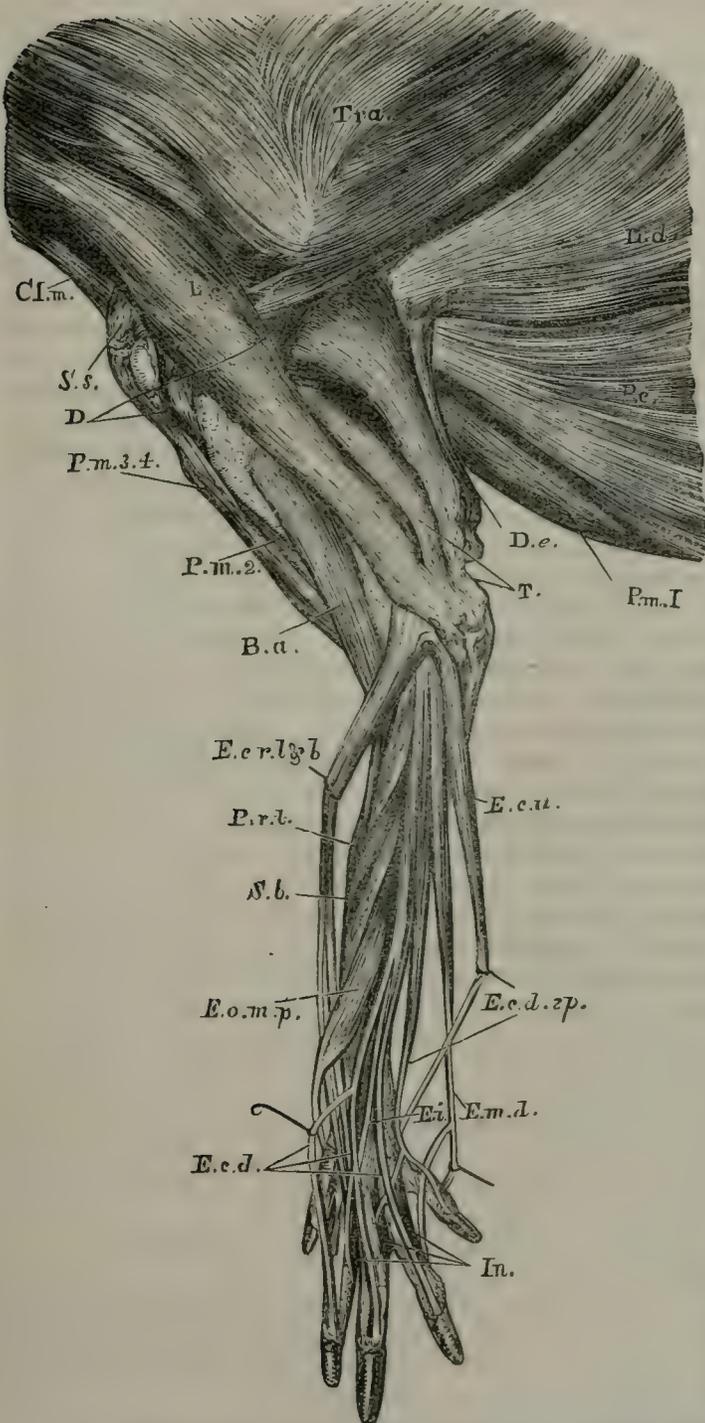
On the left fore limb of the Agouti we did, however, notice a thin fascia-like tendon, which seemed to spring from, or be a continuation of, the pronator teres, and to run on as far as the carpus.

The *flexor carpi radialis* has origin from the internal condyle, and an insertion by a long tendon which passes to the groove inside the styloid process of the radius, thence over the scaphoid, dipping deeply beneath the short flexor muscles of the pollex, and ending in the base of the first phalanx of the index (fig. 2, *F. c. r.*). It is similar in the three Rodents examined for comparison.

* *Loc. cit.* p. 306.

† *Loc. cit.* p. 300.

Fig. 3.



Tra. Trapezius. *L.d.* Longissimus dorsi. *P.c.* Panniculus carnosus. *P.c.* Panniculus carnosus. *Cl.m.* Cleido-mastoid. *S.s.* Sternoscapular. *D.* Deltoid. *P.m.1,2,3,4.* Pectoralis major, first, second, third, and fourth portions. *B.a.* Brachialis anticus. *E.c.r.l. and b.* Extensor carpi radialis longior and brevis. *P.r.t.* Pronator radii teres. *E.c.u.* Extensor carpi ulnaris. *S.b.* Supinator brevis. *E.o.m.p.* Extensor ossis metacarpi pollicis. *E.c.d.* Extensor communis digitorum. *E.c.d.2p.* Same muscle, second part. *E.i.* Extensor indicis. *In.* Interossei.

Dorsal aspect, shoulder and left fore limb of Crested Agouti.
(Photographed by Dr. Murie.)

The *flexor carpii ulnaris* is but moderately large; it arises from the ulnar aspect of the olecranon, and for a very short distance from the back of the shaft of the ulna. Its tendon, which is broad and flat, commences about halfway down the forearm, and has an insertion into the pisiform bone (fig. 2, *F. c. u.*).

In the Hare and Rabbit this muscle has likewise a slip of origin from the inner condyle in common with the flexor sublimis and profundus.

The Guinea-pig has this muscle relatively larger in the belly than the Agouti; its origin and insertion are similar.

Palmaris brevis (fig. 2, *P. b.*). This muscle, so diminutive in Man and the higher Quadrumana, is in *Dasyprocta cristata* very remarkable by reason of its great strength, and also from there being a very large palmar ossicle so developed as almost to divide it into two portions. The muscular fibres stretch across, taking origin from the first and the fifth digits for the whole length of the metacarpals.

The ossicle (fig. 2, *P. o.*) is nearly as long as the rather diminutive pollex, its proximal attachment being to the trapezium and base of the pollex; it looks, in fact, like an extra digit laid obliquely across the palm. The distal extremity reaches to the middle of the palm, but points towards the fifth digit; it terminates anteriorly in a somewhat sharp-pointed cartilaginous apex, its base alone being osseous.

In the Rabbit there is a double palmar cartilage, approaching in shape to the ossicle in the Agouti, not attached to the sides of the palm by muscular fibre as in Agouti, but only by a tendinous fascia.

In the Hare we find no ossicle or cartilage, but only a strong fascia.

In the Guinea-pig there is a palmar ossicle very nearly corresponding to that described in the Agouti, but the muscular fibres on either side are much paler and fewer in number.

Under the head of *flexor brevis manus* we may mention a small muscular mass superficial to the flexor tendons. The median nerve distributed to the palmar surface of the manus is closely embraced and surrounded by this muscle, which arises from the surface of the deep tendons on either side of the middle line, and has an apparent attachment or insertion into the proximal end of the fifth digit.

This muscle evidently agrees more or less with what we found in the Hyrax*—with this difference, however, that in the latter it ended in three tendons.

What Prof. Huxley has described† as a separate belly of muscle proceeding from the tendons of the flexor sublimis in the Rabbit may be the representative of this muscle, with but a single tendon, going to the fifth digit.

In the Guinea-pig we failed to detect any such structure.

In the Hare this muscle is wanting.

All that we noticed as representing the *Palmaris longus* was a small slip adherent upon the voluminous flexor sublimis. This slip arises from the internal condyle, and seems to be continued into the palm of the hand by the superficial fascia.

There is a similar diminutive tendon in the Rabbit; but in the

* P. Z. S. 1865, p. 341.

† Hunterian Lectures, 1865.

Guinea-pig dissected, an old fleshy male, there was a good-sized fleshy belly to the muscle above the tendon, which latter ended in the thick palmar fascia.

The *flexor sublimis digitorum* is quite a small muscle; it arises fleshy from the internal condyle along with the *flexor profundus digitorum*, lying rather to the ulnar side of this last. At the wrist it divides on the right limb into three rather delicate tendons, which form the perforated tendons of the second, third, and fourth digits; on the left limb it sends a division to the fifth digit (fig. 2, *F. s. d.*).

In the Hare we find it to have three tendons, going to the same digits as in the right limb of *Dasyprocta*; while in the Guinea-pig there are four, as in the left limb of *D. cristata*. The Rabbit, as Prof. Huxley has observed, is peculiar in having the *flexor sublimis* dividing into three tendons, with an extra muscle and fleshy belly to the ulnar side of these tendons, which itself sends a tendon to supply the fifth digit.

Flexor profundus digitorum and *flexor longus pollicis* (fig. 2, *F. p. d.* and *F. l. p.* 1, 2, 3, 4). These are represented by a complex muscle consisting of four parts: the first, and much the larger part, arises from the internal condyle; the second, outer part arises from the shaft of the ulna, its middle three-fourths; the third part, the smallest, arises in common with the first head, but rather deeper; the fourth part (which we take to represent the *flexor longus pollicis*?) arises from the middle three-fourths of the shaft of the radius.

The first, large portion is fleshy down close to the wrist, and so are the second and fourth portions; but the smallest portion becomes tendinous as far up as the middle of the forearm.

The whole of these tendons form an extraordinarily strong, hard, flat, single tendon, filling the entire interspace between the pisiform and scaphoid bones. In the palm of the hand this mass divides into four very broad tendons, inserted respectively into the second, third, fourth, and fifth digits; but no tendon goes to the pollex.

The component parts and distribution of the tendons of this muscle are the same in the Guinea-pig; but in the Hare and Rabbit there is an additional tendon to the thumb; in them also the fourth division, and not the third, is the smallest one.

Lumbricales (fig. 2, *L.*). These seem to be three in number. The *first* (radial) one arises from the radial side of the conjoined mass of tendon of the *flexor profundus* and *longus pollicis*, and also in part from the index tendon; it is inserted into the proximal end of the first phalanx of the second digit. The *second* (middle) one comes from the superficies of the same large conjoined tendon, and partly from the tendons of the index and third digits; it goes to the radial side of the third digit. The *third* (ulnar) one has a similar superficial origin from the conjoined tendon and those of the third and fourth digits; it is inserted into the ulnar side of the proximal phalanx of the third digit.

In the Rabbit, Hare, and Guinea-pig there are likewise three lumbrical muscles. Each of these is given off from, and attached to, the radial sides of the third, fourth, and fifth digits.

The *pronator quadratus* is very extensive, having attachments to the shaft of the radius and ulna for nearly their whole length, and not for half only as Meckel says*. But at the same time he also states that it is found in some other Rodents in the same condition in which we find it in *Dasyprocta cristata*.

In the Guinea-pig, Hare, and Rabbit this muscle is very small, from the approximation of the bones.

The *extensor carpii radialis longior* arises from the humerus above the external condyle; its fleshy belly extends about halfway down the forearm, and ends in a tendon which is inserted into the proximal end of the metacarpal of the index (fig. 3, *E. c. r. l.* and *b.*).

There is no difference in the Guinea-pig, Hare, and Rabbit.

The *extensor carpii radialis brevior* arises beneath the last, and is inserted into the radial side of the metacarpal bone of the third digit (fig. 3, *E. c. r. l.* and *b.*).

The same in the Guinea-pig and Hare; the muscular bellies in all are very closely applied.

The *extensor communis digitorum* has origin from the external condyle, the muscle being strongly tendinous beneath. Passing downwards it divides into three separated tendons, which are respectively inserted into the second, third, and fourth digits. There is a second part, which gives rise on the ulnar side to a much more delicate tendon, which passes down beneath the tendon of the other part, and, dividing, goes to the third and fifth digits.

Meckel † remarks that in the Marmot there are two extra extensor muscles which supply the third and fourth digits.

In the Guinea-pig it is as in the Agouti, except that the tendons of the larger part are inserted into the third, fourth, and fifth digits; while the smaller part sends two tendons to the index and third digits respectively.

In the Hare this muscle sends four tendons—namely, to the index and the three outermost digits; that going to the fifth digit forms a muscular belly rather distinct from the rest, and which appears to represent the smaller part above described in the Agouti and Guinea-pig.

The *extensor carpii ulnaris* springs from the external condyle and the contiguous part of the ulna; its insertion is into the base of the fifth metacarpal bone (fig. 3, *E. c. u.*).

Alike in the Guinea-pig and the Hare.

Extensor ossis metacarpii pollicis. This is a very large and strong muscle, with an exceedingly broad tendon. It arises from the contiguous surfaces of the radius and ulna, and is inserted into the base of the metacarpal bone of the pollex (figs. 2 & 3, *E. o. m. p.*).

In the Guinea-pig it is similar, except that its tendon (the pollex being absent) runs on to the base of the metacarpal of the index, though mainly inserted into the rudimentary trapezium.

In the Hare, as in the Agouti, the tendon goes to the metacarpal bone of pollex.

Both the *extensor primi internodii* and *extensor secundi internodii pollicis* are absent in the Crested Agouti and in the Guinea-pig.

* *Loc. cit.* p. 302.

† *Loc. cit.* p. 322.

The extensor primi internodii pollicis is also absent in the Hare and Rabbit; but the extensor secundi internodii, Prof. Huxley* says, is, together with the extensor indicis, represented by one muscle. However this may be, in the Hare an extraordinarily small muscle arises from the ulna, and it sends an extremely delicate tendon to the second phalanx of the pollex; on one side it also sends a very delicate slip to the index.

The *extensor minimi digiti* comes from the external condyle and the upper half of the outer border of the ulna; its strong tendon divides into two, these going respectively to the fourth and fifth digits (figs. 2 & 3, *E. m. d.*).

It is the same in the Guinea-pig.

According to Prof. Huxley† this muscle in the Rabbit supplies three digits, and thus in a manner forms a double set of extensors. In the Rabbit dissected by ourselves there are only two tendons given off from the extensor minimi digiti, which go to the fourth and fifth digits, that to the fourth coming chiefly from the external condyle.

In the Hare this muscle appears to be almost entirely double: the superior belly, which goes up as high as the condyle, supplies the fourth digit; the deeper belly, which does not reach the condyle, supplies the tendon of the fifth digit. The two tendons cross.

The *extensor indicis* is a very small muscle, arising from the middle of the ulna, interosseous membrane, and opposite part of the radius; its tendon is inserted into the proximal phalanx of the index (fig. 3, *E. i.*).

In the Guinea-pig it arises from the ulna, outside the extensor ossis metacarpi pollicis, and is inserted into the same part as above.

In the Hare it is absent, unless, as Professor Huxley suggests, it is represented by the extensor secundi internodii pollicis.

Muscles of the Hind Limb.

Gluteus maximus. We found a difficulty in assigning exact limits to this muscle, as what may be considered the tensor vaginæ femoris is for a considerable distance inseparably united with it, while posteriorly the gluteus maximus is in close relation with a portion of the biceps.

It arises by aponeurosis from the spines of the last lumbar and all the sacral vertebræ, and by muscular fibre from the anterior spine of the ilium and from the surface of the posterior border of the gluteus medius.

This extensive sheet is more or less divisible into two portions, the anterior of which probably represents the tensor vaginæ femoris, and it is inserted by aponeurosis immediately superficial to the outer end of what we take to be the sartorius. The posterior portion is inserted exclusively into the outside of the shaft of the femur, by strong tendinous fibres, especially into the prominence below the third trochanter‡ (figs. 4 & 5, *T. v. f.* and *G. max.*).

* Hunterian Course of Lectures, College of Surgeons, 1865.

† Lectures above cited.

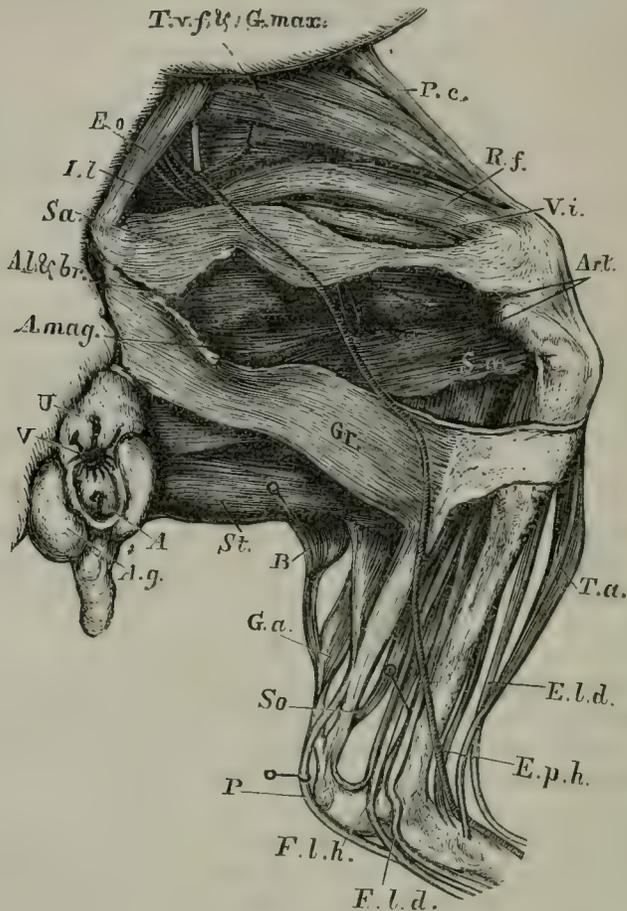
‡ As Meckel observes, vol. vi. p. 355.

In the Guinea-pig the arrangement is similar, but the prominence on the femur is less marked.

In the Hare it is inserted into the third trochanter.

The *gluteus medius* is an enormous mass arising by muscular fibres from the anterior spine and crest of the ilium, and from its inferior (anterior) margin as far as the scansorius, also from the anterior

Fig. 4.



Left groin and hind leg to ankle of Crested Agouti.
(From a photograph by Dr. Murie.)

T. v. f. and *G. max.* Tensor vaginae femoris and gluteus maximus. *P. c.* Inserion of panniculus carnosus. *E. o.* External oblique. *I. l.* Iliacus. *R. f.* Rectus femoris. *V. i.* Vastus internus. *Sa.* Sartorius. *A. mag.* Adductor magnus. *A. l. and br.* Adductor longus and brevis. *Sm.* Semimembranosus. *Gr.* Gracilis. *St.* Semitendinosus. *B.* Biceps. *Ga.* Gastrocnemius. *So.* Soleus. *P.* Plantaris. *F. l. h.* Flexor longus hallucis. *F. l. d.* Flexor longus digitorum. *T. a.* Tibialis anticus. *E. l. d.* Extensor longus digitorum. *E. p. h.* Extensor proprius hallucis. *Art.* Superficial and deep femoral arteries. *U.* Urethra. *V.* Vagina. *A.* Anus. *A. g.* Anal gland of right side.

sacral vertebræ. It is inserted by one large tendon into the summit of the peroneal trochanter, and by several smaller ones (slight fasciæ intervening) into the outer and posterior surface of the same trochanter (fig. 5, *G. med.*).

It is precisely similar in the Guinea-pig, even to the several pectinated-like tendons of insertion on the peroneal trochanter. In the Rabbit and Hare it is very thin, but the insertion presents more of a single flat tendon.

We found the *gluteus minimus* to be a very small muscle arising from the concave outer surface of the ilium, and having an insertion by a single strong tendon into the extremity of the peroneal trochanter (fig. 5, *G. min.*). This also answers to what is present in the Guinea-pig. The Hare and Rabbit, however, differ, as in them this muscle is largest, and in great measure covers the scansorius.

Scansorius. This muscle is present in *Dasyprocta cristata*, and is about the same size as the *gluteus minimus*, but is hidden by the *gluteus medius*. It arises by muscular fibres from the whole inferior (anterior) margin of the ilium, and is inserted by a very strong tendon, which passes down underneath the upper extremity of the *vastus externus* into the anterior margin of the greater (peroneal) trochanter (fig. 5, *Sc.*).

This muscle is relatively smaller in the Rabbit, Hare, and Guinea-pig.

The *pyriformis* has origin from the ventral surface of the sacrum, and, passing out superficial to the sciatic nerve, is inserted within the peroneal trochanter towards its summit. The anterior border of the muscle is intimately connected with the posterior border of the *gluteus minimus*.

In the Guinea-pig it is also connected with the scansorius.

The *obturator internus* is applied to the inner surface of the obturator foramen or fascia thereon, and, turning outwards, its strong tendon has an insertion into the trochanteric fossa immediately external to the *quadratus femoris*.

The *gemelli muscles* adhere closely to each other. One arises a little above the spine of the ischium; the other takes origin between that spine and the tuberosity of the ischium. They are inserted together into the trochanteric fossa, along with the *obturator internus*.

These muscles and the *obturator internus* Meckel* mentions as existing ordinarily in Rodents.

Quadratus femoris. This is but a very small muscle, with an attachment between the tuberosity of the ischium and the acetabulum; its insertion is into the trochanteric fossa (fig. 5, *Q. f.*).

The *obturator externus* is large and fleshy, occupying the front of the pelvis as high as the upper margin of the obturator foramen; it proceeds into the trochanteric fossa.

The above five muscles present no important difference as to attachments in the other Rodents examined.

The *biceps*, strictly speaking, consists of two parts, although externally they are indistinguishable, and indeed they are for the most

* *Op. cit.* vol. vi. p. 364.

part very intimately united (figs. 4 & 5, *B.*). The anterior portion arises from the sacral vertebræ, and is strongly muscular at its origin; superficially fibres pass on to the outside of the heads of the tibia and fibula, mingling with those of the broader second portion; but deeply this portion of the muscle terminates in a flat, thin and narrow tendon, which is inserted into the outer side of the patella.

The second portion originates by a very strong but short tendon from the outer side of the tuberosity of the ischium, and, expanding into a broad sheet of muscle, is inserted by aponeurosis into the outside of the leg down to the ankle.

It thus seems that the tensor vaginæ femoris, gluteus maximus, and the two parts of the biceps form together an almost continuous investment or sheet of muscle from the crest of the ilium to the caudal vertebræ and ischium, and from the patella to the ankle: together most powerfully flexing the limb.

In the Guinea-pig the arrangement is very similar, except that the two parts are rather more distinct and that the anterior portion is narrower.

In the Hare the two parts are very distinct, and the tendon of the anterior portion to the patella is much stronger and longer. The posterior portion presents no essential difference in attachments; but the muscular sheet, which in the two former animals extends to the ankle, in the Hare is much more aponeurotic.

The *semimembranosus*, unlike the condition of this muscle in Hyrax*, arises singly; but it agrees in being an uncommonly large muscle. It has origin from the whole of the triangular space (or tuberosity) of the ischium, and is inserted broadly from the inner condyle of the femur to the head of the tibia (fig. 4, *S. m.*). A slight dissection, moreover, shows a division at its insertion into three portions, as in Man. The middle one is more or less formed by a distinct round and strong tendon, which springs from a separate belly of muscle more or less surrounded and enclosed by the rest of the *semimembranosus*.

In the Guinea-pig, Hare, and Rabbit this separation, as it were, into two muscles is more strongly marked; in the two last the fleshy insertion of the largest portion into the tibia is not so extensive as in the Agouti and Guinea-pig. It is relatively very large in the latter.

Semitendinosus. Strong and bulky, it has two origins. The first arises by fleshy fibres from the caudal vertebræ as far back as opposite the tuberosity of the ischium, the fibres adhering to the deep fascia in the interspace between these two points.

A second head, much smaller than the preceding, but also muscular, comes from the tuberosity of the ischium, and immediately joins the larger head.

The anterior border of the first head is closely adherent to the posterior border of the gluteus maximus. Insertion: by a broad translucent strong sheet of tendon the whole length of the shaft of the tibia to os calcis (figs. 4 & 5, *St.*), as mentioned on the opposite page in the description of the *gracilis*.

* P. Z. S. 1865, p. 347.

This muscle is similarly arranged in the Hare and Rabbit, but has the fascia which goes to the tendo Achillis relatively weaker than in the Crested Agouti and the Guinea-pig.

Sartorius (fig. 4, *Sa.*). This muscle is very broad and fleshy. It is entirely different in its origin to that of Man, and seems to have for its office the rotation of the limb *inwards*. Its position (at the origin) somewhat resembles that of the pectineus muscle in the human subject. It arises from the ilio-pectineal eminence and the symphysis pubis, as far as its middle, a portion of the gracilis lying superficial to the posterior part of the origin of the sartorius. It is inserted by a tendinous fascia between the superior point of the elongated patella and the head of the tibia.

This tendinous fascia is in close relation at its insertion with the semimembranosus. A very long superficial femoral artery (fig. 4, *Art.*) crosses this muscle about its middle.

In the Guinea-pig this muscle has nearly the same position, relation, and attachments as in *D. cristata*. It differs considerably in the Rabbit and Hare. In the former of these two, besides having an origin from the ilio-pectineal eminence and slightly from the symphysis, it has another from the outer side of the anterior superior crest of the ilium, these different origins being connected by a strong fascia. In the Hare the main origin is from the anterior superior spine of the ilium, and but slightly from the ilio-pectineal eminence.

The *gracilis* is very powerful, from its extensive insertion, although it is but a moderately thick muscle. It arises (fleshy) from fully the posterior half of the symphysis, and is inserted by a fascia from the head of the tibia as far down as the ankle, the sheet of fascia joining that of the semitendinosus. The two together spread out between the internal malleolus and the tuberosity of the os calcis (fig. 4, *Gr.*).

This has a similar origin and insertion in the Rabbit, Hare, and Guinea-pig; but the fascia which proceeds down the leg is relatively weaker in the two first-mentioned.

The *pectineus* arises from the ilio-pectineal eminence and the adjoining brim of the pelvis, covered by the sartorius; its insertion is into the shaft of the femur, immediately beneath the insertion of the iliacus.

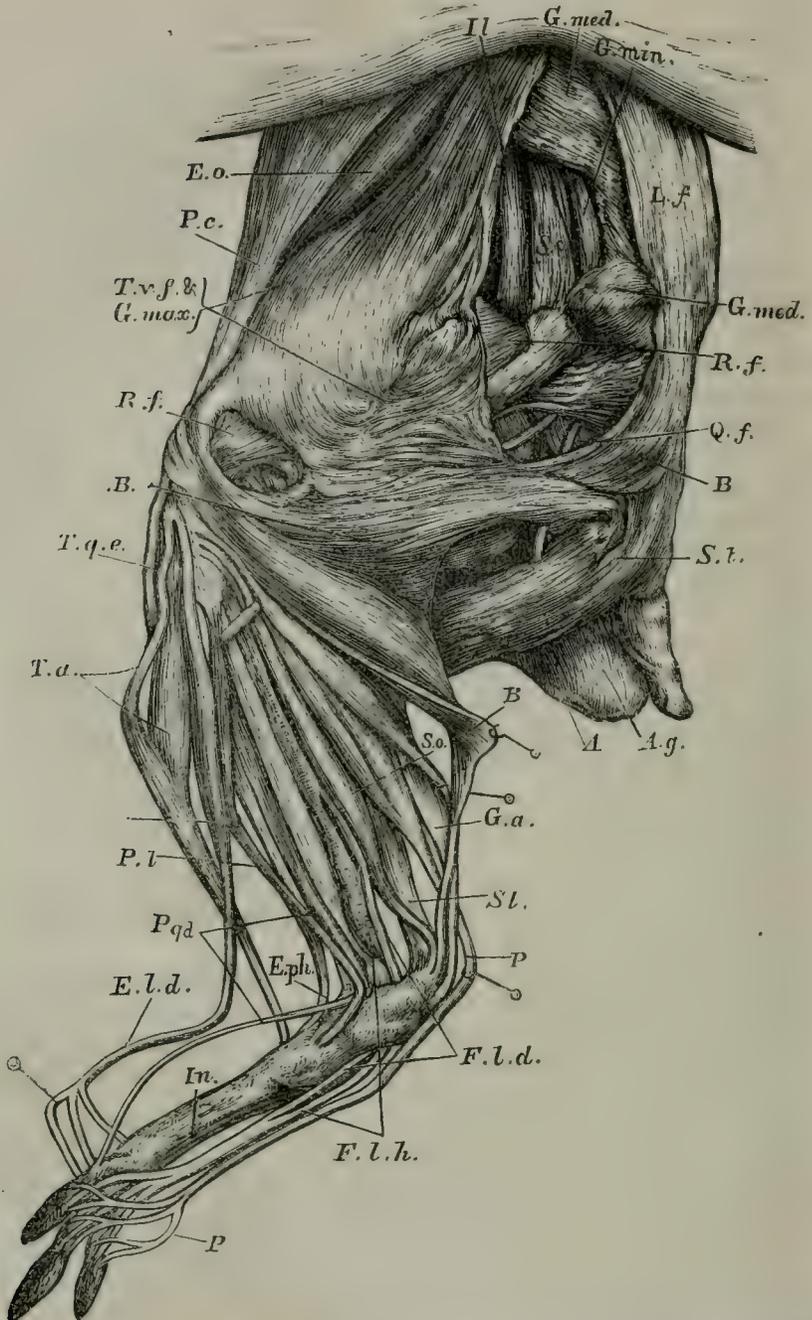
In the Hare and Rabbit it can hardly be said to be covered by the sartorius, and it is scarcely so in the Guinea-pig.

The *vastus externus* is very large, and with an origin from the upper half of the shaft of the femur as high as the rudimentary third trochanter; the insertion, which is by muscle, is on the outside of the patella, into the tendon common to the extensors of the thigh.

The *vastus internus* is small, and has a similar origin and insertion to the preceding, but on the inner side of the shaft of the femur. It arises as high as the tibial trochanter (fig. 4, *V. i.*). The vasti are similar in the Guinea-pig and Hare.

The *rectus femoris* is equal to the vasti muscles in thickness and bulk. It has the common origin by a double tendon, but a little muscular fibre extends beneath the lowest one; insertion as usual. In the Guinea-pig there is no marked difference.

Fig. 5.



Outer view of the left hind limb of the Crested Agouti, with the various muscles partially drawn aside to display the deeper layers. (Photographed from the dissection by Dr. Murie.)

P. c. Panniculus carnosus; its posterior fascia is partly removed to show portion of *E. o.*, the external oblique. *L. f.* Portion of lumbar fascia. *G. med.*

Gluteus medius. *G. min.* Gluteus minimus. *Il.* Iliacus. *Sc.* Scansorius. *R. f.* Rectus femoris. *T. v. f. & G. max.* Conjoined tensor vaginae femoris and gluteus maximus; the tendinous part continuous with the lumbar fascia is removed to exhibit the deeper muscles. *B.* Biceps. *Q. f.* Quadratus femoris. *S. t.* Semitendinosus; and lower down the same letters apply to its fascia continued towards the ankle. *T. q. e.* Tendon of combined quadriceps extensor going to patella. *T. a.* Tibialis anticus. *P. l.* Peroneus longus. *P. q. d.* Peroneus quarti digiti. *E. l. d.* Extensor longus digitorum. *E. p. h.* Extensor proprius hallucis. *In.* Interossei. *So.* Soleus. *Ga.* Gastrocnemius. *P.* Plantaris. *F. l. d.* Flexor longus digitorum. *F. l. h.* Flexor longus hallucis. *A.* Anal opening. *A. g.* Anal gland.

In the Hare and Rabbit the rectus is much less in size than the vastus externus, but about equal to the vastus internus.

The *crureus* covers the front of the femur as high as the surgical neck. This muscle is very large and most unusually distinct in all the four Rodents.

What we take to be the *adductor magnus*, by reason of its insertion, is a long and narrow muscle, in appearance not unlike an adductor longus as it exists in Man and some Quadrumana (fig. 4, *A. mag.*). It has origin by a narrow strongish tendon from the ischium towards the posterior extremity of the pubic symphysis, and has an insertion by tendon into the top of the lowest third of the shaft of the femur at its back.

The deep femoral artery passes over this muscle; so that no Hunter's canal exists, except what is formed by the fibres of the semi-membranosus.

The Guinea-pig agrees most nearly with the Agouti. In the Rabbit and Hare the adductor magnus is broader and more fleshy, it has also a larger insertion into the shaft of the femur.

Adductor longus and *brevis* (fig. 4, *A. l. & br.*). These, at their origin from the symphysis pubis and brim of pelvis, form but one mass, and so proceed to the femur. At their insertion into the back of the bone, extending from its head to about the middle of the shaft, there is a very slight interval, indicative of separation; this partial division is denoted by glistening tendinous fibres of the upper and larger portion of the muscle.

In the Hare and Rabbit these muscles are equally fused together; but, on the other hand, they are more separated in the Guinea-pig.

Tibialis anticus. Instead of its having, as is so often the case, a single origin and double insertion, this remarkable muscle has a double origin and a single insertion. The greater part arises by muscular fibres from the outer side of the upper fifth of the tibia and the head of the fibula. The smaller division arises by a very long and strong tendon from the front of the femur, on the outer condyle, just outside the rotular surface.

The two portions become intimately united a little below the middle of the tibia, and are inserted by a quite single but exceedingly strong tendon into the proximal end of the metacarpal bone of the index of the foot, *i. e.* the inner toe (figs. 4 & 5, *T. a.*).

It has the same peculiarities in the Guinea-pig*; but in the Hare

* In one specimen of the Guinea-pig this muscle had but a single head.

and Rabbit (according to our dissections) this muscle has but a single head of origin, which arises from the upper portion of the tibia, thus differing widely from the condition present in the Agouti and Guinea-pig.

Meckel* says that in the Porcupine it is united with the extensor proprius hallucis; but in our specimen that muscle existed in addition to the double tibialis anticus. He further observes† that in the Marmot the tibialis anticus is divided into a large tibial and a small peroneal head; but there is no mention of any origin from the femur.

The *extensor longus digitorum* arises by a very broad tendon from the femur, just external to the long tendon above-mentioned of the tibialis anticus. Proceeding downwards, it divides into three tendons, which are respectively inserted into the second phalanges of the only digits present, *i. e.* second, third, and fourth (figs. 4 & 5, *E. l. d.*).

The Guinea-pig appears to have a similar disposition in this muscle, although in one foot we noticed the inner tendon bifurcating, the double tendon going to the same digit. In the Hare and the Rabbit it arises by a long, *round* (instead of flattened), strong tendon from the front of the outer condyle of the femur; this tendon then runs through that groove which the femoral tendon of the tibialis anticus traverses in the Agouti. It divides into four tendons, which are inserted into the four digits; that to the index or inner toe sends a branch to the third digit.

The *extensor proprius hallucis* is rather a delicate muscle (fig. 5, *E. p. h.*). It arises from the upper two-thirds of the fibula and interosseous membrane, gives origin to a slender tendon, which ends in an insertion into the second phalanx of the index. The same in Guinea-pig.

This muscle is absent in the Hare and Rabbit.

The muscular fibres of the *extensor brevis digitorum* extend forwards over about the posterior third of the metatarsal bones, arising also from the dorsum of the tarsus above the cuboid and os calcis. These give rise to two tendons, which are inserted respectively into the two inner toes, namely the index and third digits, joining at the side the tendons of the long extensors.

It is the same in the Guinea-pig; but this muscle is wanting in the Hare and Rabbit.

Peroneus longus. This is a small muscle arising, as in *Hyrax*‡, from the head of the fibula, on each side of the lateral ligament; so that at first sight it appears as if it arose by a tendon from the femur, like the extensor longus digitorum. Passing down behind the external malleolus it sinks beneath the foot, passing through the groove on the outer side of the cuboid, crosses the sole deeply (hidden by

* *Loc. cit.* p. 410.

† *Ibid.* p. 411.

‡ See P. Z. S. 1865, p. 348, and fig. 12. p. 349, where, by an error of the artist (pardonable by reason of the very deceptive appearance of the external lateral ligament), the peroneus longus has been figured as if arising by tendon from the femur, which, as may be seen in the description, it does not; while the extensor longus digitorum, which really does arise from the femur, is represented as coming only from the tibia.

the distal end of the elongated plantar surface of the naviculare), and is inserted into the proximal end of the metatarsal of the index (fig. 5, *P. l.*).

In the Guinea-pig, Hare, and Rabbit it is similar; but in one specimen of the Guinea-pig the tendon passed altogether in front of the malleolus.

The *peroneus quarti digiti* (fig. 5, *P. q. d.*) is a much longer and rather larger muscle than the preceding; it arises by muscular fibre from the outer side of the fibula, its whole length almost to the malleolus. Its tendon goes beneath that of the *peroneus longus*, and is inserted into the proximal phalanx of the outermost, *i. e.* fourth digit.

In the Guinea-pig, except that the origin is not quite so extensive, it is similar; but in the Hare and Rabbit its fleshy origin is much shorter, it still arises, however, from the whole length of the much shorter fibula. It is inserted also into the proximal phalanx of the fourth digit.

In the Crested Agouti and Guinea-pig there is no *peroneus quinti digiti* present. In this respect they differ from the Common Rabbit, where, according to Prof. Huxley* (whose observation we have verified), there are four peronei muscles, which he suggests may be, along with the *tibialis secundi*, remnants of another set of extensors.

In the Hare, where there are also four peronei muscles, the *peroneus quinti digiti* arises from the head of the fibula above the origin of the *peroneus quarti digiti*. Passing behind the malleolus and beneath the tendon of the *peroneus longus*, it is inserted into the proximal phalanx of the fifth digit.

The *peroneus brevis* is absent in *Dasyprocta cristata*. In the Hare and Guinea-pig it is present, and arises from the upper end of the anterior surfaces of both the tibia and the fibula, being inserted into the outer side of the proximal end of the outermost metatarsal (that is to say, the fifth) in the Hare; but in the Guinea-pig with a sesamoid bone beneath the proximal end of the outermost (*i. e.* fourth) metatarsal.

The *peroneus tertius* is absent in all the four animals compared; but in one specimen of the Guinea-pig the *peroneus longus* seemed, as has been said, to assume to a certain extent the appearance of a *peroneus tertius*, inasmuch as it *passed in front* of the malleolus.

The *gastrocnemius* is very large, and has much the appearance of the same muscle in man. It arises as usual and partly from two sesamoid bones, that head which springs from the internal condyle being slightly the larger of the two; insertion the tuberosity of the os calcis (figs. 4 & 5, *Ga.*).

The Guinea-pig has also sesamoid bones to this muscle; differing in this respect from the Hare, in which we have found them absent. In the latter animal the tendon of insertion in the os calcis is distinct from that of the soleus.

Plantaris. This arises by a strong tendon from the sesamoid bone of the external condyle, and passing downwards beneath the

* Hunterian Lectures for 1864-65.

gastrocnemius, its tendon becomes superficial to that muscle; wrapping round it, and proceeding beneath the tuberosity of the os calcis, it becomes continuous with the plantar fascia, and forms the perforated tendons of the three digits (figs. 4 & 5, *P.*). In the Rabbit and Hare it terminates in four tendons; but the Guinea-pig has three, as in the Agouti.

Prof. Huxley, in his Hunterian Lecture, 20th March, 1865, said, "The extensor muscles of the leg in the Rabbit are inversely developed; for the flexor brevis is represented by a muscle which arises in the leg—namely the plantaris, which springs, as usual, from the outer condyle, wrapped up in the heads of the gastrocnemius and soleus, and it is relatively immense. It ends in a tendon which spreads on the pulley-like end of the calcaneum, and divides into four perforated tendons, thus replacing the flexor brevis, as in *Dasyus sexcinctus*."

The *soleus* has origin from the external side of the head of the tibia. Its tendon has an insertion in common with the tendo Achillis into the os calcis (figs. 4 & 5, *So.*).

Alike in the Guinea-pig; but in the Hare the tendon of insertion continues perfectly separate from that of the gastrocnemius to the very os calcis itself.

The *popliteus* comes by a strong tendon from the external condyle of the femur. It is inserted as usual, but lower down, occupying as much as two-fifths of the tibia, which it also does in the Guinea-pig, the Hare, and the Rabbit.

The *flexor longus digitorum* is, comparatively speaking, a small muscle, certainly much less in volume than the flexor longus hallucis is in *Hyrax**. It arises by a few delicate fibres from the head of the fibula, but mainly from the back of the tibia, except the part covered by the popliteus. It becomes tendinous superficially above the middle of the leg, and the tendon, as it becomes round in form at the ankle, glides through a groove behind the internal malleolus and joins in the sole of the foot the broader tendon of the flexor longus hallucis; but the tendon of the flexor longus digitorum is seen of itself to form the principal part of the tendon going to the index (figs. 4 & 5, *F. l. d.*). In the Guinea-pig the conditions are the same. In the Hare this muscle is intimately connected with the flexor longus hallucis, both in the fleshy bellies and in the tendons; but it appears to supply mainly the perforating tendons of the index, middle, and fifth digits.

The *flexor longus hallucis*, as in *Hyrax*†, is much larger than the flexor longus digitorum. It has origin from the upper two-thirds of the fibula and the interosseous membrane. Below, it forms a very large tendon, which, passing in a deep groove at the back of the tibia, unites with the preceding muscle, and terminates as the perforating tendons, forming, however, almost exclusively those of the third and fourth digits (figs. 4 & 5, *F. l. h.*).

The same in the Guinea-pig. In the Hare it is, as before said, closely united with the flexor longus digitorum, both in its belly and

* P. Z. S. 1865, p. 350.

† Ibid.

tendon; but the latter forms mainly the perforating tendons of the third and fourth digits, sending small slips, however, to the larger tendons of the flexor longus digitorum going to the index and fifth digits.

Tibialis posticus. This muscle in the Guinea-pig is of fair size, and is inserted into the proximal end of the metatarsal of the index: but in the Agouti it is wonderfully small, consisting of a minute fleshy belly which arises from the back of the tibia, at its upper part; its extremely delicate tendon passes down behind the internal malleolus, and is inserted into the proximal end of the plantar surface of the naviculare.

Prof. Huxley, in his Hunterian Course of Lectures for 1865, said that there is no proper tibialis posticus in the Rabbit; but a muscle arises from the inner and front face of the tibia, and passes through a groove at the inner malleolus, then runs beside the second metatarsal and joins the extensor tendon. For this muscle he proposed the name of *tibialis secundi*.

Our dissection of the Rabbit corroborates his observation, and we have also found a similar arrangement in the Hare. In this last the muscle comes from the inner surface of the tibia, and has fleshy fibres for a third of the length of the shaft of the bone; its tendon, which is flat and closely appressed to the periosteum, is with difficulty distinguishable from that until it reaches the malleolus. Its insertion on one foot was into the distal end of the first metatarsal of the index or innermost digit; but in the other foot the tendon bifurcated opposite the distal end of the inner metatarsal bone, the extra smaller-sized tendon passing to the third metatarsal bone at its distal end.

The *lumbricales* of the hind foot are at most but two in number. One arises between the tendons going to the third and fourth digits, and is inserted into the peroneal side of the third digit. Another muscle arises from the tibial side of the tendon of the third digit; but, as it is inserted into the deep surface of the tendon of the plantar portion of the plantaris muscle, this may very probably represent the accessorius which we found so well marked in the foot of *Hyrax**. In the Guinea-pig the above muscles are two in number. In the Hare there are three lumbricales—one arising from the tendon going to the third digit, the second from the tendon common to the fourth and fifth digits; the third comes from the tendons of the fourth and fifth digits, where these bifurcate.

The *interosseous* muscles occupy only the plantar surface of the hind foot; they are so very large in size as to cover deeply the entire surface of the sole (fig. 5, *In.*); they are true flexors of the three digits. There are also three pairs in the Guinea-pig; these lie so closely appressed as to appear but three single muscles. In the Rabbit, as well as in the Hare, there are four pairs of interossei muscles in each foot, corresponding to the number of the metatarsal bones. They arise in common by a very strong fascia from the tarsus, and are inserted respectively into the sesamoid bones on the

* *Loc. cit.* p. 351, fig. 13, A.

plantar surface of the joints, between the metatarsal bones and the digits.

SUMMARY OF FACTS.

Before concluding our observations on the Crested Agouti, we must express our regret that circumstances occurred which caused us to forego a description of the brain, part of the nervous and the vascular systems, and the muscles of the back and neck.

Of the facts here recorded we may recall, as more or less noteworthy, the unconstricted condition of the stomach of *D. cristata*, the much greater length of its large intestine as compared with that of *D. aguti*, the tendency towards a double apex of the heart, the approximation of the ureters to the fundus of the bladder, and the presence of a superficial long femoral artery.

As regards the comparison instituted between the Crested Agouti, the Guinea-pig, Hare, and Rabbit, we find that the first differs from all the others, and stands alone, in the following particulars:—1, the number and arrangement of the pads of the pes and manus; 2, the great extension of the levator claviculæ; 3, the absence of the rhomboideus capitis; 4, the more extensive insertion into the humerus of the third part of the pectoralis major; 5, the absence of the pectoralis minor; 6, the more distinct separation of the coraco-brachialis into two, and its extension further down the shaft of the humerus; 7, the insertion of the brachialis anticus below the biceps; 8, the presence of a flexor brevis manus; 9, the less marked division of the semimembranosus; 10, the absence of the peroneus brevis.

On the other hand, the Agouti agrees with the Guinea-pig, and differs from the Hare and Rabbit (as far as our observations go) in the subjoined conditions:—1, the presence of the pads beneath the pes and manus; 2, the two fleshy bellies to the digastric; 3, the peculiar scalenus anticus; 4, the single posterior scalenus; 5, the more distinct division of the psoas magnus; 6, the less intimate union of the psoas and iliacus; 7, the large size of the supinator brevis; 8, the remarkable palmar ossicle; 9, the fact that no tendon of the deep flexor goes to the pollex; 10, the great size of the gluteus medius; 11, the gluteus minimus being smaller than the gluteus medius; 12, the less strong and distinct tendon of insertion of the biceps femoris; 13, the larger rectus femoris; 14, the smaller and less fleshy adductor magnus; 15, the double head of the tibialis anticus; 16, the presence of an extensor hallucis; 17, the absence of a tibialis secundi; 18, the presence of an extensor brevis digitorum pedis; 19, the absence of a peroneus quinti digiti; 20, the presence of sesamoids at the origin of the gastrocnemius; 21, the union of the tendon of the last with the soleus; 22, the separate conditions of the bellies of the flexor longus digitorum and flexor longus hallucis; 23, the presence of a tibialis posticus.

How far these myological distinctions may extend, whether any are due to mere individual variation, or whether some may serve to characterize the respective genera or even families, more extended observations can alone determine. It is difficult, however, not to

incline to the belief that some of these differences may be coextensive with the families *Hystrioidæ* and *Leporidae* respectively; but even should they prove to be only distinctive marks of subordinate groups, these observations will not be destitute of some slight zoological and classificatory value, in addition to whatsoever they may express of anatomical interest.

November 22, 1866.

Dr. J. E. Gray, F.R.S., V.P., in the Chair.

The Secretary read a letter from Mr. A. Grote of Calcutta, F.Z.S., stating that the Porcupine transmitted to the Society on April 18th, 1866, and subsequently described by Dr. Gray (P. Z. S. 1866, p. 306, Pl. XXXI.) as *Acanthochoerus grotei*, had been received from Malacca. It had been procured for him by Capt. Maddison, Commander of one of the Straits Mail Steamers, from the jungles behind Malacca. Mr. Grote promised to endeavour to obtain other examples of this animal for the Society.

Mr. Scater exhibited a young specimen of *Chauna derbiana** in spirits, which had been forwarded to him by Dr. W. Huggins of San Fernando, Trinidad, C.M.Z.S., with the following note:—

“This is a species of Wader, apparently a young bird; the people here call it ‘*Wild Turkey*.’ These birds are very rare here, being found now and then in a large lagoon. I saw one some forty years ago, a large one, and have never met with one since until now, though I have shot in a great many places over the island. Three young birds of this species were brought to a friend of mine some little time ago, one of which I now send you.”

Mr. Scater remarked that the only species of the group of *Palamedeidae* given as occurring in Trinidad in M. Léotaud’s recently published work on the ornithology of that island† was *Palamedea cornuta* (p. 488), and that he strongly suspected that the so-called *Palamedea cornuta* of Trinidad would turn out to be the present species, which was now ascertained to extend its range from the littoral of New Granada and Venezuela into that island.

The following extract from a letter addressed to the Secretary by Dr. G. Bennett, F.Z.S., and dated Sydney, July 20th, 1866, was read:—

“Respecting the Whistling Ducks in the Botanic Gardens here, I observe in the ‘*Proceedings*’ for March last, just received (p. 149),

* See P. Z. S. 1866, p. 369.

† Oiseaux de l’isle de Trinidad, par A. Léotaud. Port d’Espagne, 1866.

you quote my letter ; but the fact is still more extraordinary, since I find, now that the birds are in full plumage, that instead of *Dendrocygna vagans*, they are of a species never, I believe, before seen so far south (and these were captured near Port Macquarie), viz. the *D. (Leptotarsis) eytoni*. They are now in fine plumage in our Aviary in the Gardens, and I hope Broughton will be able to take them to you next time he leaves for England."

The Secretary called the attention of the Meeting to several additions to the Society's Menagerie which had been made during the past summer, amongst which were particularly noticed as being of special interest the following :—

1. Two Cocks of the Rock (*Rupicola crocea*) from Demerara, presented July 4th by J. Lucie Smith, Esq., R. W. I. M. S. S. 'Tamar.'

2. Two males of the Pallas's Eared Pheasant, *Crossoptilon auritum*, presented July 13th by Dudley E. Saurin, Esq., recently attached to the British Embassy at Pekin. Mr. Saurin had unfortunately lost the females of this remarkable species of Pheasant during the journey home ; but the Society had more recently acquired two examples believed to be of the latter sex from the Jardin d'Acclimatation of Paris.

3. Six Australian Wild Ducks (*Anas superciliosa*, Gm.), two specimens of an Australian *Artamus* (*A. superciliosus*), and a Straw-necked Ibis (*Geronticus spinicollis*), presented by the Acclimatation Society of Melbourne, July 20th, 1866.

4. Three Ruddy Flamingos (*Phenicopterus ruber*) from North America, purchased August 3rd, 1866 ; not previously exhibited in the Society's Menagerie.

5. A White-necked Stork (*Ciconia leucocephala*, Gm.), presented by Mrs. D. Campbell, August 10th, from Western Africa ; believed not to have been previously exhibited in the Society's Gardens.

6. A pair of the Markhore Goat (*Capra megaceros*), presented to the Menagerie by Major F. R. Pollock, and received August 24th last. The male had been obtained for Major Pollock by Lieut. Cavagnari from the hills north of Dera Ismail Khan, in February 1863, when about four or five days old. The female had been obtained in the same locality in May 1864, when it was apparently about a month old.

7. A Blue-cheeked Barbet (*Megalæma asiatica*) and four specimens of the Himalayan *Leiothrix lutea* imported from Calcutta, both species being new to the Society's collection.

8. A fine adult male example of the Jew-Monkey (*Pithecia satanas*), purchased October 15th.

9. A Formosan Bear, purchased for the Society by Mr. R. Swinhoe, F. Z. S., as typical of his species *Ursus formosanus* (Swinhoe, P. Z. S. 1864, p. 380, and Gray, *ibid.* p. 689), and received October 25th. As far as could be told by external appearance of the living animal, this specimen appeared quite identical with the Himalayan Bear (*Ursus tibetanus*, F. Cuv.), of which two examples were in the Society's Menagerie.

10. Three Formosan Pigs (*Sus taivanus*, Swinhoe, P. Z. S. 1864, p. 383), received along with the preceding. Two of these specimens were of uniform brown coloration, as described by Mr. Swinhoe, *l. c.* The third bore a conspicuous white patch, and gave one the idea of a domesticated animal.

A communication was read from Dr. H. Schlegel, F.M.Z.S., containing the following list of the most remarkable species of Mammals and Birds collected by Messrs. Fr. Pollen and D. C. van Dam in Madagascar, and about to be described in a work entitled 'Recherches sur la Faune de Madagascar et de ses dépendances, par MM. H. Schlegel et Fr. Pollen':—

MAMMALS.

LEMUR MACACO (male). *Lemur leucomystax*, Bartlett (female). See Schlegel, Contrib. in Ned. Tydschrift voor Dierkunde, iii. p. 74. Only observed on the north-west coast of Madagascar. A series of both sexes, young and adult ones, obtained.

LEMUR MAYOTTENSIS, Schlegel, Contrib. *l. c.* Only observed in the Isle of Mayotte.

LEMUR CATTÀ. Obtained from St. Augustin's Bay. This species is restricted to the southern part of Madagascar.

HAPALEMUR GRISEUS sive OLIVACEUS, Geoffroy. A series obtained at the north-west coast.

LEPILEMUR MUSTELINUS, Geoffroy. Several specimens obtained at the north-west coast.

CHEIROGALEUS FURCIFER, Gervais. A series obtained at the north-west coast.

MICROCEBUS COQUERELI, Pollen (nov. spec.). North-west coast.

VIVERRA SCHLEGELII, Pollen; Schlegel, Contrib. *l. c.* Mayotte and north-west coast of Madagascar.

GALIDICTIS STRIATA, Geoffroy. Eastern coast, collected by Mr. Lantz.

CRYPTOPROCTA FEROX, Bennett. North-west coast of Madagascar. A very old male obtained. This is the true *Fossa* of the inhabitants of this coast, the *Viverræ* being comprised by them under the name of 'Sabady.' This form is a modification of the genus *Felis*. Body and skull more elongated; feet shorter; claws half retractile; grinders in the upper jaw exactly as in the Cats; in the under jaw one grinder more (sc. 4), a circumstance sometimes occurring also in Cats (one of our skulls of *Felis tigrina* presenting at the left side of the under jaw a fourth, although very small, posterior grinder).

PTEROPUS EDWARDSII. Madagascar and Mayotte.

PTEROPUS DUPRÉANUS, n. sp., Pollen. Allied to *P. stramineus*

from Sennaar and Senegambia; but tail longer (7 lines), and the general colour of fur greyish yellow.

SOREX. Two species. Mayotte and Madagascar.

CENTETES ECAUDATUS. Madagascar; introduced into Mayotte, Réunion, and Mauritius.

ERICULUS SPINOSUS. Tintingue, collected by Mr. Lantz.

MUS ALEXANDRINUS. North-west coast.

BIRDS.

FALCO COMMUNIS. *Falco radama*, Verreaux, is nothing but the common dark variety of this species.

FALCO NEWTONI, Gurney.

NISUS FRANCESII. Old males often with indistinct rust-coloured bands on the underside. *Nisus madagascariensis* is founded upon the females and young of this species.

NISUS LANTZII, Verreaux. Represents *Nisus fringillarius*, to which it is closely allied in its form, long and slender toes, and small head; colours darker; tail with more numerous (ten) dark bands. An adult female collected.

NISUS MORELII. *Nisuoïdes morelii*, Pollen, Bullet. d. Sciences de l'île de la Réunion, année 1866. A rather small species, and well defined by the quite straight margins of its upper mandible.

NISUS BRUTUS, Pollen, in Schlegel, Contrib. *l. c.* From Mayotte; nowhere else observed.

CIRCUS MAILLARDII. From la Réunion. Dr. Hartlaub's description of *Circus melanoleucus* is taken from a specimen of *Circus maillardii*. *Circus melanoleucus* has not yet been observed in Madagascar and its dependencies, and must be rejected as belonging to the fauna of this region.

HALIAËTUS VOCIFEROIDES. Distinct from *H. vocifer*; but not in the character taken from the colour of the tail.

BUTEO BRACHYPTERUS. A considerable series collected, even young ones in down-plumage. We must reject as a Madagascar species the *Buteo tachardus* of Hartlaub, his specimens being identical with *B. brachypterus*.

BAZA MADAGASCARIENSIS. *Pernis madagascariensis*, Smith? A very interesting species, coloured like a *Buteo*; very different from *Avicida cuculoides*, which, on the contrary, is identical with *A. verreauxii* or *A. cafer*.

MILVUS ÆGYPTIUS s. PARASITICUS. Common in Mayotte and at the north-western coast of Madagascar.

GYMNOGENYS RADIATUS. The Madagascar specimens are not specifically distinct from those of Africa. See Schlegel, Muséum, Astures, p. 54.

NOCTUA POLLENI, Schlegel, Contrib. *l. c.* Madagascar. Allied to *Noctua sonneratii*, but with spotted primary quills and a dark band crossing the under part of throat.

STRIX FLAMMEA. Four specimens collected. A little larger than the European specimens. Colouring pale.

SCOPS MENADENSIS, of which *Scops rutilus*, Pucheran, is a red variety.

CAPRIMULGUS LONGIPENNIS, Shaw. Only noted to remark that *Semeiophorus vexillarius* of Gould is based upon specimens freshly moulted, when part of the long quills has not yet been used.

CYPSELUS PARVUS. The only species of Swift observed in Madagascar and Mayotte. Not found in Réunion and Mauritius. We do not know *Cyps. unicolor*, Hartlaub, which at all events differs from *Cyps. unicolor*, Jardine, observed at Madeira and on the Gold Coast.

CHÆTURA GRANDIDIERI, Verreaux.

COLLOCALIA FRANCICA. Réunion.

HIRUNDO BORBONICA.

EURYSTOMUS MADAGASCARIENSIS. See Pollen, Album de la Réunion, 1866.

DACELO MADAGASCARIENSIS. *Ispidina madagascariensis*, Kaup. Western coast of Madagascar. Exactly described by Brisson and Hartlaub. It appears that *Halcyon gularis* does not inhabit Madagascar. See *Dacelo fusca*, Schlegel, Muséum, Alcedines, p. 28.

ALCEDO VINTSIOIDES. Common in Mayotte and Madagascar.

MEROPS SUPERCILIOSUS. Common in Madagascar and Mayotte. Hardly to be distinguished from *M. ægyptius*, *M. savignyi*, and *M. vaillantii*. Young specimens from Mayotte are like those of Northern Africa. *Merops viridissimus* was never heard of in Madagascar.

UPUPA MARGINATA. Not very rare on the north-west coast of Madagascar.

FALCULIA PALLIATA. A fine series, including very young ones, collected on this coast.

NECTARINIA ANGLADIANA and **N. SOUIMANGA**. Madagascar and Nossi-bé. The latter more common than the former.

NECTARINIA COQUERELI, J. Verreaux. Comes from Mayotte, not from Madagascar.

DRYMOICA ELLISII. *Ellisia typica*, Hartlaub. In ferns, Madagascar.

CISTICOLA MADAGASCARIENSIS. *Drymoica madagascariensis*, Hartlaub.

CALAMODYTA NEWTONI. Madagascar.

BERNIERIA MAJOR and **B. MINOR**. In ferns, on the north-west coast of Madagascar.

EROESSA TENELLA, Hartlaub = *Damia pusilla*, Pollen, *in litteris*. Form of bill somewhat like *Zosterops*; but wings rounded, the fourth quill being the longest. Small; wing 20 lines. Upper part yellowish green, but the neck greyish; throat and breast yellow. North-west and north-east coasts of Madagascar.

COPSYCHUS PICA. Madagascar. Females very rare.

SAXICOLA RUBICOLA. As mentioned many years ago, it is quite impossible to find out constant differences between *Motacilla rubicola*, Linné, from Europe, *M. sybilla*, Linné, from Madagascar, *Saxicola pastor* from South Africa, *S. hemprichii* from North Africa, *Motacilla maura*, Pallas, from Siberia, and *Pratincola indica*, Blyth, from India. All the Madagascar specimens belong to one species. The colouring (white and dark) of the rump is individual. Those from Bourbon differ more conspicuously than those from any other country, their throat remaining of a pure white when the rest of the head has already taken the black colour. We hope to be able, in our work, to decide the question whether the Bourbon specimens should stand as a proper conspecies under the epithet of *borbonica*, already given to this bird by Bory de St. Vincent.

NEWTONIA BRUNNEICAUDA, Pollen. *Erythrosterna* (?) *brunneicauda*, Newton. North-west and north-east coasts of Madagascar.

GERVAISIA ALBISPECULARIS. North-eastern coast of Madagascar, collected by Lantz and Grandidier. The genus *Gervaisia* will hardly stand.

ZOSTEROPS MADAGASCARIENSIS. North-west coast of Madagascar.

ZOSTEROPS BORBONICA. *Certhia borbonica*, Gmelin. Réunion. Not observed in Madagascar.

ZOSTEROPS HESITATA, Hartlaub. Not different from *Certhia olivacea*, Linné. Réunion; not found in Madagascar.

ZOSTEROPS CHLORONOTUS. Appears to be found only in Mauritius.

ZOSTEROPS MAYOTTENSIS, Pollen = *Zosterops flavifrons*, Pollen. See Schlegel, *Contrib. l. c.* Only in Mayotte.

PHILEPITTA SCHLEGELI, Pollen. The adults with the whole eye surrounded by large fleshy blue and green lobes; under parts and fore part of the back yellow; head black; the other upper parts yellowish green. Young without lobes.

PHILEPITTA JALA. Observed by Messrs. Lantz and Grandidier on the eastern coast of Madagascar. The males proved to be the *Philepitta sericea*, Geoffroy, *Merula madagascariensis aurea*, Brisson, *Phyllornis jala*, auct. ex Boddaert, *Turdus nigerrimus*, Gmelin, *Brissonia nigerrima*, Hartlaub; the females and young birds *Philepitta geoffroyi*, Desm. et Fl. Prevost.

HYPSSIPETES MADAGASCARIENSIS. *Merula madagascariensis cinerea*, Brisson; *Turdus ourovang*, Gmelin; *Hypsipetes ourovang*, Hartlaub. Madagascar and Mayotte. Feet and eyes brown.

HYSIPETES BORBONICA. *Merula borbonica*, Brisson. Réunion. Feet orange; eyes white.

TSCHITRÆA BORBONICA. Only from Bourbon and from Mauritius; not in Madagascar and Mayotte. Underparts grey; upper parts red brown; head black. Never attains long tail-feathers, and never becomes white and black.

TSCHITRÆA MUTATA. Madagascar and Mayotte.

CEBLEPYRIS CANA. North-eastern and north-western coasts of Madagascar.

OXYNOTUS FERRUGINEUS, from Mauritius, and **OXYNOTUS NEWTONI**, from Réunion. See Pollen, Ibis, 1866, p. 275.

ARTAMIA LEUCOCEPHALA. North-western coast of Madagascar.

ARTAMIA (LEPTOPTERUS) VIRIDIS. North-western and eastern coasts.

ARTAMIA BICOLOR. *Cyanolanius bicolor*, Bonaparte. North-western coast.

DICRURUS FORFICATUS. North-western and eastern coasts.

DICRURUS WALDENI, Schlegel, Contr. in Tydschrift, *l. c.* Mayotte. An Indian form. Dr. Kirk (see Dr. Selater, Ibis, 1864, p. 299) mentions *D. forficatus* as inhabiting Anjouan. We should not wonder if the Anjouan bird, when closely examined, turns out to be *D. waldeni*.

CALICALICUS MADAGASCARIENSIS. North-western and north-eastern coasts.

VANGA CURVIROSTRIS. North-western and north-eastern coasts.

VANGA DAMII. *Xenopirostris damii*, Pollen; Schleg. Contrib. Tydschrift, *l. c.* North-eastern coast.

CORVUS SCAPULATUS. *Corvus madagascariensis*, Bonaparte. Madagascar and Mayotte.

PASTOR TRISTIS. Introduced in Réunion and Mauritius, also on the eastern coast of Madagascar (E. Newton).

HARTLAUBIA MADAGASCARIENSIS, Bonaparte. North-western coast.

PLOCEUS PENSILIS. North-western coast. Note that *Ploceus sakalava*, Hartlaub, certainly does not come from Madagascar, and that the name of Soui-di-Seye given to this bird should be Foudicé, which is the Sakkalava name of *Ploceus pensilis*.

PLOCEUS ALGONDÆ, Pollen. A beautiful new species from Mayotte. Larger than *P. madagascariensis*, and bill longer; head, breast, and upper tail-coverts orange; rest of the underparts olivaceous grey washed with yellow; back olivaceous.

PLOCEUS MADAGASCARIENSIS. *Loxia madagascariensis*, Linné. In Madagascar in the wild state. Introduced into Bourbon and Mauritius.

PLOCEUS ERYTHROCEPHALUS. Mauritius; not seen in Réunion and Madagascar.

PLOCEUS FLAVICANS. *Foudia flavicans*, Newton. Only from Rodriguez (Newton). Note that *Foudia eminentissima*, Bonap., a large species from Zanzibar, has never been observed in Madagascar and its dependencies.

SPERMESTES NANA. Madagascar and Mayotte.

ESTRELLA ASTRILD. Not in Madagascar. Introduced from Africa into Réunion and Mauritius.

MUNIA PUNCTULARIA, M. AMANDAVA, and M. ORYZIVORA. Not in Madagascar. Introduced from India into Mauritius and Réunion.

SERINUS ICTERUS (*Crithagra chrysopyga*) and **CHLORIS CANICOLLIS.** Réunion and Mauritius. Not observed in Madagascar.

PASSER DOMESTICUS. Introduced from France into Réunion.

ALAUDA HOVA. *Mirafra hova*, Hartlaub. Madagascar and Nossi-bé.

PSITTACUS OBSCURUS. North-western and north-eastern coasts.

PSITTACUS NIGER. In the same localities as the former, and more common.

PSITTACULA CANA. Common in Madagascar. Introduced in Mauritius and Bourbon.

CENTROPUS MADAGASCARIENSIS. *C. tolu*, Gmelin, *C. superciliosus*, Hartlaub (juv.), nec Rüppell, and *C. lafresnayi*, Verreaux. Like many other species (see Schlegel, Muséum, Cuculi, p. 67), very variable in size and colouring. Common in Madagascar.

COUA CÆRULEA and C. CRISTATA. Common on the north-western and north-eastern coasts.

COUA REYNAUDII. Very rare.

CUCULUS ROCHII, Hartlaub. *Cuculus canorus*, Desjardins (Hartlaub), nec Linné. North-western coast.

LEPTOSOMUS AFER. Common in Madagascar; very common in Mayotte.

PTILOPUS MADAGASCARIENSIS. Observed only in Madagascar.

PTILOPUS SGANZINI. Observed only in Mayotte.

TRERON AUSTRALIS. Common in Madagascar.

COLUMBA POLLENI, Schlegel, Contrib. in Tydschrift, *l. c.* Only observed in Mayotte.

TURTUR PICTURATUS. Madagascar; Mauritius; Réunion; Mayotte.

GEOPELIA STRIATA. More common in Réunion than in Madagascar.

CENA CAPENSIS. Madagascar.

PERISTERA TYMPANISTRIA. Only observed in Mayotte.

NUMIDA TIARATA. Madagascar and Nossi-bé. Introduced in Mayotte.

PERDIX STRIATA. Madagascar; introduced in Réunion. Note that *P. spadicea*, *P. madagascariensis*, and *P. ponticerianus* are not found in the wild state in Madagascar or its dependencies.

TURNIX NIGRICOLLIS. Very common in Madagascar.

CHARADRIUS GEOFFROYI. North-western coast.

CHARADRIUS NIVIFRONS. *Char. tenellus*, Hartlaub. North-western coast.

STREPSILAS INTERPRES. Mayotte, Madagascar, and Réunion.

TRINGA SUBARQUATA. North-western coast.

ACTITIS HYPOLEUCOS. Mayotte, Madagascar, Réunion, and Mauritius.

NUMENIUS PHÆOPUS. North-western coast of Madagascar; Mayotte; Réunion; Mauritius.

RHYNCHÆA CAPENSIS. North-west coast.

ARDEA ATRICOLLIS. Mayotte.

ARDEA GARZETTA. *A. xanthopoda*, Pelzeln; *A. elegans*, Verreaux. Madagascar.

ARDEA IBIS. *A. ruficrista*, Verreaux; *A. bubulcus*, Savigny. Mayotte and Madagascar.

ARDEA SCHISTACEA. Madagascar.

ARDEA GULARIS. Bluish-black and white specimens. Madagascar and Mayotte.

ARDEA LEUCOPTERA. See Schlegel, Muséum, *Ardeæ*, p. 35. *Ardea idæ*, Hartlaub. Madagascar.

ARDEA ATRICAPILLA. Mayotte; Madagascar; Bourbon; Mauritius.

ARDEA MINUTA AUSTRALIS, Schlegel, Muséum, *Ardeæ*, p. 39. *Ardeola podiceps*, Bonaparte. Madagascar.

ANASTOMUS LAMMELIGERUS. North-western coast of Madagascar.

PLATALEA TELFAIRI. North-western coast of Madagascar.

IBIS CRISTATA. North-western coast.

IBIS RELIGIOSA. North-western coast.

PARRA ALBINUCHA and *P. AFRICANA.* North-western coast.

RALLUS GULARIS or *R. BERNIERI.* North-western coast.

RALLINA KIOLOIDES. North-western coast, rare, in forests.

GALLINULA CHLOROPUS. *G. pyrrhorhoa*, Alf. Newton, P. Z. S. 1861, p. 19. Madagascar, Réunion, and Mauritius.

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- ANAS MELANOTA. *Sarcidiornis africana*, Eyton. Madagascar.
 ANAS ERYTHORHYNCHA. Eastern coast of Madagascar (Lantz).
 ANAS ASSIMILIS, Forster. *Querquedula bernieri*, Verreaux. North-western coast.
 DENDROCYGNA VIDUATA. Madagascar; Réunion; Mayotte.
 NETTAPUS AURITUS. Madagascar.
 DROMAS ARDEOLA. North-western coast.
 STERNA GALERICULATA, Lichtenstein. *Sterna velox*, Hartlaub, nec Rüppell. North-western coast.
 STERNA AFFINIS, Rüppell. North-western coast of Madagascar.
 STERNA DOUGLASII. Réunion, Mauritius, and Nazareth-bank (north of Mauritius and Rodriguez).
 STERNA PANAYENSIS. North-western coast.
 STERNA STOLIDA. *Anous rousseaui*, Hartlaub. Réunion.
 PHAËTON CANDIDUS. *P. flavirostris*, Brandt. Réunion.
 GRACULUS AFRICANUS. North-western coast.
 PLOTUS MELANOGASTER, Gmelin. See Schlegel, Muséum, *Pelecani*, p. 26. North-western coast of Madagascar. It is a curious fact that the Indian, and not the African, species occurs in this island.

Mr. W. H. Flower, F.R.S., F.R.C.S., F.Z.S., read a memoir on the skeleton of *Inia geoffrensis* and on the skull of *Pontoporia blainvillii*, to which were added remarks on the systematic position of these animals in the Order of Cetaceans.

This paper will be published entire in the Society's 'Transactions.'

The following papers were read:—

1. On some Mammalia collected by Capt. A. C. Beavan, C.M.Z.S., at Moulmein, Burmah. By Dr. W. PETERS, F.M.Z.S.

(Plate XXXV.)

1. PHYLLORHINA DIADEMA, Geoffroy.

"No. 1. *Rhinolophus*, July 29, Moulmein."

A single male, agreeing in every respect with Geoffroy's original description and figure of this fine species.

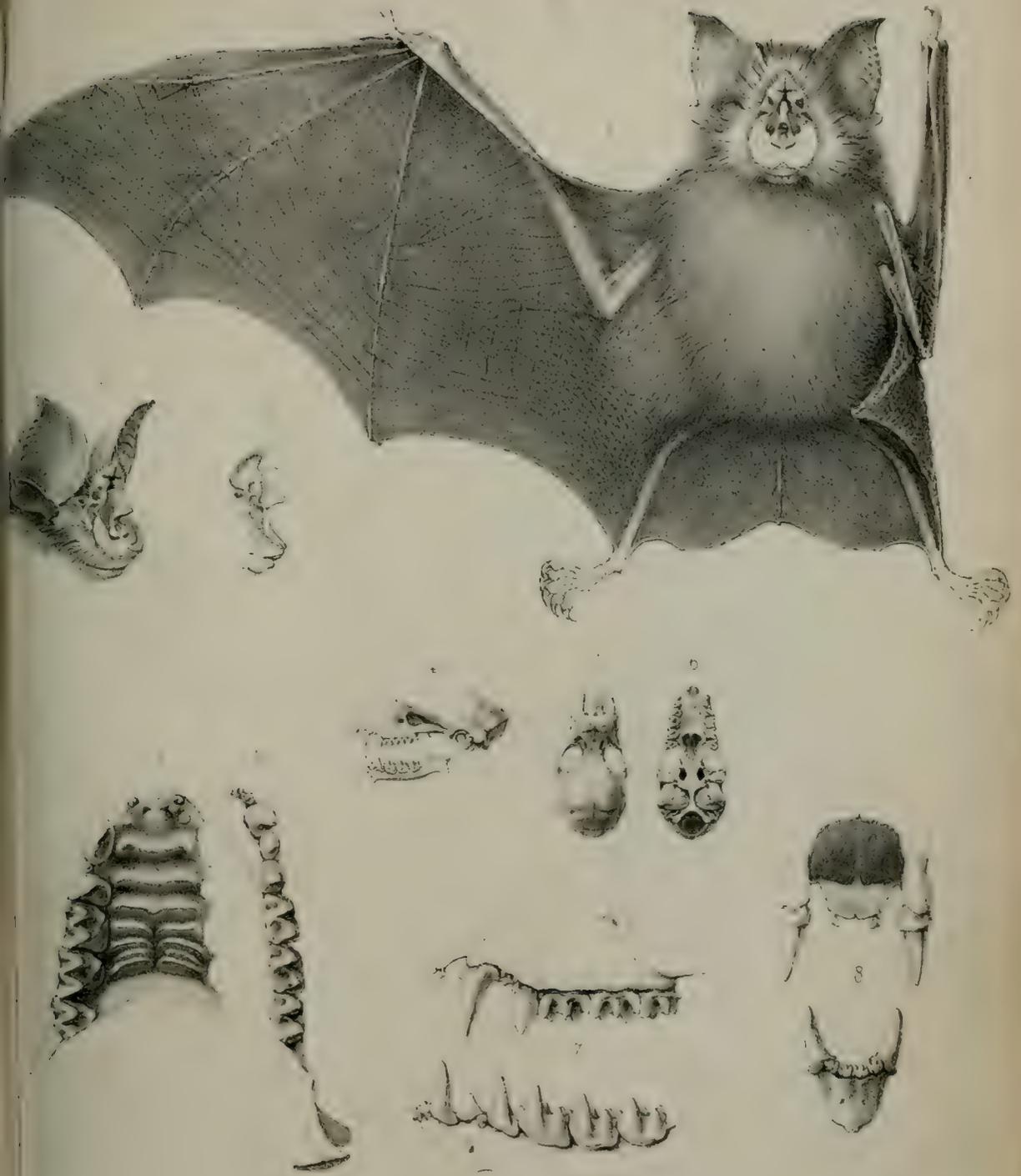
2. RHINOLOPHUS CÆLOPHYLLUS, n. sp. (Pl. XXXV.)

R. supra brunneus, subtus pallidior; auriculis latis acuminatis; prosthemate postico transverso lanceolato, cavitatem pilosam continente; verruca infralabiali quadripartita; alis talem haud attingentibus.

Long. tota 0.064 m., caud. 0.019 m., antibr. 0.042 m., tib. 0.019 m.

"No. 2. *Vespertilio*, August, Salween valley."

This very remarkable small species approaches in size the *R. ma-*



F. Wagner lith

M & N Hanhart imp

RHINOLOPHUS COELOPHYLLUS.



crotis and *subbadius*, Hodgs., from Nepal, but is very easily to be distinguished from all other species by the peculiar form of the saddle and the lancet. It agrees in every other respect with the true *Rhinolophi*; but if any one wishes to make a genus of it, he may call it *Cælophyllus*, with the same name for the species.

Ears large, pointed, a little shorter than the head, with seven or eight transverse folds, and the notch above the antitragus acutely triangular; horseshoe large, in front triangularly notched, sides covering a single rudimentary secondary leaf; front part of saddle bent forwards rectangularly, dilated at the base into a disk covering the nostrils, rounded but not dilated at the point; the upper margin of the saddle is lengthened, without a pointed process, and not united with the lancet, but entering with its hinder part into the cavity of the lancet. The latter is very peculiarly formed,—convex from behind, and containing a long hairy cavity open in front, where on each side are to be seen the usual two lower cells, as in *R. ferrum-equinum*; but the septum between these two cells is cleft to make room for the hinder part of the saddle; and instead of the upper third pair of cells there is a transverse slit, joined by a longitudinal fissure descending from the apex of the lancet. The front part of the lower lip has the usual naked swollen prominence, divided by three longitudinal furrows into four divisions. The wings are large, the fifth finger being a little longer than the fourth, and do not reach the ankle, but leave the lowest part of the tibia free, as in *R. ferrum-equinum*.

Teeth $\frac{3-2}{3-3} \frac{1}{1} \frac{1-1}{4} \frac{1}{1} \frac{2-3}{3-3}$; the first small upper premolar is short, pointed, and placed in the row of the other teeth; the second rudimentary lower premolar lies on the outside, in the angle formed by the first and second premolars.

The upper parts are brown, the underside paler, the hair being whitish with brown tips; and the wings are black brown.

Total length	metre.	0.064
Length of the head	0.020	
——— of the ear	0.0175	
Breadth of the ear	0.0125	
Length of the whole nose-leaf	0.013	
Breadth of the horseshoe	0.0087	
Length of tail	0.019	
——— of humerus	0.0235	
——— of forearm	0.042	
1st finger. Metacarp. 0.004 .. 1st ph. 0.0028.. 2nd ph. 0.0017	0.0085	
2nd finger. " 0.0335.. " 0.001 ..	0.0345	
3rd finger. " 0.031 .. " 0.013 .. " 0.0205.. Last 0.0027	0.065	
4th finger. " 0.0322.. " 0.0085.. " 0.012 .. " 0.0010	0.053	
5th finger. " 0.0315.. " 0.010 .. " 0.0116.. " 0.0013	0.054	
Length of femur	0.01651	
——— of tibia	0.019	
——— of foot	0.0105	
——— of spur	0.010*	

* In the same bottle with the Bats were two specimens of a fish (labelled "*Anabas scandens*, common on trees in water and mud-banks of Salween tidal waters") referable to *Periophthalmus koelreuteri*, Tschudi.

3. *SCIURUS ATRODORSALIS*, Gray, Ann. Nat. Hist. x. p. 213, 1842.

Sciurus atrodorsalis et *S. hyperythrus*, Blyth, Journ. As. Soc. 1855, xxiv. pp. 474 & 477; 1862, xxxi. p. 333.

“Nos. 3, 4, 5, 9, 10, 11, 12, 13, Salween valley, August.”

“No. 7, Moulmein, July 28th; No. 8, Moulmein, July 29th.”

Capt. Beavan has added the following notes:—

“Blyth, in ‘J. A. S.’ for 1862, p. 333, thus describes the difference between *S. atrodorsalis* and *S. hyperythrus*.

“‘*S. hyperythrus*, nobis (said to be from Moulmein, but more probably from the hills bordering the Sitang valley), is very like *S. atrodorsalis*; but has black whiskers, the back, sides, and exterior of limbs quite uniformly coloured, and no trace of the black patch upon the back.’ And in a note, with reference to specimens in the museum of the Asiatic Society:—‘We have specimens of *S. atrodorsalis* without the black dorsal patch; but the whiskers are white, and the general colouring, especially that of the tail, readily distinguish them from *S. hyperythrus*.’ In the collection now sent will probably be found specimens of both species, if indeed they are distinct, which I am inclined to doubt. In some the whiskers are mixed black and white. They are all, pending a further comparison, labelled *S. atrodorsalis*. Nos. 3, 4, 5, 9, 10, 11, 12, and 13 were killed on my recent trip up the Salween, where they were abundant in high trees about the villages on the proper *left* (Amherst) bank of the river. Nos. 7 and 8 were killed in Colonel Brown’s garden in Moulmein, and are thus noted:—

“Description of a specimen in the flesh, killed at Moulmein, July 28th, 1865:—

“No. 7. *S. atrodorsalis*, Gray. Full-grown male. Total length 18 inches; tail $10\frac{1}{4}$. Irides dark brown; ears round, small; teeth yellowish orange, rather dull-coloured; face, ears, and the tip of nose reddish; black patch on back slight; belly, inside of forearm, and hind legs rufous maroon; tail grizzly rufous, lighter at tip; inside of paws brown; claws brown, with white tips; whiskers, the hinder pair large, strong, and pure white, with black hairs nearer the nose; testes well developed.

“Forearm (elbow to wrist) $1\frac{3}{4}$; wrist to tip of nails $1\frac{1}{2}$ nearly; hind leg, tibia $2\frac{2}{3}$; foot 2, to end of elbow.

“No. 8. July 29th. Specimen in flesh; a male, older than the preceding, of a deeper rufous maroon underneath; nose, ears, and face more rufous; tail more bushy; paws, both hind and fore, grizzled black; the back pure black for 5 inches; tail more rufous. Length 18 inches; tail 10 inches, the tip of which is rufous white. No black hairs at all amongst the white whiskers.”

The interesting series collected in such a judicious manner by Capt. Beavan proves clearly that he is quite right in uniting *S. hyperythrus*, Blyth, with *S. atrodorsalis*.

According to Mr. Blyth no. 8, with white whiskers, would be a typical specimen of *S. atrodorsalis*; no. 3, 11, and 13, with black whiskers, a specimen of *S. hyperythrus*. But not only the specimen

no. 7, described by Mr. Beavan, with black and white whiskers, but also no. 4, with the whiskers partly yellow-pointed, nos. 5, 10, and no. 12, with yellow-ringed whiskers, represent combining forms. The same is to be seen in the different colouring of the tail of the different specimens, which varies from olive-yellow to orange and red-orange.

4. *SCIURUS PHAYREI*, Blyth, Journ. As. Soc. 1855, xxiv. p. 476.

“No. 6. *Sciurus*, August, Martaban, bank of the Salween, near the junction of Yunzalin River.”

The specimen, a male, belongs without doubt to this beautiful and well-described species*.

5. *SCIURUS CHRYSNOTUS*, Blyth, Journ. As. Soc. x. p. 920; 1847, xvi. p. 873; 1855, xxiv. p. 474.

“No. 21, male, no. 23, female, July; no. 22, male, September, Moulmein.

“No. 21. Specimen in flesh, *S. chrysonotus*, Blyth; male. Length: tip of nose to insertion of tail 9 inches; insertion of tail to end of tail 11 inches (total 1 foot 8 inches). For $4\frac{1}{2}$ inches the tail is thick and bushy, the remaining $6\frac{1}{2}$ being composed of longer, thinner, and altogether fewer hairs, with a conspicuous black tip. General colour fulvous grizzled; no black mark on back; greyer on thighs, legs, and belly. Tip of nose and paws glistening white; whiskers black; ears small and rounded; teeth dirty orange-yellow; irides dark brown. The female a little smaller, with tail bushy the whole length, and black-tipped of course. The peculiarity in the tail of the male is probably exceptional.

“No. 22. This specimen shows a slight patch or two of golden fulvous on back of neck.

“This species is very domestic, frequents a small grove of *Mesua ferrea*, Linn., near the house, on the ripe nuts of which it feeds in July; occasionally descends to the ground to pick up some fragments thrown from the house, but never stays there long. Found a nest of this species early in July, with one young one in it, in a *Cathartocarpus*, the *Cassia florida* of Vahl.”

The specimens sent with the foregoing interesting information leave no doubt about their determination.

Capt. Beavan also noticed a species of *Tupaia* about clumps of bamboos in gardens of Moulmein, but has not yet been able to secure a specimen.

* The Zoological Museum at Berlin received a long time ago a red-bellied Squirrel from Tenasserim, together with the *Semnopithecus chrysogaster*, Licht. (*S. potenzi*, Bonap.), which appears to be different from all hitherto described species. It may be called

SCIURUS PICEUS, n. sp.

S. piceus; gula, pectore, ventre artuumque latere interno rufis.

Long. ab ap. rostri ad caudæ bas. 0.70 m., cap. 0.060 m., aur. 0.018 m., caud. 0.90 m., palm. 0.035 m., plant. 0.062 m.

This species belongs to the group of *S. hippurus*, *atrodorsalis*, *erythrogaster*, &c.

2. On *Taphozous flaviventris*, Gould, a new Species of Bat from Australia. By Dr. W. PETERS, F.M.Z.S.

T. nigro-fuscus, subtus pallide ochraceus; calcari tibia longiore.

Above black brown; beneath pale ochraceous yellow; hair unicolor, the hairs on the belly whitish at the base; wings blackish, at the posterior margin whitish. Male with a large fossa between the hinder parts of the branches of the lower jaw; ears rounded, externally slightly emarginate; tragus as long as high, securiform; wings on the dorsal side naked, on the under side, above and below the arm-bones, woolly; femora on the dorsal side naked, on the ventral side covered with a thin woolly fur, which descends on the base of the interfemoral membrane. Also the point of the tail shows some hair.

	metre.
Total length, about.....	0·130
Length of head	0·035
—— of ear	0·018
Breadth of ear.....	0·011
Tail.....	0·025
Forearm	0·075
First finger	0·014
Second finger	0·074
Third finger	0·144
Fourth finger	0·087
Fifth finger.....	0·072
Tibia	0·028
Foot (with claws)	0·016
Spur	0·033

This species, represented by a single male submitted to my examination by Mr. Gould, is, although nearly related to *T. australis*, Gould, different in colour and in its superior size.

3. Note on a Collection of Bats from Trinidad.

By Dr. W. PETERS, F.M.Z.S.

The collection of Bats formed by Dr. W. Huggins, C.M.Z.S., at San Fernando, Trinidad, which Mr. Sclater has kindly put into my hands for determination, contains the following species (they are all also known from the Brazils and Surinam):—

1. PHYLLOSTOMA HASTATUM, Geoffroy.
2. HEMIDERMA BREVICAUDUM, Wied, sp.
3. DERMANURA QUADRIVITTATA, Peters.
4. CHIRODERMA VILLOSUM, Peters.
5. STURNIRA LILIUM, Geoffr., sp.





CHÆTOCERCUS. CRISTICAUDA

HEN. HAWKINS. IMP.

6. NOCTILIO LEPORINUS, Linné.
7. FURIA HORRENS, F. Cuv.
8. MOLOSSUS OBSCURUS, Geoffr.
9. VESPERTILIO PARVULUS, Temminck.

4. On the Classification of the small *Dasyuridæ* of Australia, with Descriptions of Two New Genera and One New Species. By GERARD KREFFT, Curator and Secretary of the Australian Museum, Sydney, New South Wales, Corr. Memb.

(Plate XXXVI.)

Few groups of animals have been so little understood as the small Marsupial Insectivores of Australia; the difficulty in procuring a number of specimens of these nocturnal creatures, and the carelessness of some authors, who will not take the trouble to examine a species properly before assigning it a position in the genus to which it appears to belong, have caused a confusion which I will try to correct.

The Marsupial Insectivora have hitherto been divided into three genera:—*Phascogale* (Temminck), *Antechinus* (MacLeay), and *Podabrus* (Gould). Of these, only two, namely *Phascogale* and *Antechinus*, have been defined by their respective founders; while of *Podabrus* I cannot ascertain the true characters beyond what Mr. Waterhouse tells us, that it comprises the *Phascogalæ* with slender feet. Whether this is sufficient for the establishment of a new genus without giving some information regarding the teeth of the animal, I do not know; but for the present it will perhaps be better to retain the genus. I now propose to divide these small Insectivores as follows:—

PHASCOGALE, Temminck.

Dasyuridæ with the two foremost incisors of the upper and lower jaw larger than the others, with short broad feet, more or less naked tarsi, rather long and soft fur, and with five toes to each foot, the inner toe of the hind foot being a nailless prehensile thumb.

Habits arboreal. Pouch absent. Mammæ ten. Apical portion of tail clothed with long bushy hair. Dentition:—I. $\frac{4-4}{3-3}$; C. $\frac{1-1}{1-1}$; P. $\frac{3-3}{3-3}$; M. $\frac{4-4}{4-4}$ = 46.

1. PHASCOGALE PENICILLATA (Gould, Mamm. Austr. i. pl. 31).

Hab. The coast districts from Swan River to New South Wales.

2. PHASCOGALE CALURA (ibid. pl. 32).

Hab. The interior of Australia, from the Williams River to the Lower Murray, including Victoria, South Australia, and New South Wales.

ANTECHINUS, MacLeay.

Dentition as in *Phascogale*. Fur rather harsh and short. Tail clothed throughout with short hair. The feet broad and robust. Tarsi more or less naked. First pair of incisors equal to, or but slightly larger than the other front teeth; canines more developed than any of the premolars; and the articulating condyle of the lower jaw more elevated than in the genus *Phascogale*. Provided with a pouch, which is sometimes very shallow; with ten mammæ; and arboreal in their habits.

1. ANTECHINUS FLAVIPES (Gould, Mamm. Austr. i. pl. 40).

2. A. LEUCOGASTER (ibid. pl. 38).

3. A. UNICOLOR (ibid. pl. 37).

4. A. FERRUGINIFRONS (ibid. pl. 36).

These three species are probably all local varieties of the first, *A. flavipes*. I have removed a number of skulls from specimens answering to Mr. Gould's description of the above species, but could detect no difference in the shape of the skull or the dentition. Besides, *A. flavipes* has a very wide distribution, and is found from Cape Horn to the Tropics on the east coast; it is also a common animal in the interior of South Australia and New South Wales.

5. A. SWAINSONII (ibid. pl. 34).

Hab. Tasmania.

6. A. APICALIS (ibid. pl. 39).

Hab. West Australia.

7. A. AFFINIS.

Hab. Tasmania.

8. A. MACULATUS (ibid. pl. 44).

Hab. Queensland.

9. A. MINUTISSIMUS (ibid. pl. 45).

Hab. Queensland.

Some of these species, as *A. affinis* and *A. maculatus*, I have not seen; but they belong probably to the broad-footed section of this genus.

PODABRUS, Gould.

Antechini with small, slender feet, five toes to each foot, the small nailless thumb situated still further back than in the genus *Antechinus* proper. Fur very soft and dense, of a woolly texture. Canines small, seldom exceeding the largest premolar in size. Pouch with generally ten, sometimes with only eight mammæ. Terrestrial in their habits.

1. *PODABRUS MACROURUS* (Gould, Mamm. Austr. i. pl. 46).

Hab. The east coast of Australia.

2. *P. CRASSICAUDATUS* (ibid. pl. 47).

Hab. The interior of South Australia, Victoria, and New South Wales; in the last two colonies the Lower Murray district.

Mammæ ten.

3. *P. FULIGINOSUS* (ibid. pl. 41).

Hab. West Australia.

Mammæ eight.

The last-mentioned species, I am informed by Mr. George Masters (who collected during the last nine months at the head of Spencer's Gulf and King George's Sound), is truly terrestrial in its habits, never climbing, and being generally found in deserted ants' nests. Of the forty or fifty specimens obtained, more than thirty were females, and all have eight mammæ; while *Antechinus albipes*, which is common on the Lower Murray and near Sydney, has ten mammæ in the pouch.

4. *P. ALBIPES* (ibid. pl. 42).5. *P. MURINUS* (ibid. pl. 43).

These two species are no doubt varieties of each other: a few white or black hairs on the tail, or a "wash of brown," as Mr. Gould often has it, are not sufficient to distinguish one animal from another; besides the two plates of these little creatures in the 'Mammals of Australia' are so much alike that I am sure the artist himself could not tell which was *P. murinus* and which *P. albipes*.

6. *P. LEUCOPUS* (ibid. pl. 35).

This, according to Mr. Waterhouse, is also a variety. Its habitat is stated to be Tasmania.

7. *P. MITCHELLI*, sp. nov.

This new species is by far the largest of the small Dasyuridæ with thick woolly furs. A single, much mutilated specimen, with a note attached that it was obtained by the great Australian explorer, I found in a heap of rubbish some years ago. I always thought that it was a new animal; and having now closely investigated the whole family, I no longer hesitate to describe it.

The fur is similar to that of *Phascogale lanigera* of Gould—long, thick, woolly, and beautifully soft hairs slate-grey at the base, light brown on the apical portion, and tipped with black. The ears are long, covered with short brownish hairs. The feet white. The tail is longer than the body; and what remains of the covering shows that the hair was long and probably ended in a tuft. The under part of the body is whitish. Total length 11 inches, the tail being about one-half of it or $5\frac{1}{2}$ inches, the ears $\frac{7}{8}$ inch, tarsi 1 inch. The measurement is not strictly accurate, on account of the dried condition of

the skin; a well-preserved full-grown animal would probably measure more. The skull is perfect, the form of the teeth approaching those of *P. lanigera*; the first two incisors in the upper jaw are slightly pushed forward, though not longer than the others; there is a space about the size of a tooth between the last incisor and the canine, which has been broken at the root, but, as far as I can see, has not been larger than the third premolar. The molars present the usual triangular shape; the second is the largest; the fourth narrow and transverse. There are three incisors, of almost equal size, in the lower jaw; a pair of slender rather curved canines, which are not so broad at the base as those of *Phascogale* proper; three premolars, of which the second is the largest, the first and third being about equal; and four molars, the middle two of equal size and larger than the first and fourth.

Hab. The interior of New South Wales?

ANTECHINOMYS, gen. nov.

The Dasyuridæ which I propose to arrange under the above name will comprise those truly terrestrial animals which are provided with only four toes on the hind foot, without any indication of a thumb, which have the tarsi completely covered with hair, and the underside of the toes and foot alone naked. They move by a succession of jumps, and have a tail longer than their body.

Dentition like *Podabrus*, with the canines still less developed.

At present this genus would comprise a single species only, namely, the animal described by Mr. Gould as *Phascogale lanigera*.

ANTECHINOMYS LANIGERA (Gould, Mamm. Austr. i. pl. 33).

I think that naturalists will agree with me, that an animal so different in its habits, the structure of its limbs, and the form of its teeth from *Phascogale* should have long ago been separated therefrom. I have not the least doubt that the little animal figured in the 'Mammals of Australia' upon the branch of a tree *with only four toes* is identical with another in this Museum, presented by the late Sir Thomas Mitchell; and as I have had many opportunities of observing it alive, I can confidently state that it is a truly terrestrial species.

Hab. The Lower Murray River district, near the junction of the Darling.

CHÆTOCERCUS, gen. nov.

This new genus, which will conclude the small Dasyuridæ of Australia, has been founded upon a very singular animal, approaching in its dentition *Dasyurus* proper much more than any other known genus, and may be defined as follows:—

Dasyuridæ with short, broad, almost triangular head and strongly developed auditory bulla, which equals that of *Phascogale penicillata* in size. Canine teeth in the upper jaw strong and elongate, not so broad at the base as in the genus *Phascogale*. Incisors long and





J. SMIT. LITH.

M. S. N. J. LANGLART. IMP.

CRATEROPUS MELANOPS.

narrow as in *Dasyurus*; the first pair directed forwards, and slightly longer than the others. Premolars three in the upper jaw, the middle one largest, the first somewhat smaller, and the third and last very diminutive and tubercular. Molars of the usual triangular form, with rather blunt tubercles, increasing in size from the first to the third, the fourth being narrow and transverse. The lower jaw is short and strong, and the articulating condyle placed still higher comparatively than in any other species of this group. The incisors are three in number, the first pair being the largest. Canines smaller than those of the upper jaw, but sharp and pointed, without the broad base common to other small Dasyures. Of premolars only two are found in the lower jaw, the second larger than the third. There are four molars, the first and last being the smallest, the two middle ones of about equal size; on the first the anterior tubercle is scarcely indicated, showing, with the absent third premolar, a close approach to the genus *Dasyurus*. Tail thick, compressed, with a crest of black hair upon the apical half, similar to the tail of *Chæropus*.

1. *CHÆTOCERCUS CRISTICAUDA*, sp. nov. (Pl. XXXVI.)

General structure similar to that of *Phascogale calura*; limbs strong, furnished with long claws; five toes to the fore and hind feet, the inner toe of the latter a short nailless thumb; the hair upon the fore feet is very long and shaggy.

General colour a leaden grey at the base of fur, tipped with sandy and rufous. Tail: basal portion reddish, darker towards the tip.

Total length 8 inches, tail $3\frac{1}{4}$, head to base of ear 1, tarsi and toes $1\frac{1}{8}$.

Hab. South Australia, probably the neighbourhood of Lake Alexandrina.

The Australian Museum received a specimen of this animal, which is not in very good condition, from Fr. G. Waterhouse, Esq., of the Institute Museum, Adelaide, a gentleman who has done much to investigate the fauna of South Australia.

5. On a New Species of the Genus *Crateropus*, Sw.

By Dr. G. HARTLAUB, F.M.Z.S.

(Plate XXXVII.)

CRATEROPUS MELANOPS, sp. nov.

Dorso et alis obsolete fuscis, cauda intensius fusca, sub certa luce quasi fasciolata; interscapulio colloque postico nonnihil pallescentibus; pileo conspicue cinerascente, plumularum apicibus albicantibus; mento summo nigro; gutture, capitis lateribus striolaque supraciliari cærulescenti-canis; macula inter rostrum et oculum subquadrata holosericeo-nigra; pectoris plumis pallide brunneis, pallidius marginatis; abdomine subflavescente,

immaculato; subalaribus et subcaudalibus ejusdem coloris; rostro et pedibus nigris.

Long. circa $10\frac{1}{2}''$, rostr. $10'''$, al. $4'' 3'''$, caud. $4'' 3'''$, tars. $12\frac{1}{2}''$.

Hab. Damaraland (*Andersson*).

Obs. A typical species, allied to *C. jardinii*. One example has been submitted to my examination by Mr. P. L. Sclater.

The true *Crateropi* known to me are the following;—

1. *C. bicolor*, Jard. Afr. mer.
2. *C. reinwardtii*, Sw. Afr. occid.
3. *C. platycercus*, Sw. Afr. occid.
4. *C. jardinii*, Sw. Afr. mer. et inter.
5. *C. limbatus*, Harr. Afr. orient.
6. *C. plebejus*, Rüpp. Afr. orient. et inter.
7. *C. cinereus*, Heugl. Afr. orient.
8. *C. swainsonii*, Sw. Afr. mer.
9. *C. gymnogenys*, Hartl. Afr. mer. occid.
10. *C. leucocephalus*, Rüpp. Afr. or.
11. *C. leucopygius*, Rüpp. Afr. or.
12. *C. melanops*, Hartl. Afr. mer. occid.
13. *C. apicalis* (Licht.). Afr. occid.
14. *C. chalybeus*, Bp. Palæstina.
15. *C. rubiginosus*, Rüpp. Afr. orient.
16. *C. rufescens*, Heugl. Afr. or.
17. *C. fulvus* (Desfont.). Algeria.
18. *C. acaciæ*, Rüpp. Afr. sept. orient. (less typical).
19. *C. squamiceps*, Rüpp. Arabia (less typical).
20. *C. atripennis*, Sw. Afr. occid. (less typical).

Crateropus melodus, Heugl., is very nearly allied to (if not identical with) *Parisoma frontale* of Rüppell. *Crateropus guttatus*, Heugl., is congeneric with my *Bradyornis spekei* (= *Cichladusa arquata*, Peters). Neither of them belong to this group.

6. Notice on the Pheasants found in the Neighbourhood of Pekin. By DUDLEY E. SAURIN*.

The Pheasants I am acquainted with as occurring near Pekin are the following:—

1. The common Chinese Pheasant, in Chinese *Yeh-chi*, or “Wild fowl” (*Phasianus torquatus*), which is found everywhere in the north of China. I am not aware how much further south they are found than Shanghai; but in that neighbourhood, since the devastation of the country by the Tai-pings, they are shot by hundreds. Thousands are brought down to the Pekin market in a frozen state by the Mongols from as far north as the Amour. At the new

* Mr. Saurin, to whom we are indebted for two fine males of the Pallas's Eared Pheasant (*Crossoptilon auritum*), has kindly drawn up these notes at my request.—P. L. S.

Russian port of Poussiet, conterminous with Corea, the same Pheasant abounds. I myself have seen them wild in the Imperial hunting-grounds north of Jehol, and in the mountains near Ku-peh-kow.

2. The *Pucrasia xanthospila**, by the Chinese called *Sung-chi*, or "Pine-fowl." This bird is always to be found in the Pekin market, though in far inferior numbers to the Common Pheasant; they are brought unfrozen, and sometimes alive, and never, as far as I have seen, by the Mongols; they consequently are probably confined to the mountains enclosing China proper on the north and west. The only place from which, to my knowledge, they have been brought is the Tung-lin, or eastern woods, where are the tombs of the present dynasty, about 100 miles north-east of Pekin, amongst the issues of the mountains which run down into the plain east of Ku-peh-kow, or the old north gate through the Great Wall. The *Sung-chi* is considered very good eating, and its flesh has a rather peculiar aromatic flavour.

3. The Reeves's Pheasant (*Ph. reevesii*), called by the Chinese *Chi-chi*, is seen very rarely in the Pekin market. For a long time I failed to discover from what quarter they came, as some specimens had been obtained at Tientsing, and some people pretended they were brought from Shantung. Last winter, however, I ascertained that they, too, came from the Tung-lin; and I have reason to suppose that they are to be found nowhere else in the province of Chi-li. About twenty birds were brought down alive last winter. They are never brought in frozen, or by Mongols. Their flesh is very delicious, and superior, to my taste, to that of any other Pheasant.

4. Pallas's Eared Pheasant (*Crossoptilon auritum*) is found rarely in the market, though perhaps oftener than the Reeves's Pheasant. It is *not* found in the Tung-lin, but in the mountains to the north-west of Pekin, within the Great Wall, about 100 miles distant. The place is well known for its coal-mines, and has frequently been visited by Europeans, amongst others by the French Minister, M. Berthéney, the French Missionaries, and several of our Student Interpreters. M. Berthéney, who is a sportsman and fond of natural history, thinks that, taking into consideration the comparative tameness of the bird, and the fact that since Europeans have come to Pekin the peasants have always found a good market for the nests, this rare bird, which, so far as we know, is only to be found at this one spot, cannot fail soon to become extinct. Chinese guides, it is true, have assured me that it is to be found in the Wei-chung, or Imperial hunting-grounds, which I passed through last autumn; but no reliance can be placed on their statements, even if the bird were called by the same name in so very distant a part of the country.

The Chinese name is *Ho-chi*, either "River-fowl" or "Fire-fowl." The translation depends on the character; and the peasants, who give it the name, know nothing of characters; while the students, who know characters, are quite ignorant of natural history.

Pallas's Pheasant is never brought by Mongols, or frozen; therefore '*mantchuricum*' (the name applied to it by Mr. Swinhoe) is a

* Described and figured by Mr. G. R. Gray, P. Z. S. 1864, p. 259, pl. xx.

misnomer. The hen lays towards the end of May; the egg is larger than a common fowl's, and, as far as I recollect, rather bluish in tint. The Chinese, who bring these birds in, feed them with a kind of millet-cake; they are also very fond of barley, which is grown in quantities in the mountain-valleys.

7. Description of a New Species of *Atrichia* from the Richmond River, New South Wales. By E. P. RAMSAY, C.M.Z.S.

ATRICHIA RUFESCENS, nov. sp.

All the upper surface rufous brown, becoming rufous on wings and tail; each feather, except those of the wings and tail, crossed by three crescent-shaped lines of blackish brown; underside of the wings and inner webs of primaries and secondaries dark brown, tertiaries and outer webs of primaries and secondaries crossed with wavy zig-zag lines of black; under wing-coverts brown, edged with rufous; upper tail-coverts and both the upper and under side of all the tail-feathers deep rufous, crossed by numerous distinct wavy lines of black; ear-coverts, cheeks, and sides of the throat and neck rufous, barred indistinctly with dark brown, becoming more distinct on sides of chest, which is rufous; throat whitish; rest of the under surface deep rufous, becoming brighter and of a much deeper tint on centre of abdomen and under tail-coverts; flanks deep rufous, crossed with narrow wavy lines of blackish brown; irides dark brown; bill dark horn-colour, becoming whitish on lower mandible; legs and feet light reddish brown; claws light horn-brown.

Total length $6\frac{2}{10}$ inches; bill $\frac{7}{10}$ in length, in height $\frac{2}{10}$, width $\frac{2}{10}$; tarsi $8\frac{1}{2}$ tenths; claw of hind toe $3\frac{1}{2}$ tenths; claw of middle toe $\frac{9}{10}$; wing $2\frac{4}{10}$ inches; tail $2\frac{9}{10}$.

I propose the specific name of *rufescens* for this species, as being most appropriate. Two males were all that were procured. These were shot in the thick brushes on the borders of the Richmond River, about the end of December 1865, by that well-known ornithologist Mr. T. MacGillivray, from whom I purchased the present specimen. *Atrichia rufescens* may at once be distinguished from *A. clamosa* of the west coast by its smaller size and the rufous tint which pervades the whole plumage. The legs and claws are much larger in proportion to the size of the bird than those organs in the much larger species *A. clamosa*; the claw of the hind toe is exactly the same in size as that in *A. clamosa*.

A specimen of *A. clamosa*, now before me, kindly lent to me by G. Krefft, Esq., Curator of the Australian Museum, Sydney, being one of those procured in Western Australia by Mr. G. Masters in March 1866, differs slightly from Mr. Gould's description given in his 'Handbook to the Birds of Australia' (vol. i. p. 345), in the following particulars, viz.:—The throat, chest, and abdomen pure white; an irregular triangular patch of black feathers edged with

white runs down from the centre of the throat, widening on the chest and spreading out at its base, joins the sides of the neck above the shoulders; underside of the tail-feathers dark brown, outer webs only freckled with a darker hue; under tail-coverts brown, barred with blackish brown, and margined with rufous brown. Total length 8 inches, wing $2\frac{9}{10}$ inches, tail 4 inches.

It is a curious fact that the specimens of *A. clamosa* and *A. rufescens*, procured by Gilbert, MacGillivray, or Masters are all males.

8. Remarks upon the New Species of *Atrichia* and on *A. clamosa* of the West Coast. By E. P. RAMSAY, C.M.Z.S.

Since I last forwarded my description of the new *Atrichia*, for which I proposed the specific name of *rufescens*, I find that Mr. James F. Wilcox procured the birds during an excursion made by Messrs. Wilcox and MacGillivray to the brushes of the Richmond River. Mr. Wilcox, therefore, is its discoverer, and not Mr. MacGillivray as I had stated.

I have just received a very interesting note from Mr. J. F. Wilcox, in which he gives us the following valuable account of his discovery, which, I think, I cannot do better than give in his own words:—

“In answer to your inquiries respecting the *Atrichia*, I have much pleasure in sending you all the particulars, which I take from my notes made at the time, November 17, 1865:—‘In the Bowling Creek, Richmond River, in a dense scrub, in pursuit of Rifle-birds (*Ptiloris paradisea*), my attention was drawn to the note of a bird I had never before heard, and from that moment I knew it would prove a prize should I have the good luck to procure it. I followed it up on my hands and knees (for the scrub was too thick to stand up in) until the voice appeared almost at the muzzle of the gun; here I remained fixed quite half an hour, and during that time I can scarcely describe my feelings. I was almost inclined, although not superstitious, to think some evil spirit was playing me a trick; for at one moment it would give out its own notes apparently just in front of me, and the next minute mimic the Spine-tailed Orthonyx (*O. spinicauda*) in another direction; then the Scrub-Robin’s note would be imitated in some other place; and even sometimes its voice seemed to come from the ground, at other times from the trees above me.’

“This state of things lasted until I became painfully cramped from the position I had to lie in, and my eyes painful from staring about so long. I was just about to give up, when, to my delight, I saw my tormentor hop from one bush to another, not more than 7 or 8 feet from where I had been lying the whole time. But the scrub was so densely thick I could not bring the gun to bear on it; but marking well the spot where the bird was sitting, I managed to back a little through a narrow open place, fired, and to my intense satisfaction succeeded in bringing it down. During the whole time

I am positive the bird kept in the same place; and yet its mimicking voices were heard in different places.”

In a former note from Mr. T. MacGillivray, that gentleman remarks, “They were both noisy enough, mimicking *Sericornis citreogularis* and several other brush-birds, besides having a note peculiarly their own. Both were males.”

This is a great source of regret, as neither did the late Mr. Gilbert, nor Mr. G. Masters during his recent trip to Western Australia, procure the other sex of *A. clamosa*; so we are still in the dark as to the females of either species. But now that we have an *Atrichia* inhabiting a district so near Sydney I hope we shall not long remain in ignorance upon this point.

The same wonderful power of ventriloquism noted above shows itself also in *Atrichia clamosa*. Mr. Masters informs me that he was greatly perplexed in searching for this species in Western Australia, where it inhabits dense masses of vegetation consisting of tall reedy grass and thick-growing low bushy shrubs. A whole morning was spent without a single glimpse of the bird, although its note was frequently heard within a few feet of where he was standing, first seeming to come from one side, then from another, then sounding loud and clear a few feet in front.

Upon another occasion, while passing a thicket of reeds, grass, and scrub, Mr. Masters observed one run in and disappear in a moment, without giving him a chance of bringing his gun to bear on it. As it was useless, even if possible, to follow it, he lay down at a short distance from the edge and determined to wait until the bird reappeared; after a considerable time he was rewarded by seeing its head poke out; and after looking round to see if the coast was clear, the bird came out and commenced to scratch in the sand, giving him an opportunity which was not lost.

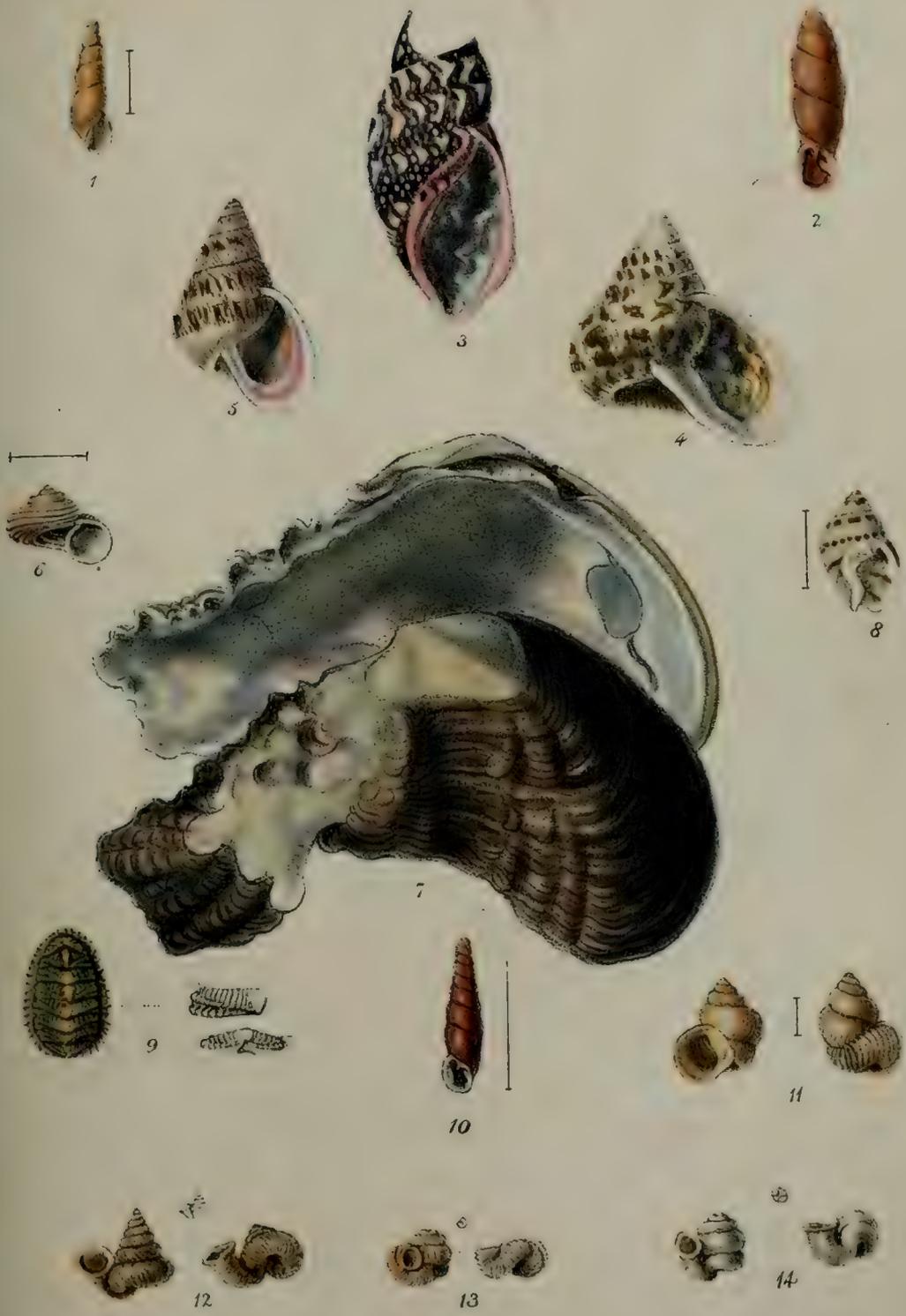
Ventriloquism is not confined to the *Atrichia*. I have myself been sorely at a loss to find *Oreoica gutturalis*. I have also observed ventriloquism in the *Cincloramphi*, as well as in *Ptenoedus rufescens*.

9. List of Land and Freshwater Shells collected by Mr. E. Bartlett on the Upper Amazons, and on the River Ucayali, Eastern Peru, with Descriptions of New Species.
By HENRY ADAMS, F.L.S.

(Plate XXXVIII.)

Fam. AMPULLARIIDÆ.

1. POMUS YATESI, Reeve.
2. POMUS NOBILIS, Reeve.
3. POMUS AMAZONICUS, Reeve.



G. SOWERBY LITH.

MAN VANHART IMP.

NEW SPECIES OF MOLLUSKS



4. POMUS HÆMASTOMUS, Reeve.
5. POMUS LYMNÆIFORMIS, Reeve.
6. POMUS PAPHYRATIUS, Spix.
7. POMUS NUBILUS, Reeve.

Fam. HELICIDÆ.

8. RUMINA (OBELISCUS) RIPARIA, Pfr.
9. RUMINA (OBELISCUS) PUSILLA, sp. nov. (Pl. XXXVIII. fig. 1.)

R. testa imperforata, turrata, tenuiuscula, striata, parum nitente, pallido-fulva; spira elongata, apice obtusiusculo, sutura impressa, non marginata; anfr. 7, planiusculis, ultimo $\frac{1}{4}$ longitudinis æquante, basi rotundato; columella superne vix torta; apertura parva, ovali; perist. simplici, recto, margine dextro leviter arcuato, columellari reflexiusculo.

Long. 8, diam. 2 mill.

10. RUMINA (SUBULINA) OCTONA, Chem.
11. CLAUSILIA (NENIA) BARTLETTI, sp. nov. (Pl. XXXVIII. fig. 2.)

C. testa non rimata, pupiformi, solidula, longitudinaliter oblique undulato-striata, haud nitente, purpurascens; spira convexo-turrata, apice obtuso, sutura pallidior; anfr. 7, convexiusculis, ultimo angustato, deorsum soluto, basi rotundato, antice confertim striato; apertura subverticali, ampla, pyriformi; lamellis convergentibus, superiore valida, inferiore flexuose ascendente; lunella distincta; plica palatali 1, supera, elongata, subcolumellari inconspicua; perist. continuo, libero, pallidior, undique late expanso, reflexiusculo.

Long. 24, diam. 6 mill.

12. LABYRINTHUS FURCILLATUS, Hupé.
13. LABYRINTHUS BIFURCATUS, Desh.
14. LABYRINTHUS LEPRIEURII, Petit.
15. AMMONOCERAS GUAYAQUILENSE, Pfr.
16. OPHIOGYRA STENOGYRA, Pfr.
17. OPHIOGYRA STENOSTREPTA, Pfr.
18. BULIMUS MAXIMUS, Sow.
19. BULIMUS (DRYPTUS) MELANOCEILUS, Nyst.
20. BULIMUS (EURYTUS) PIPERITUS, Sow.
21. BULIMUS (EURYTUS) FLOCCOSUS, Pfr.

22. *BULIMUS (ORPHNUS) TENIOLUS*, Nyst.23. *OTOSTOMUS CRICHTONI*, Brod.

A single example only, and in bad condition. The typical specimen in the British Museum has hitherto been unique.

24. *OTOSTOMUS EXPANSUS*, Pfr.25. *OTOSTOMUS CANALICULATUS*, Pfr.26. *OTOSTOMUS PULCHERRIMUS*, sp. nov. (Pl. XXXVIII. fig. 3.)

O. testa subperforata, fusiformi, tenuiuscula, obsolete irregulariter striata, lævigata, albida, strigis nigricanti-castaneis albo punctatis, supra flexuosis, infra disjunctis et macularum series 2 formantibus, ornata; spira turrata; anfr. ?, modice convexis, ultimo basi compresso et valde obtuse carinato; columella arcuata; apertura parum obliqua, rhombeo-ovali; perist. roseo, marginibus callo tenui junctis, dextro expanso, columellari reflexo, superne adnato.

Long. circa 45, diam. 17 mill.

One example only of this beautiful species has been obtained; and of that unfortunately the upper whorls are deficient.

27. *OTOSTOMUS BARTLETTI*, sp. nov. (Pl. XXXVIII. fig. 4.)

O. testa umbilicata, globoso-conica, tenuiuscula, irregulariter striata et lineis minutissimis spiralibus confertim decussata, albida, fascia castanea interrupta albo punctulata et flammis fuscis picta; spira conica, obtusiuscula; anfr. 5, planiusculis, ultimo ventricoso, ascendente, spiram paulo superante, basi obtuse carinato; apertura subverticali, obliqua, subovali; perist. tenui, undique late expanso.

Long. 25, diam. maj. 26, min. 18 mill.

Two examples, one in good condition, of this very finely marked and interesting species were obtained by Mr. Bartlett.

28. *OTOSTOMUS SCITUS*, sp. nov. (Pl. XXXVIII. fig. 5.)

O. testa rimato-perforata, ovato-pyramidata, tenuiuscula, irregulariter subrugoso-striata et lineis spiralibus minutis obsolete decussata, luteo-alba, striga interrupta fusca et maculis sparsis ornata; spira conica, apice acuto; anfr. 6, planiusculis, ultimo spiram paulo superante, rotundato, basi compresso, circa perforationem obtuse carinato; columella contorta; apertura verticali, lata, rotundato-auriformi, intus violacea; perist. simplici, undique late expanso.

Long. 28, diam. maj. 17, min. 13 mill.

One example only.

29. *OTOSTOMUS (DRYMÆUS) MUSIVUS*, Pfr.30. *OTOSTOMUS (DRYMÆUS) MONTAGNEI*, D'Orb.31. *OTOSTOMUS (LEPTOMERUS) HELOICUS*, D'Orb.32. *OTOSTOMUS (MORMUS) EXORNATUS*, Reeve.

33. OTOSTOMUS (MORMUS) TORAYLII, D'Orb.
34. OTOSTOMUS (LEIOSTRACUS) MACULATUS, Lea.
35. TORNATELLINA (LEPTINARIA) LAMELLATA, Pot. & Mich.
36. ORTHALICUS GALLINA-SULTANA, Chem.
37. ORTHALICUS BENSONI, Reeve.
38. ORTHALICUS (CORONA) REGINA, Férus.
39. ORTHALICUS (PORPHYROBAPHE) YATESI, Pfr.
40. ORTHALICUS (PORPHYROBAPHE) LABEO, Brod.

The single example collected by Mr. Bartlett is the third known of this peculiar species. The typical specimen was once in the possession of the Society, but mysteriously disappeared. The second, which was sent home by Mr. Lobb from Limabamba, Peru, formed part of the collection of the late Mr. Cuming, and is now in the British Museum.

Fam. OLEACINIDÆ.

41. GLANDINA DACTYLUS, Brod.
42. GLANDINA CARMINENSIS, Morel.
43. STREPTAXIS DEFORMIS, Férus.

Fam. CYCLOPHORIDÆ.

44. APEROSTOMA BLANCHETIANUM, Moric.
45. APEROSTOMA CONNIVENS, sp. nov. (Pl. XXXVIII. fig. 6.)

A. testa late umbilicata, depressa, tenuiuscula, striatula et inæqualiter lirata, albida, epidermide flavide brunnea induta; spira parum elevata, apice prominulo, lævi, rufo-corneo, sutura canaliculata; anfr. 4½, convexis, ultimo non soluto; apertura fere circulari, diagonali; perist. continuo, recto, superne subangulato et breviter adnato.

Diam. maj. 10, min. 8½, alt. 7 mill.; apert. diam. 4½ mill.

This species is closely allied to *A. perdistinctum*, Gund.; but the suture is less deeply canaliculated, the last whorl is not separated in front as in that species, and the raised spiral lines on the whorls are reduced to one on the inner side within the umbilicus.

Fam. HELICINIDÆ.

46. HELICINA (OLIGYRA) SPRUCEI, Pfr.
47. HELICINA (PACHYSTOMA) CONCENTRICA, Pfr.

Fam. UNIONIDÆ.

48. ANODONTA (LAMPROSCAPHA) WHEATLEYI, Lea.

49. ANODONTA (LAMPROSCAPHA) ENSIFORMIS, Spix.

50. MONOCONDYLÆA (PLAGIODON) ? ISOCARDIOIDES, Lea.

Fam. MYCETOPIDÆ.

51. MYCETOPUS SOLENIFORMIS, D'Orb.

Fam. MUTELIDÆ.

52. CASTALIA CORDATA, Humph.

53. LEILA GIGANTEA, Lea.

54. LEILA BLAINVILLIANA, Lea.

55. TRIQUETRA CORRUGATA, Lam.

Several examples of this very fine species in most perfect condition.

56. TRIQUETRA OBLIQUA, Schum.

Fam. ÆTHERIIDÆ.

BARTLETTIA, gen. nov.

Testa libera, æquivalvis, inæquilateralis, clausa; superficies valvarum rugosa vel foliata, epidermide olivaceo-viridi induta. Cardo edentulus; ligamentum breve, crassum, præcipue internum, laminis validis, curvatis, prominentibus suffultum; impressiones musculares duæ, anterior elongata, angusta, posterior ovalis, ampla; linea pallialis simplex. Intus margaritacea.

57. BARTLETTIA STEFANENSIS, Moric. (Pl. XXXVIII. fig. 7.)

B. testa falcata, solidiuscula, antice irregulariter producta, angusta, torta, postice rotundata, margine ventrali valde sinuato, anteriore lobato; superficie valvarum antice irregulariter rugose plicata, postice angulata, concentricè crasse striata.

Long. 75, lat. maj. 35, minor 20, alt. 27 mill.

Etheria stefanensis, Moric. Journ. Conch. v. (1856) p. 178.

This singular shell was first met with by M. Porte in the Amazon, near its embouchure, and was described by M. Moricand as a species of *Ætheria*. M. Moricand supposed it to be adherent like the other species of that genus, and probably by a small portion of the surface of one valve near the beak, which was broken away in both of the specimens received by him. There are no traces, however, of any such adherence in the more perfect examples collected by Mr. Bartlett; and the shell, not possessing this peculiarity, and differing also materially in other respects from *Ætheria*, forms, in my opinion, the type of a distinct genus. The other differences to which I allude are:—the ligament being marginal like that of *Anodonta*, and not sunk in a groove of the area of one valve; the internal surface being without the blisters present in both the species of the African genus;

and the form being nearly æquivalve (which is, I think, in itself strong evidence of its not being attached either to other individuals or to foreign substances).

This shell is probably rare, and therefore valued by the natives in the localities where it has been found, as some of the valves sent home by Mr. Bartlett are perforated at the small ends, apparently for the purpose of being worn as ornaments.

10. Descriptions of Six New Species of Shells, and Note on *Opisthostoma de-Crespignii*. By HENRY ADAMS, F.L.S.

(Plate XXXVIII.)

Fam. BUCCINIDÆ.

NASSODONTA, gen. nov.

Testa ovalis; spira brevis, anfractu ultimo antice sulcato; apertura antice sinuata, postice canaliculata; columella callosa, antice plicata; labrum acutum, intus incrassatum et dentatum, extus antice denticulo instructum.

1. NASSODONTA INSIGNIS, sp. nov. (Pl. XXXVIII. fig. 8.)

N. *testa ovata, solida, lævi, luteo-alba, fasciis fuscis tribus interruptis ornata; spira brevi, apice obtusiusculo, sutura simplici; anfr. 5, convexis, ultimo $\frac{2}{3}$ longitudinis testæ adæquante, basi transversim 1-sulcato; apertura subovali, angusta; columella valde arcuata, callosa, alba, postice callo mediocri munita; labro acuto, albo, intus incrassato et 2-dentato; sinu siphonali amplo.*

Long. 11, diam. 6 mill.

Hab. River Peiho, China, in company with *Velorita*.

Fam. CHITONIDÆ.

FREMBLEYA, gen. nov.

Testa ovalis, convexa. Valvæ transversæ, latæ, carinatæ; apex posterioris valvæ terminalis, producta, fissa. Limbus angustus, postice fissus, setis corneis dense obsitus.

The covering of the mantle, the form of the visible portions of the valves, and the peculiarity of the terminal valve render this species distinct from any form of Chitonidæ yet described. It has the appearance of a *Lorica* with the mantle covered with long bristles instead of imbricate scales.

2. FREMBLEYA EGREGIA, sp. nov. (Pl. XXXVIII. fig. 9.)

F. *testa ovata, antice paululum angustiore, viridi-fusca, ad latera pallidiore; valva antica radiatim costata, costis pustulosis, inter-*

stiliis oblique liratis; valva postica et valvis mediis subcarinatis, arcis dorsalibus dense longitudinaliter liratis, arcis lateralibus radiatim costatis, costis pustulosis. Limbus mediocris, spiculis brevibus corneis instructus.

Long. 15, lat. 9 mill.

Hab. —?

Fam. HELICIDÆ.

3. CLAUSILIA (PHÆDUSA) SIMILARIS, sp. nov. (Pl. XXXVIII. fig. 10.)

C. testa vix rimata, fusiformi, solida, confertim striata, sericea, rufofusca; spira sursum attenuata, apice obtuso; anfr. 10, convexiusculis, ultimo basi rotundato; apertura subverticali, pyriformi; lamellis inæqualibus, supera tenui, marginali, infera fere immersa; lunella distincta, extus conspicua; plica palatali 1, elongata, subcolumellari ad marginem peristomatidis producta; perist. continuo, superne breviter soluto, expanso, albido.

Long. 18, diam. $4\frac{1}{2}$ mill.

Hab. Formosa.

This species, which was collected by Mr. Swinhoe in Formosa, I have placed in the subgenus *Phædusa*. It is closely allied to *C. exilis*, described by me in a former paper, and referred to the subgenus *Laciniaria*, but which must also be included in *Phædusa*.

Fam. CYCLOPHORIDÆ.

4. DIPLOMMATINA (DIANCTA) MARTENSI, sp. nov. (Pl. XXXVIII. fig. 11.)

D. testa sinistrorsa, rimata, pupiformi, gibbosa, tenui, flavida, subremote minutissime striolata; spira conica, sutura impressa, apice obtusiusculo; anfr. 6, convexis, penultimo angustiore, ultimo ad antepenultimum ascendente; apertura subverticali, plica columellari obsoleta; perist. duplici, expanso; callo parietali crasso, late expanso, appresso.

Long. $3\frac{1}{3}$, diam. 2 mill.

Hab. —?

Fam. UNIONIDÆ.

5. ANODONTA SWINHOEI, sp. nov.

A. solidula, transversa, oblongo-ovata, subventricosa, concentricè obsolete plicata; margine dorsali elongato, subrecto; margine ventrali arcuato; latere antico rotundato; latere postico subangulato, superne obsolete radiatim plicato; umbonibus antemedianis, inconspicuis; epidermide olivaceo-picea induta; margarita cærulea, postice iridescente.

Long. 90, alt. 50, lat. 28 mill.

Hab. Formosa.

Several examples of this species, which does not appear to have been hitherto described, were obtained by Mr. Swinhoe.

Fam. MUTELIDÆ.

6. SPATHA BAIKII, sp. nov.

S. testa solidula, transversa, ovata, ventricosa, antice angusta, rotundata, postice lata, subrotundata; margine dorsali arcuato; margine ventrali in medio sinuato; epidermide nigro-fusca; umbonibus antemedianis, inconspicuis, erosis; margarita salmonaceo-purpurea.

Long. 120, alt. 80, lat. 45 mill.

Hab. River Niger.

I have named this species after my lamented friend Dr. Baikie, by whom it was collected. It differs from *S. rubens*, to which it approaches most nearly in form, in being more ventricose, broader and more rounded posteriorly, and in having a greater sinuation of the ventral margin. It is also a larger shell, and the epidermis is of a darker colour.

Note on Opisthostoma de-Crespignii.

Since describing the shell of this species, some examples having the animal dried within them have come into my possession; and by breaking one of them carefully and extracting the animal I have ascertained that it is provided with an exceedingly minute and very thin horny operculum. As, from its helix-like appearance and very elongated and prorected mouth, it is more singular even than the type of the genus, *O. nilgircum*, a figure of it is now given (Pl. XXXVIII. fig. 12), none having hitherto been published.

M. de Crespigny has suggested that this genus may be identical with the fossil *Scoliostoma*, which, however, has hitherto been regarded as marine. Its resemblance to the type of *Scoliostoma*, *S. dannenburgi*, is very strong; and if they are not generically the same, the very singular fact must certainly be admitted that a group of recent land-shells exists possessing this peculiar form in common with a group of extinct marine shells.—H. ADAMS.

11. On *Opisthostoma*, H. Blanford, with the Description of a New Species from the Neighbourhood of Bombay, and of the Animal and Operculum. By WILLIAM T. BLANFORD, Assoc. Roy. Sch. Min., F.G.S.

(Plate XXXVIII.)

To the keen search of one of the most indefatigable and successful collectors of land shells in India, the Rev. S. Fairbank, is due the very interesting discovery of a second species of the remarkable Cyclostomaceous genus *Opisthostoma*, the type of which was first found by my brother, Mr. H. F. Blanford, on the Nilgiri hills of

Southern India in 1857. The rediscovery of the genus is none the less fortunate, that specimens of the original species are so excessively rare that it has been impossible to distribute them so as to make the form known in Europe. I have on two separate occasions, in 1859 and 1864, searched the neighbourhood of Pykara, on the Nilgiris, without success, and, owing to an unfortunate accident, by which most of the original specimens were lost, I believe that but two now remain, one of which is in my own collection, and another in Mr. Benson's. Several specimens of the new species have, fortunately, been obtained; and it is to be hoped that the number may be increased, as the locality is easy of access.

The new form is a very near ally of *O. nilgiricum**, H. Blanf. (Pl. XXXVIII. fig. 13), but still readily distinguished by several not unimportant characters. Specimens have, fortunately, been obtained living, enabling me to complete the characters of the genus, and to confirm the opinion expressed by my brother, in our joint paper, of its being an operculated form. Although I have not succeeded in examining the animal so closely as I could have wished, I have been able to note the form of the tentacles, with the position of the eyes, and to see the operculum. All tend, I think, to bear out the views I expressed, in 1864†, as to the affinities of the genus.

Before proceeding to any further remarks, it will be well to describe the new species, and to give the generic characters as now ascertained.

OPISTHOSTOMA, H. Blanf.

Testa anguste umbilicata, umbilico interdum ab anfractu ultimo obtecto, irregulariter pupæformis, costulata, anfractibus apicalibus deflexis, anfr. ultimo constricto ibidem angulo acuto deflexo, retro curvato, denique sinistrorsum ascendente. Apertura retrorsa, circularis vel subcircularis. Operculum tenue, corneum, concentricè paucispirale, profunde retractum. Animal tentaculis brevibus, cylindricis, obtusis, oculis ad basin externam tentaculorum sessilibus, lateraliter positis sed Cyclophoridarum altioribus. Pes brevis. Proboscis brevissima.

OPISTHOSTOMA FAIRBANKI, n. sp. (Pl. XXXVIII. fig. 14.)

Testa irregulariter ovata, albida, confertim costulata, lineis impressis spiralibus minutis, vix sub lente conspicuis, sæpe obsoletis, inter costulas signata. Spira breviter subcylindrica, apice perobtusio, sutura profunda. Anfr. 5, rotundati, duo apicales parum exserti, ex axi deviantes, tertius multo major, quartus maximus, quintus brevissime constrictus, ad stricturam angulo acuto versus umbilicum deflexus, in figuram literæ S curvatus, umbilicum omnino tegens, denique sinistrorsum ascendens, anfractus penultimus undique junctus. Apertura postica,

* Described and figured in the 'Journal of the Asiatic Society of Bengal,' vol. xxix. p. 121, 1860. The figures are very good.

† Ann. and Mag. Nat. Hist. ser. 3. vol. xiii. p. 444.

verticalis, subtrigonal-rotundata; peristoma simplex, undique expansum. Operculum normale.

Diam. incl. peristom. 1.5 mm.; perist. non incl. 1 mm.; alt. 1.5 mm.; aperturæ diam. circa 0.5 mm.

Hab. prope Khandalla ad summos montes "Syhadri" sive Western Ghats appellatos, inter Bombay et Poona, Indiæ orientalis.

The animal was very difficult to observe, on account of its extreme shyness and minute size. Only a very small portion of the body was extruded from the shell. The foot is very short and apparently rounded, but could not be seen fairly, as the animal would not crawl up a glass but appeared to endeavour to hide itself amongst decayed leaves. The tentacles are short and blunt, the eyes at their outside base, rather high in position, but not nearly so much so as in the *Aciculaceæ*. The whole animal is white and translucent, the eyes appearing as black specks, perfectly sessile. After two or three failures I succeeded in examining an operculum by breaking back the whorls of a specimen carefully until I came to it. It is lodged at the constriction in the last whorl, as long since suggested by Mr. Benson, and is distinctly horny, concentric, and paucispiral, resembling the figure of the operculum of *Diplommatina folliculus* given in Adams's 'Gen. Rec. Moll.' This entirely confirms the views I long since expressed as to the close affinity of *Opisthostoma* to *Diplommatina*, and shows the former, moreover, to be nearer to the typical costulate *Diplommatinæ* of the Himalaya than to the smooth or spirally lirated species (*Arinia*, H. & A. Ad.) of Hindustan, as the latter have the spiral structure apparently obsolete*. It is worthy of remark that some of the Pupinidæ (e. g., *Pupina artata*, Bens.), when their opercula are examined by transmitted light, show an apparently paucispiral structure, due to the whorls increasing in size more rapidly near the centre; but the construction of the spiral in *Pupina* and *Cataulus* has been shown to be different from that which obtains in other forms of operculated land shells.

The characters which serve to distinguish *Opisthostoma fairbanki* from *O. nilgircum* are:—

1. The greater exertion and smaller excentric deflection of the two apical whorls of *O. fairbanki*.

2. The simple expanded peristome and subtrigonally rounded aperture—*O. nilgircum* having a non-expanding duplicate peristome, the outer portion retro-relict, and a circular aperture.

3. The more distant sculpture.

4. The manner of curvature of the last whorl, the posterior bend of which is much more acute in the present species. In *O. nilgircum* the posterior half of the sigmoid curve of the last whorl is more open than the semicircular curve nearer the aperture, the umbilicus being fully exposed within the former. In *O. fairbanki* the anterior curve is the more open, and the last whorl just in front of the pos-

* I have just cut out the opercula of two specimens of *Diplommatina pachycheilus*, Bens., from Darjiling, and find the spiral structure much less distinct than it usually is in the Cyclophoridæ.

terior half of the curve passes across and completely conceals the umbilicus.

I have, with some difficulty, detected in *O. fairbanki* the minute decussating striæ observed by my brother between the costulations in *O. nilgircum*. They are very difficult to see, even under a high power and strong light, and appear to be frequently obsolete. I cannot detect them in my specimen of *O. nilgircum*, which is in good order.

The bluntly trigonal form of the aperture in *O. fairbanki* does not appear to be quite constant; the mouth in some specimens is nearly round.

The locality at Khandalla, at the top of the well-known Bhor-ghat incline on the railway between Bombay and Poona, is some distance down a ravine behind the graveyard, below the hill known as the Duke's Nose. The mollusk lives amongst dead leaves, in the same manner as *Diplommatina*, but, except in very wet weather, it appears to bury itself in the ground.

In the paper already referred to, published in the 'Annals and Magazine of Natural History' for June 1864, I gave my reasons for believing in the affinity of *Opisthostoma* and *Clostophis* to *Diplommatina*, instead of to the Pupinidæ, to which Dohrn had referred the first named (in 'Malakoz. Blätter,' vol. x. p. 39), and I also showed that the position assigned by Dr. Pfeiffer to *Diplommatina* in his valuable 'Monograph' was unnatural. In the Second Supplement to the 'Monograph,' which has since appeared, Dr. Pfeiffer follows my opinion only so far as to assign *Clostophis* to the Diplommatinidæ, while he leaves this family with the Aciculidæ in the suborder Opisthophthalma, and relegates *Opisthostoma* together with *Arinia* to the subfamily *Pupininae* of the family Cyclophoridae, under the suborder Ectophthalma. To *Arinia* he, moreover, assigns the two species described by my brother and myself as *Diplommatinæ*, from the hills of Southern India, *D. nilgirica* and *D. kingiana*. Had Dr. Pfeiffer seen the two last-named species, he would, I think, scarcely have dissociated them so widely from their nearest relatives the Western Himalayan *Diplommatinæ*, one of which, it should be remembered, is the type of the genus. It may be correct to class *Arinia* with *Pupina*; but I cannot help doubting whether the smooth *Diplommatinæ* of South India belong to the same genus as the Philippine *Cyclostoma minus* of Sowerby, the type of *Arinia*; and I am persuaded that the association of *Diplommatina* with *Acicula* and *Truncatella* is an utter violation of all natural affinities. In no single character of shell, animal, or operculum does *Diplommatina* approach to the Opisthophthalma, so far as I am aware. Its affinities are most unmistakeably with the Ectophthalma; and I believe that its proper position is as the type of a subfamily of the Cyclophoridae, which subfamily would include *Opisthostoma* and the smooth species of Southern India, and probably *Clostophis*. Whether *Arinia* should be classed with it or not, I am not prepared to say.

DESCRIPTION OF PLATE XXXVIII.

- Fig. 1. *Rumina (Obeliscus) pusilla*, p. 441.
 2. *Clausilia (Nenia) bartletti*, p. 441.
 3. *Otostomus pulcherrimus*, p. 442.
 4. — *bartletti*, p. 442.
 5. — *scitus*, p. 442.
 6. *Aperostoma connivens*, p. 443.
 7. *Bartlettia stefanensis*, p. 444.
 8. *Nassodonta insignis*, p. 445.
 9. *Frembleya egregia*, p. 445.
 10. *Clausilia (Phædusa) similaris*, p. 446.
 11. *Diplommatina (Dianeta) martensi*, p. 446.
 12. *Opisthostoma de-crespignii*, p. 447.
 13. — *nilgiricum*, p. 448.
 14. — *fairbanki*, p. 448.

12. Corrections and Addenda to certain Papers on Lepidoptera published during the years 1865-66; with Additional Notes on some of the Species described. By ARTHUR G. BUTLER, F.Z.S., Assistant, Zoological Department, British Museum.

I regret to find that, having relied too much upon the completeness of a recently published list of Diurnal Lepidoptera, I have, in several of my papers, overlooked species. This error has in some cases been the means of leading me to redescribe insects; and to these I propose in the present paper to restore their rightful names.

As I have lately had the advantage of seeing several types, and additional specimens, of insects which I have mentioned, I am now enabled to correct or add to any remarks which I may have made with regard to them.

PAPILIO.

In a paper published in the 'Annals and Magazine of Natural History,' June, 1866, "On the Identity of certain Species of Lepidoptera," I supposed that *P. caudius* might possibly be an Amazonian form of *P. argentus*. However, I have since detected a male of *P. caudius* amongst our specimens of *P. torquatus*: it differs from the *P. torquatus* of Brazil in having a broader subapical band on the front wings, and greenish instead of yellow submarginal spots on the hind wings; the outline of the wings, too, with the exception of the tails, exactly corresponds to the outline of the wings of *P. caudius*; therefore, although very closely allied, I think these two species may stand. Although the sexes in this group differ considerably in coloration, the outline of the wings is almost identical.

HESPEROCHARIS.

I have seen the type specimen of *Hesperocharis graphites*, Bates, in Mr. Salvin's collection, and I must confess that it seems to me

sufficiently distinct from my *Pieris avivolans*, P. Z. S. 1865, p. 457. n. 4, pl. xxvi. f. 4, to justify their separation as species. They may very possibly be local forms of one type; but in *avivolans* the submarginal lunulate marks of the underside are all distinct, whilst in *graphites* they form a continuous line; the orange streaks also are more defined, and the basal black spots larger and less numerous*.

ANTHOCHARIS.

My *A. leo* is only a variety of *A. halimede*, ♂, Klug.

ANTHOCHARIS HALIMEDE.

Anthocharis halimede, Klug, Ehrenb. Symb. Phys. Ins. (1-5) 10. t. 7. f. 12-15, ♂, ♀.

Var. ♂. *Anthocharis leo*, Butler, Ann. & Mag. Nat. Hist. December (1865).

Hab. Arabia Felix (*Klug*); White Nile (*Butler*). B.M.

RHODOCERA.

I feel satisfied that my *Gonepteryx urania* can be nothing more than Mr. E. Doubleday's *wallichii*, and may even be described from the type of that species; this species has been for years confounded with a smaller insect described last year by Mr. F. Moore in the 'Proceedings' of the Society.

RHODOCERA WALLICHII.

Gonepteryx wallichii, E. Doubleday, Trans. Ent. Soc. Lond. t. 5, Proc. p. 47 (1848).

Gonepteryx urania (wallichii?), Butler, P. Z. S. 1865, p. 458, pl. xxvi. f. 5.

Hab. North India. B.M.

EUPLŒA.

The following species are omitted in my 'Monograph,' *antea*, p. 268:—

EUPLŒA KADU.

♂. *Euplœa kadu*, Eschscholtz, Kotzeb. Reise, p. 210. n. 15, pl. 6. figs. 15a, 15b (1821).

Hab. Guam.

This may be identical with the *eunice* of Boisduval (Sp. Gén. Lép. pl. 24. f. 1), and probably the male of *E. hewitsonii*.

EUPLŒA NOVARÆ.

Euplœa novaræ, Felder, Cat. Nov. Voy., Verhandl. zool.-botan. Vereins in Wien, xii. p. 482. n. 103 (1863).

Hab. Nicobar.

Allied to *E. eunice*, Godt.; should come, according to Dr. Felder, next to his *E. ledereri*.

* Mr. Salvin does not consider these insects to be distinct species.

EUPLŒA ESPERI (*E. crameri*, Lucas, local var.).

Euplœa esperi, Felder, Cat. Nov. Voy., Verhandl. zool.-botan. Vereins in Wien, xii. p. 482. n. 109 (1863).

Hab. Nicobar Islands.

The former of these may be identical with some species in the National Collection; but I cannot find anything to suit the description to my satisfaction.

E. crassa may be a local form of *E. klugii*, Moore.

EUPLŒA SCHERZERI.

Euplœa scherzeri, Felder, Cat. Nov. Voy., Verhandl. zool.-botan. Vereins in Wien, xii. p. 479. n. 88 (1863).

Hab. Ceylon.

Dr. Felder describes this insect as being, at first sight, like *E. climena* of Cramer, but larger; underneath like *E. melina* of Godart, but with two discal streaks. It may be my *E. picina*; but the localities are different; and as no figure is given, it is impossible to be sure of the identity of the two insects.

EUPLŒA FRAUENFELDI (*E. crameri*, Lucas, local form).

Euplœa frauenfeldi, Felder, Cat. Nov. Voy., Verhandl. zool.-botan. Vereins in Wien, xii. p. 479. n. 87 (1863).

Hab. Ceylon.

Very near *E. bremeri*, Felder.

E. felderi may be a local form of *E. kinbergi*, Wallengren.

EUPLŒA ADYTE.

Euplœa adyte, Boisduval, Bull. Ent. p. clvi. n. 8 (1859).

Hab. New Caledonia.

Must be placed next to *E. eleusine*, Cramer. Dr. Boisduval seems to consider the locality of *E. eleusine* to be Amboyna; we have several specimens of it from Java, but none from that locality.

Cramer's figure is certainly meant to represent the insect subsequently figured by Hübner, and not the ♂ *mniszecii* of Felder. Judging by the description, I should think *E. adyte* must more nearly approach *E. eleusine* than *E. saundersii* (*tulliolus*, var.).

E. latifica is probably only the *E. dufresnii* of Godart.

E. corinna, M'Leay (King's Survey of Australia, ii. App. p. 462 (1827)), is most likely only a local variety of *E. core*.

EUPLŒA HELCITA (*E. eleutho*, var.?).

Euplœa helcita, Boisduval, Bull. Ent. p. clvi. n. 7 (1859).

Hab. New Caledonia.

I do not think this can be more than a local variety of *E. eleutho*; I have regarded it as such in my 'Monograph.' *E. eleutho* varies very much in form, and in the shape and position of the spots upon the wings, in specimens from the same locality; and therefore it is but natural to suppose that some more definite alteration in the size and position of the spots would occur in a different habitat.

DANAIS.

Danais xanthippus should in my 'Monograph' have been placed after *D. eresimus*, to which it is closely allied.

Since sinking Mr. Bates's species *D. jamaicensis* into a synonym I have seen more specimens of that insect; and it appears to be about as constant as any of the allied forms. Unless the line be drawn somewhere, the whole of the species of *Danais* from *berenice* to *cleophile* might be considered one species, the difference between one form and another being generally almost imperceptible. Thus specimens of *D. berenice* from the north-western coast of America only differ from *D. strigosa* (Bates) in being slightly larger and duller in colouring, and with the nervures not margined with grey; dark specimens of *D. jamaicensis* cannot conscientiously be separated from *D. strigosa*, and only differ from *D. gilippus* in having no central white spots and the nervures margined with grey. *D. gilippus* differs from *D. eresimus* in having several additional white spots and a wider submarginal black border; *D. eresimus* has several white spots more than *D. cleothera*, which it otherwise entirely resembles; *D. cleothera* scarcely differs from the Brazilian form of *D. erippus*; and the small Venezuelan form of *D. erippus* only differs from *D. cleophile* in having a narrower marginal border, and the subapical spots of the front wings pale ferruginous instead of yellow and placed a little closer together. Considering these facts, it would perhaps be as well to regard *D. strigosa* and *D. jamaicensis* as distinct from the other allied forms.

DANAIS MANUJA.

Idea manuja, Eschscholtz, in Kotzebue's Reise um die Welt, pl. 7. f. 13 a, 13 b (1821).

Hab. Brazil.

Omitted in my paper; probably only another form of *D. gilippus*. It seems chiefly to differ in its greater expanse of wing and larger white spots; it should come after *D. gilippus*, Cramer. This species is not noticed in Mr. Doubleday's 'Genera of Diurnal Lepidoptera.'

Idea plexippus, Eschscholtz, in Kotzebue's Reise um die Welt, pl. 7. f. 14 a, 14 b (1821), synonym of *D. erippus*: also omitted in the 'Genera.'

DANAIS CRATIPPUS (*D. chrysippus*, local var.).

Danais cratippus, Felder, Sitzungsberichte der K. Akademie der Wissenschaften zu Wien, p. 449 (1860).

Hab. Amboyna.

A very slight local variety of *chrysippus*, the dark form mentioned in my 'Monograph' as from Ceram, Java, and Greece.

My *D. pullata* proves to be identical with Felder's *D. mitylene*.

DANAIS MITYLENE.

Danais mitylene, Felder, Wien. ent. Monatschr. iv. p. 232. n. 78 (1860).

Danais pullata, Butler, P. Z. S. 1866, p. 47.

Hab. Oceania.

B.M.

DANAIS ABIGAR.

Idea abigar, Eschscholtz in Kotzebue's Reise um die Welt, pl. 7. f. 12 a, 12 b (1821).

Hab. Manilla (*Coll. Hewitson?*).

This species is not mentioned in the 'Genera.' It must be placed after *D. fulgurata*. In some respects it resembles *D. affinis*, Fabricius, in others *D. melanippus*, Cramer.

DANAIS NESIPPUS (*D. hegesippus*, var. ? B.M.).

Danais nesippus, Felder, Cat. Nov. Voy., Verhandl. zool.-botan. Vereins in Wien, xii. p. 486. n. 123 (1863).

Hab. Sambelong.

This is omitted in my 'Monograph' of the genus. It seems to me to be an intermediate form between *D. hegesippus* and *D. conspicua*; but as far as I can judge from the description, it appears not to be identical with the latter insect. Dr. Felder considers it to be "a local variety of *D. hegesippus* and *D. melanippus* of Cramer, and a local subspecies of *D. lotis*." I do not pretend to understand such a term as "local subspecies;" but perhaps some people may be found to appreciate the meaning of it.

D. nesippus should be placed after *D. conspicua*.

D. similis, var. *chinensis*, Felder, Cat. Nov. Voy., Verhandl. zool.-botan. Vereins in Wien, xii. p. 486 (1863).

Hab. Hong Kong.

Probably the true *similis* of Linnæus.

The following species was inserted in the manuscript of my paper; but by some accident the page was lost:—

DANAIS JUVENTA.

Papilio juvena, Cramer, Pap. Exot. ii. t. 188. f. B (1779).

Danais juvena, Godart, Enc. Méth. ix. p. 193 (1819); E. Doubl. List Lep. Brit. Mus. pt. i. p. 50 (1844); Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 93. n. 34 (1847); F. Moore, Cat. Lep. Mus. East Ind. Comp. p. 122. n. 240 (1857).

Hestia juvena, Hübner, Verz. bek. Schmett. p. 15 (1816).

Hab. Java; Borneo; Lombok; Philippines; Celebes. B.M.

The position of this species is after *D. Meganira* (Godart).

DANAIS CEYLANICA (*D. aglea*, var.).

Danais ceylanica, Felder, Cat. Nov. Voy., Verhandl. zool.-botan. Vereins in Wien, xii. p. 479. n. 90 (1863).

Hab. Ceylon.

B.M.

Having now seen Mr. Hewitson's *Danaidæ*, I have become aware of the fact that the *phyle* of Felder is the insect described and figured in the 'Proceedings' as *D. erebus*. It would have been quite impossible for me to have discovered this without either seeing the insect

itself or a figure of it; for descriptions of these closely allied forms differ so little from one another that distinctions of outline or pattern can scarcely be appreciated.

DANAIS PHYLE.

Danais phyle, Felder, Wien. ent. Monatschr. p. 105. n. 65 (1863).

Danais eërebus, Butler, P. Z. S. 1866, p. 54,

Hab. Philippine Islands.

B.M.

I have lately seen specimens of *D. vitrina*, Felder, in Mr. Bates's and Mr. Hewitson's collections; and it seems to me to differ from my *D. cœnone* (P. Z. S. 1865, p. 433, pl. xxv. f. 6, 1866, p. 56) in being larger and with fewer marginal spots; there can, however, be no doubt that it is the same species with mine.

Euplœa philomela of Zinken-Sommer, hitherto placed as a synonym of *D. cleona* of Cramer, must be kept separate from it. This species, excepting in form, bears a more general resemblance to my *D. crocea*; it is intermediate between the two species; and the male, two specimens of which I have discovered in the Museum Collection, is of the same form as my *D. gloriola*, ♂. It may be easily distinguished from *D. crocea*, not only by its different form, but by the male having the entire basal portion of the front wings yellow, and the subapical streaks much broader and shorter.

DANAIS PHILOMELA.

Euplœa philomela, ♀, Zinken-Sommer, Nova Acta Acad. Nat. Curios. xv. t. 16. f. 17 (1831).

Hab. Java; Nepal.

♂, B.M.

The two next are identical:—

DANAIS PUMILA.

Danais pumila, Boisduval in Ann. Soc. Ent. France, p. 156 (1859).

Danais mariana, Butler, Ann. & Mag. Nat. Hist. xvi. p. 397 (1865); P. Z. S. 1866, p. 58, Pl. IV. f. 7.

Hab. New Caledonia.

B.M.

The following also prove to be synonymous:—

DANAIS CHLORIS.

Danais chloris, Felder, Wien. ent. Monats. p. 300. n. 11 (1861); Butler, P. Z. S. 1866, p. 58.

Danais salvini (*chloris*, Felder?), Butler, P. Z. S. 1866, p. 172 (♀ fig.).

Hab. Celebes.

♀, B.M.

VICTORINA.

By comparison of the types I find that my *Victorina aphrodite*, P. Z. S. 1865, p. 483, is identical with Mr. Bates's *Amphirene superba*, Ent. Month. Mag. (1864); yet, judging from the description alone, I had concluded that they must be distinct. This shows how necessary

figures are for the determination of species of Lepidoptera, even when the insects are carefully described.

VICTORINA SUPERBA.

Amphirene superba, Bates, Ent. Month. Mag., List Butterfl. Guatem. & Panam. (1864).

Victorina aphrodite, Butler, P. Z. S. 1865, p. 483.

Hab. Polochic Valley, Guatemala; Mexico. B.M.

The Mexican form which I described is somewhat longer and narrower in the wings than the one described by Mr. Bates. We now have specimens of both insects in the Museum Collection.

CHARAXES.

The following alterations should be made in my monograph of this genus (P. Z. S. 1865, p. 422 *et seq.*):—

Charaxes euryalus and *C. latona* should come after *C. affinis*, *C. latona* being included in the same division with *C. affinis* and its allies, as it is evidently the female of an insect belonging to that group.

Charaxes jahlusa (Trimen) and *C. argynnides* (Westwood), p. 637. n. 59, must, I think, be separated as distinct species; I have lately seen specimens of two species, probably typical of these forms, in Mr. Bates's collection.

According to M. Lucas, the *Nymphalis pleione* of Godart, which in the 'Genera of Diurnal Lepidoptera' is placed in the genus *Paphia*, should properly belong to *Charaxes*, where it would come near *C. horatius*, the *anticlea* of Drury.

M. Lucas has examined the type specimen described by Godart; he considers that the proper locality of the insect should be the coast of Africa, and not the Antilles as stated in the 'Encyclopédie Méthodique.' The synonymy of this species therefore will stand as follows:—

CHARAXES PLEIONE.

Nymphalis pleione, Godart, Enc. Méth. ix. p. 366. n. 56 (1819).

Paphia pleione, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 319. n. 23 (1850).

Charaxes pleione, Lucas, Bull. Soc. Ent. de France, p. xx (1861).

Hab. Antilles (Godart); coast of Africa (Lucas).

CHARAXES FABIUS. (Synonym of)

Papilio euphanes, Esper, Ausl. Schmett. i. pl. 59. f. 1 (1801).

C. GALAXIA of my 'Monograph' has been supposed by some to be a mere variety of *C. pyrrius*; but having lately seen a specimen of the true *pyrrius* in the collection of Mr. Bates, I am enabled to say distinctly that the two insects are vastly different, *C. pyrrius* having been very well represented by Clerck, Cramer, and others. The specimen in Mr. Bates's collection is from Amboyna.

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BRAHMÆA.

By the kind assistance of Mr. Frederic Moore I have discovered that my *Brahmæa petiveri* is identical with *B. lunulata* of Bremer, figured in the third part of Ménériés's catalogue, the habitat of that insect being stated as North China. *B. whitei* I believe goes under the name of *hearseyana*, which I imagine must have been the name intended for it by Mr. Adam White, the specimen which he figured having been brought over by General Hearsey.

BRAHMÆA LUNULATA.

Brahmæa lunulata, Bremer, Etud. Ent. de Motschulsky, p. 64 (1852); Ménériés, Reis. und Forsch. in Amur-Lande, Bd. ii. p. 55. n. 134 (1859); Cat. Lepid. Mus. imp. Petrop. iii. pl. 15. f. 5.

Brahmæa petiveri, Butler, P. Z. S. 1866, p. 120.

Saturnia undulata, Bremer, Beitr. zur Schmett.-Fauna des Nördl. China's, p. 16. n. 78 (1853).

Hab. Isle of Chusan (*Petiver*); North China (*Bremer, Ménériés*).

13. A Monograph of the Genus *Euptychia*, a numerous race of Butterflies belonging to the Family *Satyridæ*; with Descriptions of Sixty Species new to Science, and Notes on their Affinities &c. By ARTHUR GARDINER BUTLER, F.Z.S., Assistant, Zoological Department, British Museum.

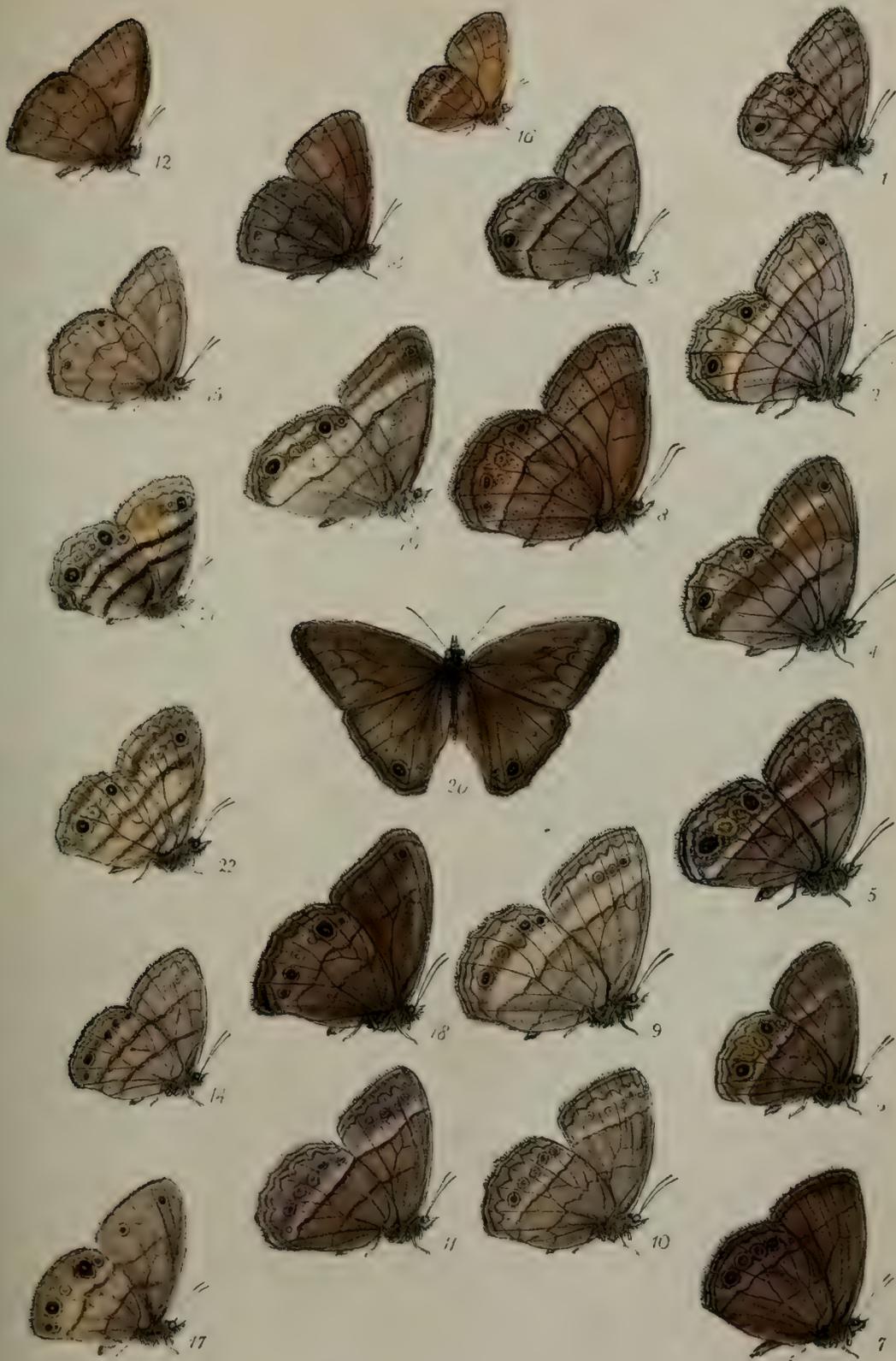
(Plates XXXIX., XL.)

The very numerous genus which I have now taken in hand has for some years remained comparatively untouched by entomologists. The species are confined exclusively to the New World, the majority of them being natives of South America. They are generally rather sober in colouring; but some species are exceedingly brilliant, and often varied on the underside with silvery spots and streaks which appear embossed, as though molten metal had been dropped upon the wings.

Euptychia is closely allied to several other Satyride genera, from some of which it seems scarcely to differ except in colouring or locality. Professor Westwood, in the 'Genera of Diurnal Lepidoptera,' has separated it under two names, *Neonympha* and *Euptychia*, following the example set by Hübner in his 'Verzeichniss der bekannten Schmetterlinge;' but most entomologists now agree that the two genera are synonymous. In the 'Genera,' although great trouble has been taken in dividing them, several species are placed under both heads.

In the present paper I have placed the insects as nearly as possible in natural consecutive order, and divided them under sections, to render their determination less difficult.

This Monograph includes all the species in the National Collection,



NEW SPECIES OF EUPTYCHIA





F. W. WILSON DEL.

V. N. HANUART IMP.

NEW SPECIES OF EUPTYCHIA



of which more than forty are new to science—besides three new species in the collection of Mr. Osbert Salvin, and fifteen in that of Mr. H. W. Bates. Mr. Hewitson has also kindly lent me several typical specimens, and has given me permission to describe his new species, which I intend to do as soon as possible in a supplementary paper.

Some two or three of the new species here described may prove to be only varieties of insects described by Godart; but I have strictly followed out each of his descriptions with every new species before describing it; so that any error of this nature must be attributed to the absence of figures of his insects.

Genus EUPTYCHIA, Hübner.

Euptychia, *Neonympha*, and *Megisto*, Hübner, Verz.

Euptychia, *Neonympha*, and *Cissia*, E. Doubleday, List Lep. Brit. Mus.

Euptychia and *Neonympha*, Westw. & Hewits. Gen. Diurn. Lepid.

Oreades strigata, Hübner, olim.

*Satyru*s, Godart, Enc. Méth.

Division I.

Alæ supra fuscae, rarissime albo violaceove variae; posticæ plerumque ocello subanali distincto: subtus pallidiores, ocellis forma regularibus, plerumque distinctis, lineis duabus mediis, interna anticarum raro obsoleta.

1. EUPTYCHIA OCIRRHÖE.

Papilio ocirrhoë, Fabricius, Gen. Ins. p. 260 (1776); Ent. Syst. iii. pt. 1. p. 96. n. 297 (1793).

Euptychia ocirrhoë, Westw. & Hewits. Gen. Diurn. Lep. p. 373. n. 1 (1851).

*Satyru*s *ocyrrhoë*, Godart, Enc. Méth. ix. pp. 464 & 489. n. 41 (1819).

Oreas (strigata) ocyrrhoë, Hübner, Samml. exot. Schmett. Bd. i. pl. 85. f. 1-4 (1806).

Papilio hesione, Sulzer, Gesch. der Insekt. t. 17. f. 3, 4, p. 144 (1776).

Papilio cissia, Cramer, Pap. Exot. iii. p. 3, pl. 194. f. D, E (1782).

Euptychia cissia, E. Doubl. List Lep. Brit. Mus. p. 122 (1844).

Hab. Panama; Brazil; Honduras; Caraccas. B.M.

1 a. EUPTYCHIA OCIRRHÖE, var. (sp. n. ??).

Alæ magis productæ, linea submarginali anticarum subintegra, area basali fuscescente, fasciisque angustis.

Hab. Polochic Valley, Guatemala (*Coll. Salvin*).

Alæ basi subtus solum fuscescente.

Hab. Obydos (*Coll. Bates*); Panama. B.M.

Unless I had seen intermediate varieties, I should have been in-

clined to consider this form a distinct species, the appearance of the underside being so unlike that of *ocirrhoë* proper that it would be impossible to place the two insects under one name without such proofs of their apparently specific identity. Even now I am not sure that the two insects might not be separated, as this form differs even from those most closely allied to it in having the front wings more produced, and the submarginal line of the front wings entire to near the apex.

2. EUPTYCHIA LYDIA. (*E. ocirrhoë*, ♀?)

Papilio lydia, Cramer, Pap. Exot. ii. pl. 148. f. C, D (1779) (but not of Fabricius, Ent. Syst. iii. pt. 1. p. 135).

Euptychia lydia, Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 2 (1851).

Satyrus lydius, Godart, Enc. Méth. ix. pp. 464 & 489. n. 40 (1819).

Hab. Surinam.

The representation of this species may be intended for the female of *E. ocirrhoë*; but it is impossible to decide whether it is so or not; and until we know more of the Lepidoptera of Surinam, this and many other Butterflies figured by Cramer must be considered distinct species.

3. EUPTYCHIA OCYPETE.

Papilio ocypete, Fabricius, Gen. Ins. Mant. 260 (1776); Ent. Syst. iii. pt. 1. p. 96. n. 296 (1793).

Euptychia ocypete, Hübner, Verz. bek. Schmett. p. 54. n. 506 (1816); Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 10 (1851).

Satyrus ocypete, Godart, Enc. Méth. ix. pp. 463 & 488. n. 34 (1819).

Hab. Surinam.

Var. *Alæ supra paulo glaucæ; posticæ macula anali nigra fusco pallido cincta.*

Hab. Venezuela; Para; Tapajos (*Coll. Bates*). B.M.

This species is not perfectly identical with *E. helle* of Cramer; although Fabricius refers to Cramer's figure of that insect, his description does not in all points agree with it.

4. EUPTYCHIA HELLE.

Papilio helle, Cramer, Pap. Exot. iii. pl. 194. f. F, G (1782).

Papilio ocypete (synonym), Fabricius, Ent. Syst. iii. pt. 1. p. 96. n. 296 (1793).

Euptychia ocypete (synonym), Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 10 (1851).

Hab. Surinam.

Var. *Alæ posticæ supra macula anali distincta bipupillata et ochreo cincta.*

Hab. Para.

B.M.

This species differs from *ocypete* in being longer in the wings and not so distinctly glaucous, in having the anal ocellus above distinctly bipupillated, the bands of the underside broader and becoming reddish at the anal angle of the hind wings, and also in having three apical ocelli instead of two in the front wings; this last, however, is a variable character in *E. ocypete*.

5. EUPTYCHIA MYNCEA.

Papilio myncea, Cramer, Pap. Exot. iv. pl. 293. f. C (1782).

Euptychia myncea, Hübner, Verz. bek. Schmett. p. 54. n. 516 (1816); Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 5 (1851).

Satyrus myncea, Godart, Enc. Méth. ix. pp. 463 & 488. n. 36 (1819).

Neonympha clerica, Herrich-Schäffer, Lep. Ind. Syst. (1864).

Hab. Guiana (*Westw.*); Brazil. B.M.

Var. *a.* *Posticæ supra macula anali minus distincta; anticæ subtus macula postica flava distinctiore, posticæ ocellis minoribus.*

Hab. Para. B.M.

This variety of *myncea* has hitherto stood in the National Collection under the name of *crantor* of Fabricius—a species which, if the figure of Donovan be correct, it is wholly unlike, and which we do not possess.

Var. *b.* *Alæ subtus cinerascens.*

Hab. Para (*Coll. Bates*).

Var. *c.* *Alæ subtus fasciis rufescentibus; anticæ macula flava valde distincta; posticæ margine postico latiore intusque fulvo marginato, ocellis mediis parvis.*

Hab. Honduras. B.M.

This has also been considered a variety of *C. crantor* (*vide* Gen. Diurn. Lepid. p. 373. n. 7, localities). Fabricius's description does not, however, suit either of these forms; he describes the underside as having two ocelli in the front wings. Both of these varieties have three apical ocelli, the highest of which is the only pupillated one, the other two being merely silvery spots with indistinct dusky irides.

6. EUPTYCHIA PALLADIA, sp. n. (Pl. XXXIX. fig. 21.)

Alæ supra fuscæ, fasciis duabus apud basim (interna indistincta) obliquis integris; margine postico, linea marginali aliaque submarginali undulata fuscis; margine anali posticarum albicante: anticæ ocello apicali, posticæ uno anali, nigris flavo cinctis et argenteo bipupillatis: corpus cinereo-fuscum, antennis pallidis rufo-fuscis.

Alæ subtus albidæ, fasciis duabus mediis, posticarum minime convexis; lineis duabus marginalibus aliaque submarginali undulatis fuscis, externa anticarum integra, interna angulis alternis, lineis internis ad angulum analem posticarum latioribus flavescentibusque: anticæ ocellis tribus ochreo cinctis et fusco circumcinctis subapicalibus, maculisque duabus insuper parvis piriformibus

ochreis, fusco cinctis; ocello primo magno nigro, argenteo bipupillato, aliis fuscis argenteo bipupillatis; macula permagna subanali flava: posticæ ocellis quinque unoque anali minimo, ochreo cinctis, fusco circumcinctis et argenteo bipupillatis, primo, secundo, quinto et anali nigris, primo parvo, secundo et quinto magnis, aliis fuscis: corpus albido-cinereum.

Exp. alar. unc. 1 $\frac{7}{16}$.

Hab. Tapajos (Coll. Bates).

This insect is not closely allied to any other known species; in general coloration it most nearly resembles the Honduras form of *E. myncea*, but differs from it in many particulars.

7. EUPTYCHIA TERRESTRIS, sp. n. (Pl. XXXIX. fig. 1.)

Alæ supra fuscæ, fasciis duabus mediis obliquis, linea una submarginali undata duabusque marginalibus directis nigro-fuscis; posticæ macula anali parva argentea brunneo cincta.

Alæ subtus pallidiores, fasciis mediis fuscis rufescentibus; lineis marginalibus velut supra fuscis; anticæ ocello apicali consueto maculisque duabus argenteis; posticæ maculis quinque ocellatis, primo secundo quintoque nigris ochreo cinctis argenteoque bipupillatis, tertio quartoque argenteis ochreo cinctis, ocellis omnibus fascia lata indistincta submarginali inclusis.

Exp. alar. unc. 1 $\frac{7}{16}$.

Hab. Para.

B.M.

Var. Ocellis nigris majoribus.

Hab. Lower Amazons (Coll. Bates).

Underside uniform greyish brown; central ocelli of hind wings large and oval; otherwise very similar to *E. myncea*, but smaller.

8. EUPTYCHIA CLARISSA.

Papilio clarissa, Cramer, Pap. Exot. iv. pl. 293. f. D, E (1782).

Euptychia clarissa, Hübner, Verz. bek. Schmett. p. 54. n. 503 (1816); Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 6 (1851).

Papilio penelope, Fabricius, Ent. Syst. iii. pt. 1. p. 96. n. 298 (1793); Godart, Enc. Méth. ix. pp. 463 & 496. n. 39 (1819).

Hab. Guiana (Westw.); Para.

B.M.

This species may readily be distinguished from *E. myncea* by the distinct apical ocellus in the front wings above; below by the brilliance and number of the silver spots, which are almost destitute of iris, the pale hind marginal edge, and doubly dentated submarginal lines.

9. EUPTYCHIA CAMERTA.

Papilio camerta, Cramer, Pap. Exot. iv. pl. 293. f. F (1782).

Neonympha camerta, Westw. & Hewits. Gen. Diurn. Lep. p. 375. n. 3 (1851).

Hab. Guiana, Brazil (Westw.); Surinam (Cramer).

This species, although closely allied to several acknowledged *Euptychiæ*, has been placed in the genus *Neonympha*. It appears

to me that if questionable microscopical distinctions are to be the means of widely separating species which are evidently related to one another, it would be much better not to pay attention to them.

10. EUPTYCHIA THEMIS, sp. n.

In the collection of Mr. Hewitson.

11. EUPTYCHIA USITATA, sp. n. (Pl. XXXIX. fig. 2.)

Alæ supra fuscæ linea media fuscescente continua post cellas posita, tribusque marginalibus undatis; anticæ ocello apicali parvo nigro, flavo cincto et albo bipupillato; posticæ ocellis duobus similibus analibus, interno majore.

Alæ subtus pallidiores, lineis duabus mediis fuscis distinctis lituraque ad cellæ extimum, area apicali pallida ad apicem anticarum fuscescente, lineis marginalibus velut supra distinctioribus; anticæ ocello apicali consueto punctisque minimis argenteis, macula magna subanali indistincta; posticæ ocellis velut in E. myncea, minoribus.

Exp. alar. unc. 1½.

Hab. Venezuela.

B.M.

Var. a. Anticæ subtus immaculatæ, posticæ ocellis minus distinctis.

Hab. Venezuela.

B.M.

Var. b. Lineis mediis subtus rufescentibus.

Hab. Polochic Valley, Guatemala (*Coll. Salvin*).

12. EUPTYCHIA SIMILIS, sp. n.

Alæ supra fuscæ; posticæ lineis tribus marginalibus fuscescentibus, media latiore, ocello uno subanali nigro ochreo cincto cæruleoque pupillato; corpus fuscescens.

Alæ subtus pallidiores cinereo variæ, lineis mediis velut in E. usitata; area apicali cinerascens lineis tribus tenuissimis marginalibus undatis, media ad angulum analem posticarum dilatata; fascia submarginali lata ochreo-fusca; posticæ macula subanali nigra ochreo cincta, punctisque tribus submarginalibus fuscis: corpus pallidum; antennis supra fuscis nigro acuminatis, subtus pallidioribus rubro nigroque acuminatis.

Exp. alar. unc. 1¼.

Hab. Guatemala (central valleys) (*Coll. Salvin*).

Allied to the preceding species, but very distinct.

Var. Alæ subtus pallidiores nec cinerascens, lineis marginalibus margini propioribus, anticæ ocellis tribus fuscis pallidis valde indistinctis, posticæ ocellis quinque majoribus (secundo et quinto maximis) nigris.

Hab. Nicaragua.

B.M.

13. EUPTYCHIA PIERIA, sp. n. (Pl. XXXIX. fig. 3.)

Alæ supra olivaceo-fuscæ; anticæ puncto subapicali, lineis tribus

marginalibus mediaque valde indistinctis fuscis; posticæ linea media paulo distinctiore et apud angulum analem subangulata, ocello subanali nigro flavo cincto et albo bipupillato, lineis tribus marginalibus distinctis undatis fuscis: corpus cinereum.

Alæ subtus pallidiores, lineis duobus late separatis et margini subparallelis, externa paulo latiore ad costam anticarum incurrente, apud angulum analem posticarum subangulata; lineis tribus submarginalibus fuscis, interna anticarum sinuata, posticarum sinuata et dentata, aliis anticarum subintegris, posticarum sinuatis: anticæ puncto subapicali parvo, nigro, ochreo pallido cincto argenteoque pupillato; posticæ ocellis quinque ochreo pallido cinctis, tertio et quarto argenteo sparsis, aliis nigris argenteo bipupillatis, puncto subanali ochreo: corpus pallidum.

Exp. alar. unc. 1 $\frac{3}{8}$.

Hab. Honduras.

B.M.

Allied to the preceding species.

14. EUPTYCHIA AUSTERA, sp. n. (Pl. XXXIX. fig. 4.)

Alæ supra olivaceo-fuscæ; anticæ ocello anali nigro argenteo bipunctato fulvoque cincto; posticæ paulo sinuata, ocellis duobus subanulibus analique majore, similibus, fascia indistincta media arcuata fusca, puncto anali, duobus apud apicem valde indistinctis fasciisque marginali ochreo-fuscis, ciliis fuscis: corpus paulo obscurius.

Alæ subtus cinerascens, fascia subcontinua cellarum media oblique transerrante aliaque latiore obliqua post cellas posita ochreo-fuscis; anticæ linea submarginali ochrea fasciam adjacentem, ocello velut supra, lineisque tribus marginalibus, interna dentata; posticæ maculis quinque, prima tertia et quarta indistinctis argenteis ochreo cinctis, secunda et quinta ocellatis, fascia tenui marginali ochrea aliaque interna fusca, ciliis velut supra fuscis: corpus cinereum, antennis fuscis, subtus rufescentibus.

Exp. alar. unc. 1 $\frac{6}{8}$.

Hab. Bogota.

B.M.

15. EUPTYCHIA DIVERGENS, sp. n. (Pl. XL. fig. X.)

Alæ supra olivaceo-fuscæ, lineis tribus marginalibus fuscis; anticæ costa basali ochracea; posticæ linea media obliqua indistincta ocelloque subanali indistincto: corpus olivaceo-fuscum.

Alæ subtus pallidiores, margine postico ochreo, lineis tribus marginalibus nigro-fuscis fasciisque submarginali ochracea, fasciis duobus mediis subferrugineis, apicibus divergentibus; anticæ ocello apicali, fasciis mediis latius separatis; posticæ ocellis quinque submarginalibus, secundo et quinto majoribus nigris argenteo bipupillatis fulvoque cinctis, aliis argenteis fulvo cinctis, fasciis mediis plus approximantibus, externa medio paulo angulata: corpus olivaceo-fuscum.

Exp. alar. unc. 1 $\frac{5}{8}$.

Hab. Rio Negro (Colls. Salvin and Bates).

This insect is something like a very small specimen of *E. antinoë*.

16. EUPTYCHIA EURYTUS.

Papilio eurytus, Fabricius, Syst. Ent. p. 487. n. 194 (1775-78).

Papilio eurytris, Fabricius, Ent. Syst. iii. pt. 1. p. 157. n. 485 (1793).

Neonympha eurytris, Westw. & Hewits. Gen. Diurn. Lep. p. 375. n. 1 (1851).

Satyrus eurythris, Godart, Enc. Méth. ix. pp. 465 & 495. n. 57 (1819); Boisduval et Leconte, Hist. Léop. Am. Sept. pl. 61 (1833).

Papilio cymela, Cramer, Pap. Exot. pl. 132. f. C, D (1779).

Megisto cymelia, Hübner, Verz. bek. Schmett. p. 54. n. 517 (1816).

Hab. United States.

B.M.

17. EUPTYCHIA PERIPHAS.

Satyrus periphias, Godart, Enc. Méth. ix. pp. 465 & 495. n. 62 (1819).

Neonympha periphias, Westw. & Hewits. Gen. Diurn. Lep. p. 375. n. 5 (1851).

“*Alis integerrimis, fuscis, supra ocello unico, subtus striga ferruginea; posticis ocellis tribus punctisque quatuor interjectis.*”

“It differs from *eurythris* in being smaller, the upperside and the underside of the front wings having only a single ocellus, and the underside of the hind wings only three ocelli—one near the margin, and two (the outer one very small) near the anal angle,—finally in that it only has one brown line, instead of two, in the middle of the disk of each wing.”—*Enc. Méth.*

Hab. Brazil (*Coll. Hewitson*).

18. EUPTYCHIA LETHE, sp. n.

♂. *Alæ supra fusæ, linea marginali alteraque submarginali indistinctis obscurioribus subintegris; posticæ ocello subanali nigro brunneo cincto, linea media discali undulata indistincta: corpus nigro-fuscum, antennis nigro-fuscis.*

Alæ subtus paulo pallidiores, area apicali pallescente, lineis duabus mediis valde separatis fuscis, interna angulata, externa undulata, lineis marginalibus velut supra distinctioribus; anticæ ocellis duobus nigris flavo cinctis et albo pupillatis, uno subapicali, aliisque subanali majore; posticæ ocellis quatuor, uno apicali, duobus analibus minimis unoque subanali maximo nigris flavo cinctis et albo pupillatis, punctis duobus ocellatis inter ocellos apicalem et anales positis indistinctis fuscis: corpus nigro-fuscum.

Exp. alar. unc. 1 $\frac{5}{8}$.

Hab. Venezuela.

B.M.

19. EUPTYCHIA MÆPIUS.

Satyrus mæpius, Godart, Enc. Méth. ix. pp. 464 & 490. n. 45 (1819).

Euptychia mæpius, Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 21 (1851).

“*Alis integris, fuscis: subtus strigis tribus ferrugineis dimidioque apicali grisescente; posticis ocellis quinque bipupillatis, 2°, 4°, 5° supra conspicuis.*”

“About $1\frac{1}{2}$ inch in expanse. The upperside of the wings dark brown.

“The underside is of a pale shade, nearly of the same brown from the base to the middle, with two ferruginous transverse lines; becoming greyish towards the apex, with a row of four ocelli in the front wings, and a row of five in the hind wings, the second, fourth, and anal ones visible above; these ocelli, which are bounded in front by a ferruginous waved line and a double blackish line, are very dark, with yellowish iris and double silver pupil; of those in the front wings only two (the first and last) are visible above.”—*Enc. Méth.*

Hab. Guiana.

Var. *Alæ supra ocellis primo et quarto indistinctissimis, microscopio solum manifestis.*

Alar. exp. unc. $1\frac{3}{4}$.

Hab. Para.

B.M.

If measured as it is when set, this insect would only expand $1\frac{1}{2}$ inch; but taking each wing separately the expanse is $1\frac{3}{4}$ inch. This fact perhaps may account for many errors into which authors have fallen with regard to the measurement of Lepidoptera.

20. EUPTYCHIA ERIGONE, sp. n. (*E. mæpius*, var. ?) (Pl. XXXIX. fig. 5.)

Alæ supra olivaceo-fuscæ, linea media obliqua fusca post cellam posita; anticæ lineis tribus marginalibus indistinctis fuscis; posticæ lineis tribus distinctioribus, interna apud apicem angulata, ocellis quinque submarginalibus nigris ochreo cinctis, secundo obsoleto, quarto magno cæruleo pupillato, quinto minimo argenteo pupillato.

Alæ subtus pallidiores, lineis duabus mediis apud angulum analem posticarum angulatis, lineis tribus marginalibus fuscis, interna undulata; anticæ area apicali ochreo-fusca, fascia lata media fusca, ocellis tribus subapicalibus fuscis ochreo cinctis, infimo majore cæruleoque bipupillato; posticæ area apicali cinerea, fascia media lata fusca ocellisque quinque submarginalibus argenteo-cæruleo bipupillatis, primo secundo et quinto nigris flavo cinctis, aliis fuscis flavo cinctis, secundo et quinto majoribus: corpus olivaceo-fuscum, antennis fuscis.

Exp. alar. unc. $1\frac{5}{8}$.

Hab. S^{to} Paulo.

B.M.

Var. *Posticæ supra, ocellis parvis, indistinctis.*

Hab. Ega (*Coll. Bates*).

Allied to *E. mæpius*. It chiefly differs in the number of ocelli upon the upperside, in *E. mæpius* only three being visible in the hind and two in the front wings, in this insect none in the front and five in the hind wings, one of which is, however, very indistinct;

on the underside it differs in the number of ocelli in the front wings, *E. mæpius* having four instead of three.

21. EUPTYCHIA ARGYROSPILA, sp. n.

Alæ supra fuscæ; anticæ lineis duabus marginalibus obscurioribus, interna undulata, margine ipso nigro-fusco, ciliis fuscis puncto apud angulum analem nigro minimo; posticæ ocellis tribus subanalibus nigris ochreo cinctis, medio magno distincto, violaceo pupillato: corpus fuscum, antennis fuscis.

Alæ subtus ochreo-fuscæ, lineis duabus mediis obscurioribus, externa posticarum medio indentata; margine postico, linea marginali alteraque submarginali nigris, posticarum undatis, interna anticarum angulis alternis undulata; anticæ ocellis quatuor fulvo cinctis, primo et quarto minoribus nigris, primo argenteo bipupillato, secundo et tertio fuscis violaceo pupillatis; posticæ ocellis quinque fulvo cinctis, apicali minimo, primo secundo et quinto nigris, aliis fuscis, quinto argenteo bipupillato, aliis violaceo pupillatis: corpus pallidius.

Exp. alar. unc. $1\frac{9}{16}$.

Hab. Ega (Coll. Bates).

22. EUPTYCHIA CRANTOR.

Papilio crantor, Fabricius, Ent. Syst. iii. pt. 1. p. 158. n. 489 (1793); Donovan, Insects of India, pl. 37. f. 4 (1800).

Satyrus crantor, Godart, Enc. Méth. ix. p. 488. n. 37 (1819).

Euptychia crantor, Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 7 (1851).

Hab. —?

This species is said by Fabricius to come from India. Westwood gives the localities "Brazil, Pernambuco, Honduras." I think, however, he must have intended another species, as he quotes it as in the Museum Collection, and I have not been able to find anything like it amongst our species of *Euptychia*.

23. EUPTYCHIA OCNUS, sp. n.

Alæ supra fuscæ, margine extremo nigro; linea marginali alteraque submarginali fuscis, posticarum et interna anticarum undulatis; posticæ macula subanali nigra ochreo cincta: corpus cinereo-fuscum, antennis supra fuscis, subtus albidis præ flavescentibus et apud apicem fusco fasciolatis.

Alæ subtus pallidiores, paulo violascentes, fasciis duabus mediis rufescentibus, interna anticarum ad costam extus currente, posticarum paulo irregularibus, externa ad marginem analem angulo incurrente, margine ipso lineaque marginali nigris, posticarum undulatis, linea submarginali fusca angulis alternis undata, ciliis cinereo-fuscis; anticæ fascia submarginali fusca, ocellis tribus subapicalibus, primo nigro fulvo cincto et argenteo bipupillato, aliis minimis fuscis indistinctis argenteo pupillatis; posticæ ocellis quinque, primo secundo et quinto nigris fulvo cinctis et

argenteo bipupillatis, primo minimo, aliis fulvis linea media argentea, omnibus fusco circumcinctis: corpus pallide ochreum.

Exp. alar. unc. $1\frac{1}{6}$ ³.

Hab. Tapajos (*Coll. Bates*); Villa Nova.

B.M.

24. EUPTYCHIA ERIPHULE, sp. n. (Pl. XXXIX. fig. 6.)

Alæ supra fuscæ, posticæ lineis tribus undatis marginalibus fuscis punctoque valde indistincto subanali fusco: corpus fuscum.

Alæ subtus pallidiores, linea tenuissima fusca apud basim posita, lineaque post medium extus violaceo marginata et ad angulum analem posticarum angulata, margine postico pallido lineis tribus marginalibus nigris; posticæ area basali paulo cinerascente, area apicali ocellis quinque submarginalibus, primo secundo et quinto nigris albo pupillatis et fulvo cinctis, tertio et quarto ovalibus argenteis fulvo cinctis, primo minimo.

Exp. alar. unc. $1\frac{1}{8}$.

Hab. Pernambuco.

B.M.

Something like a small suffused specimen of *E. myncea*, but, I think, quite distinct from that species.

25. EUPTYCHIA CELMIS.

Satyrus celmis, Godart, Enc. Méth. ix. pp. 463 & 489. n. 38 (1819).

Euptychia celmis, Westw. & Hewits. Gen. Diurn. Lepid. p. 374. n. 26 (1851).

"*Alis subintegris, fuscis, subtus strigis tribus obscurioribus; posticis ocellis quinque, 2° et 3° obsoletis, 4° bipupillato majoreque.*

"Nearly 2 inches in expanse. The upperside of the wings is black-brown, without spots on the front wings; a black ocellus encircled with yellow, and with a white pupil, near the anal angle of the hind wings. The underside is a little paler than the upperside, with three very obscure transverse bands; between the outer and central ones in the front wings is a small very distinct ocellus, and in the hind wings a row of five ocelli, the second and third nearly obsolete, the other three black, having a yellow iris and white pupil, the fourth and largest ocellus bipupillate. The outer margin of each wing is also bordered by a double blackish flexuous line, rather more distinct on the upperside."—*Enc. Méth.*

Hab. Brazil.

26. EUPTYCHIA ELECTRA, sp. n. (*E. celmis*, var.??) (Pl. XXXIX. fig. 7.)

♂. *Alæ supra fuscæ, posticæ lineis tribus marginalibus nigro-fuscis ocelloque subanali nigro brunneo cincto cæruleoque pupillato.*

Alæ subtus minime pallidiores, linea transversali obliqua post cellam posita tribusque marginalibus nigro-fuscis, interna apud apicem paulo undulata; posticæ lineis duabus mediis tribusque marginalibus paulo undulatis, nigro-fuscis, ocellis quinque submarginalibus cæruleo-argenteo pupillatis, apicali minimo, secundo et quinto

nigris flavo cinctis, aliis fuscis brunneo cinctis, tertio, quarto et quinto bipupillatis: corpus olivaceo-fuscum.

Exp. alar. unc. 1 $\frac{6}{8}$.

♀. *Alæ anticæ subtus puncto apicali fulvo ocellisque tribus subapicalibus, primo magno, aliis minoribus indistinctioribus.*

Hab. Bahia.

B.M.

At the first glance this species might almost be taken for a variety of *eriphule*; it, however, differs from that insect in coloration, marginal lining, and spotting.

27. EUPTYCHIA VARIABILIS, sp. n. (Pl. XXXIX. fig. 8.)

Alæ supra olivaceo-fuscæ, ciliis pallidis; anticæ linea post alarum medium valde indistincta, linea submarginali paulo irregulari aliisque duabus marginalibus, fuscis; posticæ linea submarginali undulata duabusque similibus marginalibus fuscis, ocellis duobus subanalibus nigris albo pupillatis brunneoque iridatis, anali minimo, alio magno bipupillato.

Alæ subtus pallidiores; anticæ area apicali fusco sparsæ, lineis duabus mediis late separatis, interna indistincta, fuscis, aliisque marginalibus velut supra nigro-fuscis, ciliis pallidis; posticæ paulo violascentes, area basali obscuriore, olivaceo sparsa, lineis duabus mediis fuscis, externa apud medium subangulata, area apicali minus olivaceo sparsa, lineis marginalibus velut supra fuscis, ocellis sex submarginalibus ochreo cinctis, tertio obsoleto, secundo quinto et sexto nigris, aliis fuscis, primo secundo quarto et quinto bipupillatis: corpus fuscum, antennis supra fuscis, subtus flavescens.

Exp. alar. unc. 1 $\frac{6}{8}$.

Hab. Pernambuco; Rio Janeiro.

B.M.

Var. *Alæ subtus pallidiores; posticæ ocellis primo tertio et quarto obsoletis minimisve.*

Exp. alar. unc. 1 $\frac{5}{8}$ -1 $\frac{13}{16}$.

Hab. Rio Janeiro.

B.M.

28. EUPTYCHIA ANGULARIS, sp. n.

To be described in a supplement to the genus.

Coll. Hewitson.

29. EUPTYCHIA STRAMINEA, sp. n.

Coll. Hewitson.

30. EUPTYCHIA AFFINIS, sp. n. (Pl. XXXIX. fig. 9.)

Alæ supra fuscæ pallidæ; anticæ linea submarginali angulis alternis undulata duabusque marginalibus continuis fuscis indistinctis; posticæ lineis tribus marginalibus fuscis unaque ochrea undulatis, ocello subanali nigro cæruleo pupillato flavoque cincto: corpus fuscum.

Alæ subtus pallidiores, ochraceæ, lineis duabus mediis anticis, interna directa, externa de nervulo mediano primo ad costam oblique

divergente, posticis obliquis valde irregularibus et ad marginem anteriorem stria terminali conjunctis, lineis tribus marginalibus fuscis, posticarum et interna anticarum angulis alternis undulata, fascia submarginali obscura; anticæ ocellis tribus subapicalibus argenteo bipupillatis, primo nigro aliisque fuscis ochreo cinctis; posticæ ocellis quinque submarginalibus ochreo cinctis et argenteo bipupillatis, primo secundo et quinto nigris, aliis fuscis: corpus ochreo-fuscum, pallidum, antennis albido fasciolatis.

Exp. alar. unc. 1 $\frac{5}{8}$.

Hab. Rio Janeiro; Pernambuco.

B.M.

31. EUPTYCHIA VESTIGATA, sp. n.

To be described in the supplementary paper.

In the collection of W. C. Hewitson, Esq.

32. EUPTYCHIA PIMPLA.

Neonympha pimpla, Felder, Wien. ent. Monatschr. vi. p. 177. n. 156 (1862).

“*Alis supra brunneo-fuscis, subtus brunneis cano atomatis, strigis binis discalibus, margini subparallelis, litura interjecta brevi, striga submarginali undata alteraque marginali integerrima fuscescentibus, margine ipso ante cilia fusco, anticarum ocellis quinque, posticarum sex nigris, ochraceo iridatis, argenteo pupillatis, secundo, quinto et sexto posticarum distinctioribus, ♂.*” — Felder.

Hab. Rio Negro, New Granada (*Felder*).

33. EUPTYCHIA RENATA.

Papilio renata, Cramer, Pap. Exot. iv. pl. 326. f. A (1782).

Neonympha renata, Herrich-Schäffer, Lep. Ind. Syst. (1864).

Hab. Surinam (*Cramer*); Rio Janeiro.

B.M.

I can find no mention made of this species in the ‘Genera of Diurnal Lepidoptera;’ yet there is not the slightest doubt that it belongs to this genus.

Var. *a.* E. PIMPLA, var., Felder, Wien. ent. Monatschr. vi. p. 177. n. 156 (1862).

Hab. Bahia.

B.M.

Var. *b.* *Ocello supra parvo, lineis marginalibus indistinctis; subtus ocellis anticarum parvis, apicali nec nigro; ocellis posticarum parvis, linea media externa medio subangulata.*

Hab. Tocantins River, Brazil (*Coll. Salvin*).

34. EUPTYCHIA PHRONIUS.

Satyryus phronius, Godart, Enc. Méth. ix. pp. 466 & 496. n. 65 (1819).

Neonympha phronius, Westw. & Hewits. Gen. Diurn. Lepid. p. 376. n. 21 (1851).

“*Alis integris, supra fuscis, limbo saturatiore: subtus flavidis, undis strigisque tribus fuscis; anticis puncto, posticis quatuor albis.*”

“About $1\frac{1}{2}$ inch in expanse. The upperside of the wings is blackish brown, with the outer area very dark.

“The underside is yellowish, with a number of waves and three transverse lines dark brown; the outer line is flexuous, preceded in the front wings by a single white spot, and in the hind wings by four, the two outer ones encircled with black.”—*Enc. Méth.*

Hab. Brazil.

35. EUPTYCHIA PÆON.

Satyrus pæon, Godart, *Enc. Méth.* ix. pp. 464 & 498. n. 43 (1819).

Euptychia pæon, Westw. & Hewits. *Gen. Diurn. Lepid.* p. 374. n. 23 (1851).

Hab. Brazil.

36. EUPTYCHIA OCHRACEA, sp. n.

In the collection of W. C. Hewitson.

37. EUPTYCHIA MARMORATA, sp. n. (Pl. XL. fig. 2.)

Alæ supra fuscæ; anticæ fascia post alarum medium unaque ad cellæ extimum brevi fuscis indistinctis, linea submarginali unaque marginali undulatis fuscis; posticæ margine postico ochreo, puncto apud angulum analem fusco: corpus cinereo-fuscum, antennis supra fuscis, subtus ferrugineis.

Alæ anticæ subtus pallidiores, lineis velut supra distinctioribus; posticæ ochreo albido, fusco ochreoque marmoratæ, fasciis duabus mediis valde irregularibus ochreo-fuscis, linea submarginali unaque marginali undulatis fuscis, ocellis sex, duobus subapicalibus duobusque subanalibus nigris ochreo cinctis, punctis minutissimis albis bipupillatis, duobus obsoletis fuscis intermediis: corpus cinereum.

Exp. alar. unc. $1\frac{5}{8}$.

Hab. Rio Janeiro; Rio Grande (*Coll. Bates*).

B.M.

Allied to *E. pæon*.

38. EUPTYCHIA NECYS.

Satyrus necys, Godart, *Enc. Méth.* ix. pp. 466 & 511. n. 100 (1819).

Euptychia necys, Westw. & Hewits. *Gen. Diurn. Lepid.* p. 373. n. 14 (1851).

“*Alis integerrimis, supra nigricantibus, immaculatis; subtus nebuloso-cinereis, strigis tribus fuscis serieque punctorum sex albidorum.*”

“About $1\frac{1}{2}$ inch in expanse. Wings above black brown, and without spots. The underside is ashy, spotted with brown, with three dark lines, transverse and waved—two between the base and the

middle, the third submarginal and preceded internally on each wing by a row of six whitish spots. The body is of the same colour as the wings; the antennæ are brownish, and annulated with grey above and ferruginous below."—*Enc. Méth.*

Hab. Brazil (*Godart*); Venezuela (*Westwood*).

Although this species is stated, in the 'Genera of Diurnal Lepidoptera,' to be in the British Museum Collection, I have not been able to find any specimens that agree with the description; it may possibly be allied to *E. byses*, *Godart*.

39. EUPTYCHIA GRIMON.

Satyrus grimon, *Godart*, *Enc. Méth.* ix. pp. 464 & 490. n. 44 (1819).

Neonympha grimon, *E. Doubleday*, *List Lep. Brit. Mus. App.* p. 33 (1847); *Westw. & Hewits. Gen. Diurn. Lepid.* p. 375. n. 10 (1851).

"*Alis subintegris, fuscis: subtus strigis tribus obscurioribus undatis; posticis ocellis duobus alteroque bipupillatis, maculis flavidis duabus interpositis.*

"About $1\frac{1}{2}$ inch in expanse. Wings slightly dentated, brown, rather dark in some parts; upperside without spots. The underside shows three very dark lines, transverse and waved; between the central and outer ones the hind wings have a row of five spots, only the three exterior ones black, with a double white pupil and orange iris; the third and fourth yellowish, and at times somewhat reniform; the front wings also have two similar yellowish spots surmounted by a bipupillate ocellus. There is a double blackish line along the posterior margin of all the wings, scarcely perceptible on the upperside."—*Enc. Méth.*

Hab. Brazil.

B.M.

40. EUPTYCHIA ARGANTE.

Papilio argante, *Cramer*, *Pap. Exot.* iii. pl. 204. f. C, D (1782).

Euptychia argante, *Westw. & Hewits. Gen. Diurn. Lepid.* p. 374. n. 27 (1851).

Satyrus argulus, *Godart*, *Enc. Méth.* ix. pp. 463 & 488. n. 35 (1819).

Hab. Surinam.

This insect is intermediate between *E. grimon* and the next species.

41. EUPTYCHIA AMBIGUA, sp. n. (Pl. XXXIX. fig. 10.)

Alæ supra fuscae, lineis tribus marginalibus fuscis valde indistinctis, interna alterne dentata; posticæ linea marginali indistincta ochrea.

Alæ subtus pallidiores, area apicali pallida, linea apud basim valde irregulari alteraque post alarum medium obliqua continua apud angulum posticarum analem subangulata, lineis marginalibus velut supra fuscis distinctis; anticæ et posticæ ocellis quinque linea fusca circumcinctis et argenteo minutissime bipupillatis serie angulata positis, anticis paulo minus distinctis, secundo anticarum et primo secundo quintoque posticarum nigris, aliis fuscis:

corpus fuscum pallidum, antennis fuscis albido fasciolatis et nigro flavoque acuminatis.

Exp. alar. unc. $1\frac{3}{8}$.

Hab. Rio Janeiro.

B.M.

42. EUPTYCHIA MODESTA, sp. n.

Alæ supra fusca, lineis duabus marginalibus aliaque submarginali undulata obscurioribus, anticis valde indistinctis: corpus fuscum, præ olivaceo virescens; antennis supra brunneis albido fasciolatis et nigro acuminatis, subtus ferrugineis.

Alæ subtus pallidiores, cinerascetes, fasciis duabus mediis obliquis paulo irregularibus rufo-fuscis, lineis duabus marginalibus aliaque submarginali undulata fuscis: anticæ ocellis tribus ochreo cinctis, primo nigro, argenteo bipupillato; aliis fuscis: posticæ ocellis quinque fulvo cinctis et argenteo pupillatis, primo minimo, quinto maximo, primo secundo et quinto nigris, aliis fuscis, tertio quarto et quinto bipupillatis: corpus cinereum.

Exp. alar. unc. $1\frac{7}{8}$.

Hab. Para (Coll. Bates).

Var. Alæ subtus ocellis minoribus lineisque tenuioribus.

Hab. Cameta (Coll. Bates).

Allied to *E. ambigua*.

43. EUPTYCHIA HUEBNERI, sp. n. (Pl. XXXIX. fig. 11.)

Alæ supra velut in E. ambigua, subtus autem area basali paulo brunnescente, area apicali cinerascete, margine postico ochraceo, ocellis distinctioribus, lineis mediis rufescentibus, interna regulari, externa apud angulum analem paulo undulata, posticisque additur ocellus subanalis minimus: corpus fuscum, antennis velut in E. ambigua.

Exp. alar. unc. $1\frac{7}{16}$.

Hab. Para (Coll. Bates and B.M.).

Allied to the preceding species.

44. EUPTYCHIA GALESUS.

Satyrus galesus, Godart, Enc. Méth. ix. pp. 465 & 496. n. 64 (1819).

Neonympha galesus, Westw. & Hewits. Gen. Diurn. Lepid. p. 376. n. 20 (1851).

Euptychia canthe, var., Herrich-Schäffer, Ind. Syst. (1864).

“Alis integris, fuscis, supra immaculatis: subtus strigis tribus obscurioribus; anticis punctis nullis, posticis quinque nigricantibus.

“About $1\frac{1}{2}$ inch in expanse. All the wings entire and of a rather dark brown; upperside without spots; the underside shows three very dark lines, the central one relieved in front by greyish violet, the outer one very delicate and festooned; this last line is separated from the preceding one, but only in the hind wings, by a row of five

blackish points; the front wings have no spot, at least in the specimen from which this description is taken."—*Enc. Méth.*

Hab. Brazil.

I cannot agree with Dr. Herrich-Schäffer in considering this a variety of *E. canthe*: it is much too large for that species—although in this respect it does not differ from Hübner's figure, and consequently I suppose that some specimens may attain to the size of $1\frac{1}{2}$ inch; but the unspotted front wings seem certainly to indicate another species.

45. EUPTYCHIA VESPER, sp. n.

In the collection of W. C. Hewitson.

46. EUPTYCHIA ARMILLA, sp. n.

In the collection of W. C. Hewitson.

47. EUPTYCHIA LITURATA, sp. n.

In the collection of W. C. Hewitson.

48. EUPTYCHIA SOSYBIUS.

Papilio sosybius, Fabricius, Ent. Syst. iii. pt. 1. p. 219. n. 684 (1793).
Satyrus sosybius, Godart, Enc. Méth. ix. pp. 465 & 495. n. 63 (1819); Boisduval et Leconte, Icon. Léop. Am. Septr. t. i. pl. 63. f. 1-4 (metamorph.) (1829).

Neonympha sosybius, Westw. & Hewits. Gen. Diurn. Lep. p. 375. n. 2 (1851).

Hab. ♂, ♀, East Florida; ♀, Nicaragua.

B.M.

49. EUPTYCHIA FALLAX.

Neonympha fallax, Felder, Wien. ent. Monatschr. vi. p. 177. n. 157 (1862).

"*Alis supra fuscis, subtus pallidioribus, strigis binis fuscis subrectis [anticarum marginem internum versus convergentibus], litura discali, striga submarginali undulata alteraque marginali integerrima fuscis, margine ante cilia nigro-fusco, anticarum ocellis quinque obsoletis, posticarum sex atris, anguste ochraceo iridatis, argenteo pupillatis, in posticis secundo, quinto et sexto distinctioribus. ♂.*"—Wien. ent. Monatschr.

Hab. Rio Negro (Felder); ♂, Venezuela.

B.M.

Var. *Alæ subtus obscuriores; anticæ lineis mediis latius separatis, litura discali obsoleta; posticæ linea interna apud basim marginis terminata, externa magis irregulari.*

Hab. Venezuela.

B.M.

Var. *Alæ paulo majores ocellis lineisque subtus obscurioribus.*

Hab. Ega (Coll. Bates).

50. EUPTYCHIA ATALANTA, sp. n. (Pl. XXXIX. fig. 12.)

Alæ apice anticarum acuto, angulo anali posticarum minime obtuse producto: supra fusca margine postico obscuriore, posticæ lineis

duabus marginalibus analibus nigro-fuscis: subtus pallidiores, ocellis velut in E. hermes dispositis, lineis duabus mediis fuscis, anticarum de alarum medio excurrentibus, ad costam minime convergentibus, interna posticarum brevi subarcuata, externa bisinuata apud angulum analem subangulata; lineis tribus marginalibus, interna anticarum apud apicem bisinuata, posticarum sinuata medio angulis alternis; ciliis longis.

Exp. alar. unc. ♂ $1\frac{5}{16}$, ♀ $1\frac{3}{16}$.

Hab. ♂, ♀, Venezuela.

B.M.

Var. *Alis brevioribus, subtus ocellis fuscis distinctioribus, lineis mediis minus irregularibus.*

Hab. ♀, Para.

B.M.

51. EUPTYCHIA HERMES.

Papilio hermes, Fabricius, Ent. Syst. iii. pt. 1. p. 158. n. 486 (1793).

Satyrus hermes, var., Godart, Enc. Méth. ix. p. 487. n. 33 (part.) (1819).

Neonympha hermes, E. Doubleday, List Lep. Brit. Mus. p. 138 (1844); Westw. & Hewits. Gen. Diurn. Lepid. p. 375. n. 11 (1851).

Oreas (strigata) canthe, Hübner, Samml. exot. Schmett. Bd. i. pl. 87. f. 1-4 (1806).

Euptychia canthe, Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 22 (1851).

Hab. Pernambuco; Rio Janeiro; Para; Nicaragua; Honduras.

B.M.

I have referred to the type specimen of *E. hermes*, three wings of which still exist in the Banksian Collection, and I find that it is identical with *E. canthe* of Hübner.

52. EUPTYCHIA UNDULATA, sp. n. (Pl. XXXIX. fig. 13.)

♀. *Alæ supra fuscæ, subtus pallidiores, cano atomatis et paulo cinerascens; lineis duabus mediis, margini subparallelis, anticis late separatis et paulo irregularibus, posticis valde dentatis; linea submarginali sinuata aliaque marginali integerrima; margine nigro: anticæ aliquando ocellis quatuor valde indistinctis; posticæ ocellis sex paulo indistinctis parvis, secundo quarto et quinto nigro punctatis: corpus cinereum.*

Exp. alar. unc. $1\frac{2}{8}$ — $1\frac{3}{8}$.

Hab. Para.

B.M.

Chiefly differs from the preceding species in its slightly greater size, shorter wings, and very irregular central lines.

53. EUPTYCHIA BINALINEA, sp. n. (Pl. XXXIX. fig. 14.)

Alæ supra fuscæ pallidæ, lineis duabus mediis, duabusque marginalibus fuscis, interna sinuata, externa subintegra; margine fusco: posticæ margine postico ochreo; ocellis duobus analibus (interno majore) nigris ochreo cinctis argenteoque pupillatis, aliisque tribus submarginalibus valde indistinctis: corpus cinereum.

Alæ subtus pallidiores, lineis duabus binis mediis margini subparallelis; aliisque tribus marginalibus unicus, interna autem ad angulum analem posticarum geminante, lineis mediis ochreum includentibus, interna posticarum paulo undulata, externa apud marginem internum sinuata apud costam undulata; linea marginali anticarum interna apud costam angulis alternis dentata, duabus externis integerrimis; lineis posticarum sinuatis: anticæ ocellis tribus indistinctis subapicalibus ochreo-fuscis fuscoque cinctis, infima punctis duobus minutissimis argenteis, albis, fusco pupillatis: posticæ ocellis sex nigris, ochreo pallido cinctis, fusco circumcinctis, et atomis argenteis pupillatis, primo, secundo et quinto bipupillatis: corpus ochreo-cinereum, antennis ferrugineis.

Exp. alar. unc. 1 $\frac{3}{8}$.

Hab. Venezuela; Pernambuco.

B.M.

54. EUPTYCHIA POLTYS.

Neonympha poltys, Prittwitz, Entom. Zeit. herausg. von dem entom. Veréine, Stettin, p. 311 (1865).

"Size of a moderately large *ædipus**. Wings lobed, costa folded over. Body and thorax blackish; antennæ the same. Palpi and underside of the body light brownish. All four wings ochreous (*pierre de feu*), the base sprinkled with dark atoms.

"Front wings: in the middle two dark oblique streaks, between them near the costa a darker angular line (upon which the discoidal cell terminates), close to the outer margin a more slender bent line, in front of the greyish fringe two parallel lines, all three dark reddish brown. Hind wings: a darker oblique streak, anal angle much produced; outer margin with its lower portion emarginate, with four sinuations; in front of the greyish fringe two sinuated brown bands, a little further inwards a third broader and darker one; between the three lines the ground-colour is lighter; at the inner angle in the left wing two, in the right wing one black spot encircled with yellow; Underside grey, dusted with brown. Front wing: markings as above, but more delicate; both of the central lines doubled; fringe and a shade near the outer oblique line violet-brown. Hind wings the same. The shade near the outer oblique line reaching from the costa to near the middle of the wing continued near the outer margin by six very small ocelli, the second and fifth of those within the cell have slender silver pupils. All the fringe brown, darker than the ground-colour."—*Ent. Zeit.*

Hab. Corcovado (South America).

55. EUPTYCHIA ACMENIS.

(*Oreas strigata*) *Megisto acmenis*, Hübner, Samml. exot. Schmett. Zutr. f. 233, 234 (1806).

Neonympha acmenis, Westw. & Hewits. Gen. Diurn. Lep. p. 375. n. 14 (1851).

Hab. Baltimore.

* *ædipus* is a *Cænonympha*, not a *Neonympha*.

This species may be allied to *E. grimon*; but the central lines are very dissimilar in form to those of that insect, they much more nearly resemble those of the next species.

56. EUPTYCHIA EOÛS, sp. n. (Pl. XXXIX. fig. 15.)

Alæ supra olivaceo-fuscæ; anticæ linea undulata submarginali valde indistincta fusca, margine extremo nigro: posticæ puncto subanali nigro ochreo cincto, lineis duabus marginalibus alteraque submarginali fuscis: corpus thorace cinereo, abdomine olivaceo-fusco.

Alæ subtus pallidiores, lineis duabus mediis valde irregularibus, anticarum apud costam angulatis, posticarum externa ochreo marginata in medio valde producta, linea submarginali, apud apicem anticarum angulis alternis undata, in posticis sinuata et dentata ochreoque marginata, lineis duabus marginalibus ochreum includentibus, anticarum integris, posticarum undulatis: anticæ punctis tribus minutissimis subapicalibus, apicali nigro, secundo nigro argenteo bipupillato, tertio argenteo; posticæ ocellis quinque submarginalibus ochreo cinctis, primo minimo, quinto maximo, tertio et quarto obsoletis, aliis nigris argenteo pupillatis, primo et quinto bipupillatis: corpus cinereo-fuscum, antennis fuscis nigro acuminatis.

Exp. alar. unc. $1\frac{5}{16}$.

Hab. Brazil; Para.

B.M.

57. EUPTYCHIA PHARES.

Satyryx phares, Godart, Enc. Méth. ix. pp. 464 & 491. n. 47 (1819).

Neonympha phares, Westw. & Hewits. Gen. Diurn. Lepid. p. 375. n. 18, pl. 66. f. 4 (1851).

“*Alis integris, supra fuscis: subtus anticis grisescentibus, strigibus tribus ferrugineis: posticarum utraque pagina ocellis sex, 3^o didymo.*”

“About $1\frac{1}{2}$ inch in expanse. The upperside of the wings blackish brown; front wings without spots; hind wings with six ocelli, the second and fourth very large, the third double. These ocelli are black, with a double silver pupil and yellow iris.

“The underside of the front wings is orange, with the apex rosy grey, and marked by one or two small ocelli; the underside of the hind wings is grey mottled with brown, with the same ocelli as on the opposite side; there are besides on each wing three dark-ferruginous distinctly waved lines—to wit, two near the base, and a third near the outer margin, which is bordered by a black festooned line.”

—*Enc. Méth.*

Hab. Brazil; Venezuela.

B.M.

The Museum specimens of this species vary considerably in size, the largest measuring $1\frac{7}{16}$ inch in expanse of wings, whilst the smallest only measures $1\frac{1}{8}$ inch. We have only one specimen that has no spots in the front wings on the upperside; all the others have one distinct subapical ocellus.

The MS. name of *pharella*, applied to Mr. Doubleday's species

by Dr. Herrich-Schäffer in his 'Index Systematicus,' was not needed, as the insect figured in the 'Genera' is undoubtedly Godart's species.

58. EUPTYCHIA PHARELLA, sp. n. (Pl. XXXIX. fig. 16.)

Alæ corpusque supra olivaceo-fusca.

Alæ subtus pallidiores, anticæ ochreo suffusæ; linea indistincta ferruginea post alarum medium posita et margini subparallela, lineis duabus submarginalibus fuscis, interna sinuata, margine ipso nigro, ciliis olivaceo-fuscis: anticæ ocellis tribus subapicalibus ochreo cinctis violaceoque pupillatis, apicali nigro, aliis fuscis: posticæ ocellis quatuor ochreo cinctis, duabus externis nigris albo pupillatis, apicali majore, aliis fuscis violaceo pupillatis: corpus cinereo-fuscum, antennis ferrugineo-olivaceis.

Exp. alar. unc. 1.

Hab. Rio Janeiro.

B.M.

This species differs from *E. phares* in its much smaller expanse of wings, the absence of any ocelli on the upperside, the more regular rounded hind wings,—on the underside in the smaller and fewer ocelli with differently coloured pupils, and the differently formed central lines on the hind wings.

59. EUPTYCHIA HARMONIA, sp. n. (Pl. XXXIX. fig. 17.)

Alæ supra olivaceo-fusca; corpus nigrescens.

Alæ subtus pallidiores, anticæ lineis duabus mediis lituraque intermedia fuscis apud costam divergentibus tunc subangulatis, lineis tribus marginalibus valde indistinctis fuscis; ocellis quatuor submarginalibus, ochreo cinctis fuscoque circumcinctis, externis nigris, apicali albo pupillato, intermediis fuscis vix distinguendis: posticæ basi fuscescente, lineis duabus mediis, interna extus trisinuata, externa medio et apud angulum analem angulata; lineis duabus subapicalibus, tertioque marginali fuscis; ocellis quinque submarginalibus ochreo cinctis, secundo maximo, tertio indistincte parvo, primo secundo quarto et quinto nigris albo pupillatis: corpus cinereum.

Exp. alar. unc. 1½.

Hab. Quito (Ecuador).

B.M.

Var. Alæ subtus distinctioribus, ocellis anticis duobus.

Hab. Ecuador (Coll. Bates).

60. EUPTYCHIA PHINEUS, sp. n. (Pl. XXXIX. fig. 18.)

Alæ supra fuscæ obscuræ, corpus cinerascens, antennis fuscis.

Alæ subtus paulo pallidiores nitentesque, lineis mediis ocellisque posticarum iis Harmoniæ simillimis sed paulo distinctioribus; anticæ lineis tribus marginalibus distinctis fuscis, ocello uno subapicali nigro, ochreo cincto alboque pupillato, margine postico subconcavo: posticæ lineis tribus marginalibus fuscis undatis, margine postico undulato: corpus cinereo-fuscum.

Exp. alar. unc. 1⅙.

Hab. Venezuela.

B.M.

Allied to the preceding species, but darker; the underside markings more distinct, only one ocellus in the front wings; the hind margin of the front wings slightly concave, of the hind wings subsinuate.

61. EUPTYCHIA NEBULOSA, sp. n.

Alæ supra olivaceo-fuscæ, posticæ lineis duabus marginalibus aliaque submarginali fuscis indistinctis: corpus cinerascens; antennis supra fuscis, subtus ferrugineis.

Alæ subtus pallidiores roseo tinctis, lineis duabus mediis irregularibus fuscis, margini subparallelis, lineis duabus marginalibus aliaque submarginali sinuata fuscis: anticæ ocello apicali parvo indistincto nigro ochreo cincto alboque pupillato; posticæ ocellis quinque, secundo quintoque magnis, primo, secundo quintoque nigris ochreo cinctis alboque bipupillatis, aliis ochreo-fuscis: corpus cinerascens.

Exp. alar. unc. $1\frac{9}{16}$.

Hab. Venezuela.

B.M.

Allied to the preceding species, but quite distinct.

62. EUPTYCHIA NOSSIS.

Euptychia nossis, Hewitson, Exot. Butterf. iii. pl. ? f. 1 (underside view) (1862).

Hab. Quito (Coll. W. W. Saunders and W. C. Hewitson).

63. EUPTYCHIA PRONOPHILA, sp. n.

In the collection of W. C. Hewitson.

64. EUPTYCHIA SATURNUS, sp. n. (Pl. XXXIX. fig. 19.)

♂. *Alæ supra olivaceo-fuscæ, margine obscuriore: posticæ macula apicali fusca; ocello subanali nigro, albo pupillato albidoque cincto: corpus cinereum.*

Alæ subtus niveæ, apud basim paulo fuscescentes, fascia submarginali lata fusca, lineis duabus mediis tribusque marginalibus fuscis, posticarum sinuatis: anticæ ocellis duobus nigris ochreo cinctis fuscoque circumcinctis, apicali majore albo pupillato: posticæ ocellis quinque, primo, secundo quintoque nigris fulvo cinctis alboque pupillatis, tertio quartoque fuscis brunneo cinctis argenteoque bipupillatis, primo minimo, quinto maximo: corpus albido-cinereum.

Exp. alar. unc. $1\frac{1}{16}$.

Hab. Venezuela; Brazil (Coll. Bates).

B.M.

Allied to *E. nossis* (Hewitson).

65. EUPTYCHIA VESTA, sp. n. (Pl. XXXIX. fig. 20.)

♂. *Alæ supra olivaceo-fuscæ: anticæ margine postico fuscescente; stria apud cellæ extimum fasciaque de costa post cellam currente, margini subparallela, de lunulis elevatis formata, lineis tribus marginalibus fuscis, interna apud apicem sinuata: posticæ lineis tribus marginalibus fuscis duabusque inter eas albidis; ocellis*

duobus subanalibus nigris flavo cinctis argenteoque bipupillatis, anali minimo.

Alæ subtus pallidiores: anticæ area apicali paulo pallidior, maculis quatuor indistinctis submarginalibus ochreo-fuscis; ocello apicali nigro, ochreo cincto alboque bipupillato; linea post medium alarum obliqua irregulari fusca; linea submarginali undata duabusque marginalibus nigro-fuscis: posticæ lineis duabus submediis fuscis, basali trisinuata, externa biconcavata, sinu medio alteroque interno; fascia media albida; margine postico late olivaceo-fusco; fascia media irregulari ochrea, ocellis sex argenteo bipupillatis interrupta, secundo duobusque analibus nigris ochreo cinctis, aliis fuscis albido cinctis; lineis tribus marginalibus undulatis nigro-fuscis: corpus ochreo-cinereum.

Exp. alar. unc. 1 $\frac{5}{8}$.

♀. *Alis latioribus: anticæ fascia post alarum medium obliqua fusca, continua nec elevata: posticæ ocello apicali distincto nigro, flavo cincto nec pupillato: anticæ subtus punctis duobus apud apicem submarginalibus albis ocelloque velut in mari, linea media externa, sinu interno irregulari: aliter velut in mari.*

Exp. alar. unc. 1 $\frac{5}{8}$.

Hab. Venezuela.

B.M.

Allied to the preceding species; the male has on the front wings a row of lunular spots, raised above the surface of the wings, as if embossed.

66. EUPTYCHIA ENYO, sp. n. (Pl. XXXIX. fig. 22.)

Alæ supra pallidæ: anticæ fuscæ, fasciis duabus mediis obliquis, una submarginali alteraque marginali, fuscis indistinctis, macula subapicali fusca: posticæ fuscæ, area apicali rufescente, fasciis duabus mediis obliquis, una submarginali, lineaque marginali fuscis indistinctis; macula subanali fusca: corpus cinereo-fuscum, antennis fuscis præ fulvescentibus.

Alæ subtus ochræ, fasciis rufo-fuscis; posticæ ocello anali minimo ad angulum extremum posito, macula anali rubra, ocellis nigris majoribus; aliter velut in E. mollina, Huebneri.

Exp. alar. unc. 1 $\frac{3}{8}$.

Hab. Cuenca.

B.M.

This species is quite unique in appearance, the reddish colouring of the hind wings giving it the look of a very distinct species; it is, however, closely allied to *E. mollina*.

67. EUPTYCHIA MOLLINA.

(*Oreas strigata*) *Euptychia mollina*, Hübner, Samml. exot. Schmett. Zuträge, f. 105, 106 (1806).

Euptychia mollina, E. Doubleday, List Lep. Brit. Mus. App. p. 31 (1847).

E. molina, Hübner, Verz. bek. Schmett. p. 54. n. 509 (1816).

Hab. Para; Ega.

B.M.

This species is not identical with the one from Venezuela and the West Indies; it differs from it in size, pattern, and coloration.

68. EUPTYCHIA WESTWOODII, sp. n.

Neonympha mollina, Westw. & Hewits. Gen. Diurn. Lep. p. 375. n. 17 (1851).

Alæ supra albæ, margine postico et antico anticarum paulo fuscescentibus: anticæ ocello subapicali fusco, distincto, albido cincto; fasciis ut in E. mollina dispositis: posticæ lineis duabus irregularibus marginalibus apud apicem connexis fuscis; maculis fasciisque aliis velut in E. mollina: corpus ochreo-cinereum; antennis supra fuscis cinereo-fasciolatis, subtus ferruginosis.

Alæ subtus albæ, fasciis rufo-fuscis, nec ad costam anticarum approximantibus, linea marginali anticarum valde irregulari, ocellis duobus nec quatuor apicalibus.

Exp. alar. unc. $1\frac{1}{16}$; aliter velut in E. mollina.

Hab. Honduras.

B.M.

Var. *Alæ supra fasciis maculisque indistinctis, fasciis subtus rufo-olivaceis; anticæ ocello uno maculisque duabus albidis.*

Exp. alar. unc. $1\frac{1}{4}$.

Hab. Venezuela.

B.M.

This species, although somewhat resembling the *mollina* of Hübner, is far too distinct to be considered a mere variety; the different coloration, regular reddish central bands, more irregular double marginal lines, and small number of ocelli are quite characters enough to warrant its separation as a species.

Division II.

Alæ supra subtusque violaceo, cæruleo viridive variæ.

69. EUPTYCHIA PICEA, sp. n.

Alæ supra nigro-fuscæ, margine postico paulo dilutiore, minime violascentes: anticæ fasciis quinque nigris, prima basali brevi obliqua venæ subcostalis basim marginante, secunda tertiaque mediis obliquis ad costam approximantibus, quarta submarginali apud costam intus currente, ad marginem internum tertiam approximante, quinta marginali: posticæ fasciis nonnullis vix distinguendis lineisque duabus marginalibus nigris: corpus fuscum.

Alæ subtus albidæ, violascentes, ciliis fuscis: anticæ linea marginali nigra, fasciis aliis velut supra rufo-fuscis, ocellis tribus subapicalibus nigris ochreo-albo cinctis, apicali maximo alboque pupillato: posticæ fasciis quatuor, duabus basalibus, una media quartaque submarginali lunulata ad costam et angulum analem tertiam adjungente, linea marginali nigra; ocellis quatuor nigris albo pupillatis et flavo cinctis inter fascias apicales positus, secundo quartoque magnis, tertio quartoque iride una inclusis: corpus albidum; antennis supra fuscis, subtus albidis.

Exp. alar. unc. $1\frac{1}{4}$.

Hab. Ega.

B.M.

Var. *a. Alæ supra obscuriores, subtus fasciis mediis latius separatis.*

Hab. Brazil.

B.M.

Var. *b. Alæ anticæ subtus ocellis apicalibus contiguis iride una inclusis.*

Hab. Tapajos.

B.M.

Var. *c. Alæ anticæ ocellis duobus, posticæ tribus, interna anali puncto solum indicato.*

Hab. Para (*Coll. Salvin and B.M.*).

70. EUPTYCHIA LYSIDICE.

Papilio lysidice, Cramer, Pap. Exot. ii. pl. 169. f. C, D, ♂ (1779); Fabricius, Ent. Syst. iii. pt. 2. p. 156. n. 480 (1793).

Erycina lysidice, Godart, Enc. Méth. ix. p. 583. n. 92 (1819).

(*Oreas strigata*) *Lysidice*, Hübner, Samml. exot. Schmett. Bd. i. pl. 86. f. 1, 2 (♂), 3, 4 (♀) (1806).

Euptychia lysidice, Hübner, Verz. bek. Schmett. p. 54. n. 507 (1816); Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 12 (1851).

Papilio doris, Cramer, Pap. Exot. i. pl. 8. f. B, C (♀) (1779); Fabricius, Ent. Syst. iii. pt. 1. p. 101. n. 314 (1793).

Euptychia doris, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 373. n. 13 (1851).

Hab. Surinam (*Cramer*); Para, Tapajos, Ega, Nauta, Brazil (*Coll. Bates and B.M.*); Trinidad, Cassim R. (*Coll. Salvin*).

71. EUPTYCHIA GLAUCINA.

♂. *Euptychia glaucina*, H. W. Bates, Ent. Month. Mag. i. p. 202. n. 76 (1865).

Hab. Duenas (Guatemala) (*Coll. Salvin*).

This species is allied to *E. lysidice*, but is very distinct from it.

72. EUPTYCHIA ÆGROTA, sp. n.

♂. *Alæ supra cæruleæ: anticæ margine late et regulariter nigro, fascia media lineaque brevior adjacente subbasali nigris subdirectis integris: posticæ apice, margine tenui maculaque subanali ovali nigris: corpus albido-cinereum; antennis supra fuscis, subtus albidis, apud apicem flavescens et nigro acuminatis.*

Alæ subtus albido-cæruleæ, lineis duabus mediis distinctis nigris ferrugineo tinctis, linea submarginali lunulata duabusque tenuioribus subintegris nigris: anticæ ocellis tribus punctoque costali nigris, ocello subapicali nigro, cæruleo (ochreo tincto) cincto et nigro circumcincto, aliis duobus de circulis nigris, atomos nigras lunulas indistinctas formantes includentibus: posticæ ocellis tribus (primo minimo) nigris ochreo cinctis, nigro circumcinctis et argenteo bipupillatis, duobus subapicalibus tertio post disci medium posito; inter hos circulis duobus nigris piriformibus, seriem efficientibus; litura maculaque basalibus nigris: corpus albicans.

Exp. alar. unc. $1\frac{9}{16}$.

♀. *Alæ supra velut in lysidice ♀; subtus brunnescentes fasciis tenuibus; anticæ ocellis quatuor indistinctis; posticæ ocellis sex distinctis; aliter velut in E. lysidice, ♀.*

Hab. Para (♂, *Coll. Hewitson*; ♀, *Coll. Hewitson and B.M.*).

This beautiful little insect seems to be intermediate between *E. glaucina* and *E. pilata*; the female is very like *E. lysidice*, ♀; the male is of the same form as my *E. pilata*, but totally differs from it in marking; it will be figured in a supplementary paper.

73. EUPTYCHIA PILATA, sp. n. (Pl. XL. fig. 3.)

♂. *Alæ latæ, breves, supra cæruleæ: anticæ violascentes, macula interna discali fulva de pilis formata, marginibus costali posticoque fuscis, cellæ extimo venisque paulo fuscescentibus: posticæ certo situ virescentes, apice nigro, linea submarginali, altera marginali indistincta et margine ipso nigris; ciliis albidis: corpus cinereum; antennis supra fuscis, subtus ferrugineis.*

Alæ subtus cæruleæ, certo situ paulo virescentes; lineis duabus mediis obliquis nigris, rufo sparsis; linea submarginali duabusque tenuissimis marginalibus undulatis nigris: anticæ ocellis quatuor obsoletis, apicali iride flava: posticæ sex, tertio quartoque obsoletis, aliis nigris iride flava: corpus cæruleum, præ cinerascens.

Exp. alar. unc. $1\frac{7}{16}$.

Hab. Ega.

B.M.

74. EUPTYCHIA BRIXIOLA, sp. n. (Pl. XL. fig. 4.)

Alæ supra pallidæ, maris cinereæ, feminae fuscæ, stria basali, duabus mediis, quarta discali, quinta submarginali sextaque tenui marginali, regularibus obscurioribus; margine ipso nigro: stria quarta posticarum et ocellis duobus indistinctis nigris, iride alarum colore, fusco circumcinctis, minime albido pupillatis: corpus cinereum; antennis supra nigro-fuscis, subtus paulo flavescentibus.

Alæ subtus albidæ, fasciis velut supra distinctioribus fuscis: anticæ maris ocello subapicali obsoleto, feminae distincto nigro ochreo cincto et argenteo bipupillato, aliisque duobus valde indistinctis argenteo pupillatis: posticæ ocellis quinque, primo minimo, secundo et quinto maximis, his nigris fulvo cinctis et argenteo bipupillatis, tertio et quarto argenteis flavo cinctis, quarto elongato: corpus cinereum.

Exp. alar. unc. $1\frac{3}{8}$.

Hab. Para (Coll. Bates).

Allied to *E. brixius*, but smaller and differently coloured.

75. EUPTYCHIA BRIXIUS.

Satyrus brixius, Godart, Enc. Méth. ix. pp. 464 & 490. n. 42 (1819).

Euptychia brixius, Westw., Doubl. & Hewits. Gen. Diurn. Lepid. p. 374. n. 24 (1851).

"*Alis integris, teneris, cærulescentibus, strigis utrinque sex fuscis; posticarum quarta subtus ocellis quinque bipupillatis.*

"Expanse of wings about $1\frac{1}{2}$ inch. The upperside of the wings is ashy blue, with six transverse streaks, and a double black-brown marginal line.

"On the underside the design of the upperside is repeated; but

the ground-colour is paler, and the fourth streak of the hind wings has five ocelli, only the first, second, and last with whitish iris, the other two without iris: all the ocelli are black and bipupillated with silver."—*Enc. Méth.*

Hab. Brazil.

76. EUPTYCHIA CÆLESTIS, sp. n. (Pl. XL. fig. 5.)

♂. *Alæ supra cæruleæ: anticæ area apicali fasciisque duabus mediis brevibus fuscescentibus: posticæ lineis marginalibus duabus distinctis submarginalique indistincta nigris, apice alarum fuscescente: corpus ochreo-cinereum; antennis supra fuscis, subtus flavis, nigro acuminatis.*

Alæ subtus cæruleæ: anticæ area anali paulo violascente, costa media, fasciis duabus mediis, brevioribus apud marginem posticum, una submarginali irregulari duabusque marginalibus subintegris fuscis: posticæ fasciis duabus mediis, externa undulata, ad marginem internum linea tenuissima junctis, fascia apud marginem posticum brevioribus, una submarginali undulata duabusque marginalibus undatis fuscis: anticæ ocellis duobus subapicalibus nigris iride cærulea fusco circumcinctis, apicali majore; posticæ quinque, secundo et quinto magnis, nigris albido cinctis, aliis cæruleis fusco cinctis: corpus albido-fuscum.

Exp. alar. unc. $1\frac{1}{16}$.

♀. *Alæ supra cæruleæ: anticæ area apicali fasciisque duabus mediis brevibus fuscis: posticæ linea marginali tenuissima duabusque distinctis, apice, puncto subanali circuloque ad cellæ extimum fuscis, fasciis marginalibus nigro-fuscis: corpus ochreo-cinereum; antennis supra albidis, subtus flavis.*

Alæ subtus anticæ ocello uno; posticæ quinque distinctioribus; margine interno anticarum albido; aliter velut in mari.

Exp. alar. unc. 2.

Hab. Ega.

B.M.

♀. Var. *Minor, cæruleo-lucescente, fasciis anticarum circuloque posticarum minus distinctis, subtus fasciis tenuibus minus distinctis ocellis parvis; ocellis duobus, secundo quintoque distinctis, secundo parvo, aliis vix distinguendis.*

Exp. alar. unc. $1\frac{5}{8}$.

Hab. Para (Coll. Salvin).

This may possibly prove to be the female of another species; but it is very closely allied to the Ega female.

77. EUPTYCHIA URANIA, sp. n. (Pl. XL. fig. 6.)

♂. *Alæ supra viridi-cæruleæ, nitidæ: anticæ costa et margine postico olivaceo-fuscis, stria post cellæ extimum olivaceo-fusca: posticæ margine postico fusco marginato, lineis duabus indistinctis marginalibus fuscis: corpus cinereo-fuscum, atomis cæruleis rotatum; antennis ferrugineis.*

Alæ subtus cæruleæ, costis, lineis duabus mediis obliquis, tertia apud marginem posticum interrupta, quarta submarginali et quinta

marginali fuscis; margine ipso fusco; apice anticarum et angulo anali posticarum olivaceo fuscescentibus: anticæ ocello subapicali indistincto nigro; posticæ ocellis duobus nigris, aliis tribus haud indicatis, striis marginalibus undatis: corpus olivaceo-albidum.

Exp. alar. unc. $1\frac{7}{8}$.

Hab. Cameta (*Coll. Bates*).

Closely allied to *E. cælestis*.

78. EUPTYCHIA LEA.

Papilio lea, Cramer, Pap. Exot. ii. pl. 151. f. C, D (♀) (1779).

Satyrus lea, Godart, Enc. Méth. ix. pp. 464 & 492. n. 50 (1819).

Euptychia lea (*ebusa*, part.), Hübner, Verz. bek. Schmett. p. 54. n. 515 (1816).

Euptychia lea, Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 17 (1851).

Hab. Surinam.

79. EUPTYCHIA JUNIA.

Papilio junia, Cramer, Pap. Exot. iv. pl. 292. f. D (♂ upperside), E (♀ ? underside) (1782).

Euptychia junia, Hübner, Samml. exot. Schmett. Zuträge, f. 627, 628 (♀) (1806), Verz. bek. Schmett. p. 54. n. 511 (1816); Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 18 (*E. lea*, alt. sexus?) (1851).

Satyrus lea, var., Godart, Enc. Méth. ix. p. 492. n. 50 (1819).

Hab. Surinam (*Cramer*); Bahia (*Westwood*); Brazil, ♂. B.M.

Var. ♀. *Area apicali anticarum supra vix fuscescente, posticarum paulo fuscescente.*

Hab. Para (*Coll. Salvin and B.M.*).

This species, although allied to *E. lea*, is, I think, far too distinct to be a mere variety of it. I do not believe that the two insects are merely sexes. We possess a slight variety of the female of *E. junia* which certainly is not the *lea* of Cramer; and Hübner's figure of the female of *E. junia* differs considerably from Cramer's figure of *lea*—more, I think, than can be accounted for by the age of the book.

80. EUPTYCHIA PHILIPPA, sp. n.

Alæ supra fuscæ; area apicali posticarum maris et areis basalibus femine cinereo cærulescentibus; lineis duabus marginalibus fuscis indistinctis, anticis apud costam, posticisque undulatis: corpus cinereo-fuscum; antennis supra fuscis, subtus ferrugineis, apud apicem nigro fasciolatis albidoque acuminatis.

Alæ subtus fasciis duabus mediis: posticæ subintegræ, ocellis majoribus: aliter velut in E. junia.

Exp. alar. unc. $2\frac{1}{16}$.

Hab. Ega (*Coll. Bates*).

This species is closely allied to *E. junia*, and scarcely differs from it on the underside; the colouring of the upperside, however, is so totally distinct that it must be considered a good species.

Division III.

Alæ magnæ, supra fuscæ, subtus fasciis duabus mediis; ocellis magnis regularibus.

81. EUPTYCHIA ANTONOË.

Papilio antonoë, Cramer, Pap. Exot. i. pl. 59. f. E, F (♂) (1779).

Satyrus hermes (part.), Godart, Enc. Méth. ix. p. 487 (1819).

Hab. Para; Bolivia (♀, *B.M.*); —? (♂, *Coll. Salvin*).

This insect is quite distinct from the *antonoë* of the 'Genera of Diurnal Lepidoptera;' that species is the *libye* of Linnæus. It is also widely distinct from the insect generally supposed upon the continent to be Cramer's species, and which I have here described and figured as *E. erichtho*.

82. EUPTYCHIA GIGAS, sp. n. (Pl. XL. fig. 7.)

♀. *Alæ supra fuscæ, fascia media obscuriore valde indistincta, lineis duabus undulatis marginalibus unaque submarginali fuscis, posticarum nigrescentibus: posticæ ocello permagno subanali nigro, rubro cincto alboque pupillato: corpus fuscum; antennis flavis, apice nigro, albo acuminatis.*

Alæ subtus pallidiores, roseo tinctis, fascia media alteraque apud basim rufo-fuscis; area apicali paulo pallidiores, anticarum ochreo variegata; lineis duabus marginalibus undulatis unaque submarginali angulis alternis undata fuscis: anticæ ocellis tribus subapicalibus, apicali distincto, nigro, flavo cincto alboque pupillato, aliis minimis brunneis, pupilla violacea, indistinctis: posticæ ocellis quinque paulo piriformibus, quinto maximo, primo, secundo quintoque nigris flavo cinctis alboque pupillatis, tertio quartoque brunneis, iride obsoleta, albido pupillatis: corpus ochraceo-fuscum.

Exp. alar. unc. 2½.

Hab. Mexico.

B.M.

This species is of the same size as *antonoë* of Cramer, to which it is allied; it more nearly resembles *E. libye* in the pattern of the underside.

83. EUPTYCHIA LIBYE.

Papilio libye, Linnæus, Syst. Nat. ii. p. 772. n. 146 (1766); Sulzer, Gesch. pl. 17. f. 7; *P. lybie* ejusd. p. 145 (1776).

Neonympha? antonoë, E. Doubleday, List Lep. Brit. Mus. i. p. 138 (1844).

Neonympha antonoë, Westw. & Hewits. Gen. Diurn. Lep. p. 375. n. 12 (1851).

Euptychia antonoë, Westw. & Hewits. Gen. Diurn. Lepid. p. 374. n. 30 (1851).

Hab. Pernambuco, Bahia, Rio, Honduras, Para, Quito (*B.M.*); Jamaica; Polochic Valley, Guatemala (*Coll. Salvin*).

Var. *Parva, obscura.*

Hab. Quito.

B.M.

84. EUPTYCHIA LIBYOIDEA, sp. n.

♂. *Alæ supra fuscæ immaculatæ, lineis marginalibus velut in E. libye dispositis: subtus pallidæ, albido-cinereæ, lineis duabus mediis integris obliquis rufo-fuscis: anticæ ocellis quatuor apud marginem posticum nigro-fuscis, flavo cinctis et irregulariter atomis albis pupillatis; serie ocellorum ad costam punctis duobus fuscis continuata; linea submarginali nigro-fusca irregulari, apud costam angulis alternis arcuata; lineis duabus marginalibus tenuibus nigro-fuscis: posticæ ocellis quinque submarginalibus piriformibus, secundo et quinto majoribus, quinto maximo, flavo cinctis et albo pupillatis, tertio et quarto fuscis, aliis nigris; ocello simili minimo ad marginem internum, fasciam externam mediam terminante; linea submarginali irregulari rufo-fusca; dimidio apicali angulis alternis undato; duabus marginalibus tenuibus undulatis nigro-fuscis: corpus ochreo-fuscum; antennis albido-ferrugineis, fusco subacuminatis.*

Exp. alar. unc. 2 $\frac{5}{16}$.

Hab. Nicaragua.

B.M.

This species is closely allied to *E. libye*, Linn., of which at first I imagined it to be a variety; but I am now quite satisfied that it is a good and distinct species; it differs from it as follows:—in being about a quarter of an inch larger in expanse of wing; the front wings more produced at the apex, with no pale discal spot*; the hind wings not so abruptly scalloped; on the underside it differs in being of a much more uniform colour, with narrower and more distinct central bands, the submarginal lines also being more irregular; in having four more or less distinct ocelli in the front wings; and the ocelli of the hind wings very much larger and more distinctly pupillated.

85. EUPTYCHIA OBSCURA, sp. n.

♀. *Alæ supra velut in E. libye; subtus anticæ colore simili, linea irregulari sinuata et dentata post medium posita, altera submarginali undata duabusque marginalibus integris nigro-fuscis, punctis tribus subapicalibus minutissimis albis serie angulata positis: posticæ obscuriores, linea apud basim angulata, altera post medium irregulari undata, tertia submarginali sinuata ad marginem internum secundam adjungente duabusque marginalibus undulatis nigro-fuscis; ocellis quinque, secundo quintoque nigris iride tenuissima flava pupillaque alba, aliis reniformibus ochreo-fuscis, apicali albo pupillata.*

Exp. alar. unc. 2 $\frac{3}{8}$.

Hab. Bolivia.

B.M.

Allied to *E. libye*, Linnæus.

86. EUPTYCHIA VASTATA, sp. n.

Alæ supra fuscæ cupreo nitentes: corpus fuscum, præ nigrescens; antennis supra nigro-fuscis, subtus albido fasciatis flavescentibus. Alæ subtus olivaceo-fuscæ: posticæ et area apicalis anticarum undis

* This is also the case with Panama specimens of *E. libye*.

plurimis variegatæ; lineis duabus marginalibus aliaque submarginali sinuata fuscis: anticæ linea discali lunulata fusca; punctis tribus subapicalibus fulvis: posticæ lineis duabus mediis irregularibus; punctis quinque submarginalibus fulvis: corpus cinereo-fuscum.

Exp. alar. unc. $1\frac{5}{8}$.

Hab. Rio Grande (*Coll. Bates*).

Allied to the preceding species.

87. EUPTYCHIA QUANTIUS.

Satyrus quantius, Godart, Enc. Méth. ix. pp. 463 & 487. n. 31 (1819).

Neonympha quantius, Westw. & Hewits. Gen. Diurn. Lep. p. 376. n. 23 (1851).

“*Alis fuscis, supra immaculatis: posticis subtus fascia media limboque posteriore violaceo-cinereis, striga punctorum flavescantium interposita.*

“Scarcely 2 inches in expanse. Wings entire, dark brown; the upperside without spots.

“The underside of the hind wings has two bands of ashy violet,—one discoidal, transverse, and margined by two lines a little darker than the ground-colour; the other quite terminal, dentated on its inner edge, and separated from the preceding one by a transverse row of six yellow spots: the underside of the front wings has the hind margin cinereous, and preceded by four spots of the colour of those in the hind wings, but smaller.”—*Enc. Méth.*

Hab. Brazil (*Godart*); Venezuela.

B.M.

? Var. *a.* *Anticæ apice paulo subangulato, subtus punctis quinque fulvis: posticæ puncto apicali magno.*

Hab. Rio Grande (*Coll. Bates*).

Var. *b.* *Alæ majores, subtus valde obscuriores: anticæ punctis quinque fulvis.*

Hab. Rio Janeiro.

B.M.

88. EUPTYCHIA POLYPHEMUS, sp. n.

Alæ supra fusca: corpus fuscum; antennis supra fuscis, subtus minime præ ferrugineis.

Alæ subtus paulo pallidiores, lineis duabus mediis obliquis bene separatis, interna irregulari, externa anticarum intus angulariter bisinuata, internæ ad costam angulis duobus alternis, ad marginem internum intus profunde bisinuata; linea submarginali sinuata; linea submarginali et margine ipso subintegro, nigro-fuscis: anticæ punctis tribus minimis subapicalibus albidis: posticæ ocellis quinque submarginalibus, primo, secundo, tertio et quarto microscopio solum distinguendis, primo et secundo albo pupillatis, quinto subanali nigro, distincto, albo pupillato: corpus fuscum.

Exp. alar. unc. 2.

Hab. Bogota.

B.M.

This species seems to be most closely allied to *E. quantius*; with a magnifying-glass three indistinct brown ocelli with white pupils may be seen on the front, and five on the hind wings below.

Division IV.

Alæ supra fuscæ, plerumque violascentes; subtus maculis ocellatis mediis, posticarum plerumque elongatis, argenteis.

Subdivision 1.

Alæ subtus ocellis regularibus nec elongatis.

89. EUPTYCHIA CLUENA.

Papilio (Nymph.) cluena, Drury, Ill. iii. p. 9, pl. 7. f. 5, 6 (1782).

Euptychia cluena, Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 3 (1851).

Papilio clueria, Fabricius, Ent. Syst. iii. pt. 1. p. 229. n. 716 (1793).

Satyrus clueria, Godart, Enc. Méth. ix. p. 492. n. 51 (1819).

Euptychia clueria, E. Doubleday, List Lep. Brit. Mus. i. p. 122 (1844).

Hab. Brazil.

B.M.

The figure given by Drury of this species does not agree entirely with the specimens in the National Collection; the ocelli of the upperside are pupillated, with small central irides, and in our specimens with simple white spots; the underside bands are quite different, those in Drury's figure being placed near together, and the outer one angulated in the middle. In all the specimens that I have seen the outer central band is entire, excepting at the inner margin, where it takes a sudden angle inwards; the ocelli of the underside are also represented as being all alike, and only one in the front wings. It is just possible that these differences may be owing to incorrect drawing, especially as he describes the insect as $2\frac{1}{4}$ inches in expanse (the usual size of the females), but figures it $2\frac{1}{2}$ inches, and as the colouring of the figure does not altogether agree with the description.

90. EUPTYCHIA SERICEELLA.

Euptychia sericeella, H. W. Bates, Ent. Month. Mag. i. p. 202. n. 75 (1865).

Hab. Vera Paz, Guatemala (*Coll. Salvin*).

This species appears to be intermediate between *E. cluena*, Drury, and *E. ebusa*, Cramer.

91. EUPTYCHIA EBUSA.

Papilio ebusa, Cramer, Pap. Exot. iv. pl. 292. f. F, G (1782).

Euptychia ebusa, Hübner, Verz. bek. Schmett. p. 54. n. 515 (1816); E. Doubleday, List Lep. Brit. Mus. i. p. 123 (1844); Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 16 (1851).

Papilio aranea, Fabricius, Ent. Syst. iii. pt. 1. p. 97. n. 299 (1793).

Satyrus aranea, Godart, Enc. Méth. ix. pp. 464 & 492. n. 49 (1819).

Hab. Guiana (*Westwood*); Pernambuco; Bahia; Para; Venezuela. B.M.

92. EUPTYCHIA BYSES.

Satyrus byses, Godart, Enc. Méth. ix. pp. 466 & 496. n. 67 (1819); Westw. & Hewits, Gen. Diurn. Lepid. p. 373. n. 9 (1851).

Hab. Rio Janeiro. B.M.

Var. *Alæ supra magis cærulescentes, ocellis subtus minimis; alæ aliquando purpureo, albo, viridi, ochreove variæ.*

Hab. Brazil. B.M.

This species is very accurately described by Godart; it, however, varies exceedingly in the size of the ocelli and the ground-colour of the underside; in some specimens the ocelli are hardly perceptible, and there are purplish and white patches near the apices of the wings.

Subdivision 2.

Posticæ subtus maculis mediis ocellaribus elongatis et irregularibus.

93. EUPTYCHIA CHLORIS.

Papilio chloris, Cramer, Pap. Exot. iv. pl. 293. f. A, B (1782).

Euptychia chloris, Westw. & Hewits, Gen. Diurn. Lepid. p. 373. n. 20 (1851).

Satyrus tolumnia, ♀, Godart, Enc. Méth. ix. p. 491. n. 48 (1819).

Euptychia chlorimene, Hübner, Verz. bek. Schmett. p. 54. n. 514 (1816).

Hab. Surinam (*Cramer*); Brazil; Bahia; Para. B.M.

Note.—Some specimens of this species have no ocellus on the underside of the front wings.

94. EUPTYCHIA HERSE.

Papilio herse, Cramer, Pap. Exot. i. pl. 10. f. C, D (1779).

Satyrus herseis, Godart, Enc. Méth. ix. pp. 465 & 495. n. 60 (1819).

Euptychia herseis, Westw. & Hewits, Gen. Diurn. Lepid. p. 373. n. 11 (1851).

Hab. Guiana (*Westwood*); Brazil; Venezuela; Para. B.M.

Var. *Alæ paulo majores, fasciis anticarum ad costam minime approximantibus, fasciis posticarum flavescentibus, ocellis magis elongatis.*

Hab. Para; Tapajos (*Coll. Bates and B.M.*).

95. EUPTYCHIA CALLICHLORIS, sp. n. (Pl. XL. fig. 10.)

Alæ supra fuscae, area basali pellucescente et violascente: anticæ fasciis duabus mediis obliquis fuscis, tertia harum externam approximante, lineisque duabus marginalibus fuscis indistinctis: pos-

tica fascia basali indistincta, altera media medio valde angulata, lineisque duabus marginalibus indistinctis fuscis; stria marginali ad angulum analem albicante; ocello subanali magno, nigro, ochreo cincto, aliisque indistinctis per alas conspicuis: corpus cinereo-fuscum, antennis fuscis ochreo acuminatis, subtus ferrugineis.

Alæ subtus albicantes: anticæ fasciis velut supra distinctioribus; ocello subapicali nigro, ochreo cincto, argenteo bipupillato: posticæ basi fusca, fascia media flavescente medio valde angulata, area apicali violaceo-cærulescente; margine apicali albicante, anali flavescente, margine ipso nigro lineis duabus marginalibus nigris; ocellis quinque submarginalibus fulvo-cinctis, secundo tertioque, et quarto quintoque iride una inclusis; apicali minimo, anali maximo, primo, secundo et quinto nigris argenteo bipupillatis, aliis argenteis elongatis: corpus albido-fuscum.

Exp. alar. unc. $1\frac{7}{8}$.

Hab. Ega (Coll. Bates).

Most closely allied to *E. herse*, but very distinct from all the neighbouring species.

96. EUPTYCHIA HEWITSONII, sp. n. (Pl. XL. fig. 4.)

♂. *Alæ supra area basali apud basim pellucida: anticæ fuscæ, area anali cærulea nitida, apud basim paulo virescente; ciliis albis: posticæ cæruleæ nitidæ, opud basim virescentes; ciliis albis: corpus cinereum, antennis cinereis.*

Alæ subtus albidæ violascentes, area apicali posticarum aliquando cærulea: anticæ fasciis duabus mediis, unaque submarginali ferrugineo-fuscis; tribus tenuibus marginalibus nigris; ocello subapicali nigro, argenteo pupillato ochreoque iridato: posticæ fasciis duabus mediis, externa sinuata et dentata, ferrugineis; una submarginali, apud apicem nigra, apud marginem internum rufescente, dilatata et mediam externam approximante; duabus marginalibus tenuibus nigris; ocellis quinque flavo cinctis, tertio et quarto argenteis elongatis, aliis nigris argenteo bipupillatis, quinto maximo: corpus cinereum.

Exp. alar. unc. $1\frac{5}{16}$.

♀. *Alæ supra fuscæ violascentes, lineis tribus marginalibus indistinctis fuscis: posticæ una intermedia ochrea, maculaque magna subanali nigra: corpus fuscum; antennis fuscis, ad apicem flavescenscentibus.*

Alæ subtus violaceæ roseæve, fasciis ocellisque velut maris: corpus albidum.

Exp. alar. unc. $1\frac{5}{16}$ — $1\frac{7}{16}$.

Hab. Para (Colls. Bates, Salvin, Hewitson, and B.M.).

Var. ♂. *Alæ supra virescentes, posticæ paulo elongatæ; subtus pallidiores paulo virescentes violascentesque.*

Hab. Ega.

B.M.

This is one of the most lovely little Butterflies in the genus, and not very closely allied to any other species that I have seen; in some respects it agrees with *E. chloris*.

97. EUPTYCHIA AGATHA, sp. n. (Pl. XL. fig. 8.)

♂. *Alæ anticæ supra fuscæ violascentes: posticæ cyaneæ, area costali fusca violascente: corpus fuscum, antennis flavo-ferrugineis.*

Alæ subtus pallidæ nitentes viridescentes, fasciis duabus mediis obliquis, externa posticarum medio angulata, unaque submarginali irregulari ad apicem coarctata, conjuncta: anticæ fascia submarginali indistincta fusca, altera marginem approximante unaque marginali fuscis; ocello subapicali nigro, ochreo cincto alboque pupillato: posticæ margine anali fusco, linea media marginali albida; ocellis quinque, primo, secundo et quinto nigris fulvo cinctis alboque pupillatis, aliis elongatis argenteis flavo cinctis, quinto maximo, primo minimo: corpus albidum.

Exp. alar. unc. 1 $\frac{5}{8}$.

♀. *Alæ supra violaceæ subpellucidæ, marginibus rufo-fuscis, lineis marginalibus velut in mari: subtus ocellis per alas conspicuis.*

Alæ subtus fasciis posticarum mediis, approximantibus: aliter velut in mari.

Exp. alar. unc. 1 $\frac{6}{8}$.

Hab. Para (Coll. Bates and B.M.).

This species is closely allied to *E. chloris*, Cramer. The male differs in having the outer margin of the front wings less sinuated, being of a duller and darker colour, with the hind wings longer and more broadly suffused with blue; on the underside the ocelli are larger and nearer to the outer margin, the second one being placed very near the margin, as in *E. herse*, Cramer; and the central bands are orange. The female is of a brighter colour above, with the marginal lines less distinct; below the differences are the same as in the male.

98. EUPTYCHIA TOLUMNIA.

Papilio tolumnia, Cramer, Pap. Exot. ii. pl. 130. f. F, G (♂) (1779); Fabricius, Gen. Ins. ii. p. 85. n. 374 (1776); Ent. Syst. iii. pt. 1. p. 107. n. 330 (1793).

Euptychia tolumnia, Hübner, Verz. bek. Schmett. p. 54. n. 513 (1816); Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 19 (1851).

Satyrus tolumnia, Godart, Enc. Méth. ix. pp. 464 & 491. n. 48 (1819).

Hab. Guiana; Bahia (Westwood; Coll. Hewitson).

The specimen referred to in the 'Genera' as in the British Museum is probably the female of *chloris*, which, however, is not the insect intended by Cramer; his figure more nearly resembles *E. agatha*, but is quite distinct from it.

99. EUPTYCHIA AYAYA, sp. n. (Pl. XL. fig. 11.)

Alæ supra cærulescentes, apud marginem violascentes; margine ipso nigro, linea marginali alteraque submarginali indistinctis fuscis: posticæ macula magna ad cellæ finem nigra: corpus olivaceo-fuscum; antennis flavo-fuscis, subtus flavis.

Alæ subtus argenteo-cæruleæ, fasciis duabus mediis obliquis oliva-

ceis; margine externo tenuissime nigro; linea marginali alteraque submarginali olivaceo-fuscis, anticis apud costam undulatis, posticis angulis alternis: antica fascia apud marginem olivacea purpurascens; ocello subapicali nigro, ochreo cincto argenteoque pupillato: posticæ ocellis quinque fusco circumcinctis, primo, secundo et quinto nigris fulvo cinctis et argenteo bipupillatis, tertio et quarto piriformibus violaceo-argenteis et flavo cinctis: corpus ochreo-albidum.

Exp. alar. unc. $2\frac{1}{8}$.

Hab. Tapajos (Coll. Bates).

100. EUPTYCHIA TRICOLOR.

Euptychia tricolor, Hewitson, Ann. & Mag. Nat. Hist. vi. p. 440 (1850); Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 15, pl. 65. f. 3 (1851).

Hab. ♂, Tapajos; Fonteboa.

B.M.

♀, Tapajos (Coll. Bates).

This is one of the most distinct and beautiful species of *Euptychia*: specimens from Fonteboa are even more exquisite in colouring than the one figured in the 'Genera;' they have a broad ill-defined subcostal streak of metallic blue green in the front wings. The only specimens of the female of this insect which I have seen are in Mr. Bates's collection; they are very similar to the females of *E. chloris*.

101. EUPTYCHIA BATESII, sp. n. (Pl. XL. fig. 16.)

♂. *Alæ supra fuscæ, omnino viridi purpureoque micantes: corpus olivaceo-fuscum; antennis supra fuscis, albido fasciolatis, præ flavescens, nigro acuminatis, subtus flavis nigro acuminatis.*

Alæ subtus albidæ, minime roseo micantes, fasciis duabus mediis obliquis rubris; fascia lata apud marginem posticum fusca, ocellos includente; linea submarginali fusca, anticarum apud apicem angulis alternis undata, posticarum undata; lineis duabus marginalibus fuscis, posticarum undulatis: antica ocello uno subapicali nigro, fulvo cincto argenteoque pupillato, punctisque duobus minimis intersectis argenteis: posticæ ocellis quinque fulvo cinctis, primo, secundo et quinto nigris argenteo pupillatis, primo minimo, quinto maximo et bipupillato, tertio et quarto ferreo-argenteis iridibus fusco conspurcatis: corpus ochreo-fuscum.

Exp. alar. unc. $2\frac{5}{16}$.

Hab. Tapajos (Coll. Bates and B.M.).

♀. *Alæ supra pallidæ violascentes, lineis marginalibus distinctis: posticæ macula subanali ovali nigra brunneo cincta.*

Hab. Tapajos (Coll. Bates); Para (Coll. Salvin).

The female of this species bears a strong general resemblance to our variety of *E. ocypete*, and even more closely resembles *E. helle*, but may be at once distinguished from these by the form and position of the central bands, which in *E. ocypete* and *E. helle* are rather nearer to the outer margin; the central ocelli also are bipupillate in these two species.

102. EUPTYCHIA NORTIA.

Euptychia nortia, Hewitson, Exot. Butterf. iii. pl. 44. n. 2. f. 2 (1862).

Hab. Tapajos.

B.M.

103. EUPTYCHIA GERA.

Euptychia gera, Hewitson, Ann. & Mag. Nat. Hist. vi. p. 439 (1850); Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 4. pl. 63. f. 4 (1851).

Hab. Tapajos (*Colls. Bates and Hewitson*).

104. EUPTYCHIA METAGERA, sp. n.

Alæ supra fuscæ, medio albicantes, fasciis duabus mediis indistinctis fuscis; lineis tribus marginalibus nigro-fuscis: posticæ macula subapicali nigro-fusca, alteraque ocellata subanali per alas conspicua: corpus cinereo-fuscum; antennis supra fuscis, præ flavescenscentibus et ad apicem fusco fasciolatis, subtus basi cinereis præ flavis.

Alæ subtus pallidiores, area apicali roseo tincta; fasciis velut supra, sed distinctioribus: posticæ ocellis sex flavo cinctis, primo, secundo, quinto et sexto nigris argenteo pupillatis, primo et sexto minimis, quinto maximo, tertio et quarto argenteis elongatis: corpus fuscum pallidum.

Exp. alar. unc. 1 $\frac{5}{8}$.

Hab. Upper Amazon (*Coll. Bates*).

Allied to *E. gera* and *E. nortia*.

105. EUPTYCHIA HIEMALIS, sp. n.

Alæ supra niveæ, costa et margine postico anticarum fuscis, lineis tribus marginalibus indistinctis fuscis: posticæ lineis tribus marginalibus, maculis duabus apicalibus unaque subanali fuscis: corpus fuscum; antennis supra cinereis albo fasciolatis, præ flavescenscentibus, subtus flavis præ nigrescentibus.

Alæ subtus niveæ, fasciis duabus mediis, anticarum brevibus, externa medio angulata, externa posticarum ad angulum internum irregulari; costæ apiceque anticarum fuscescentibus; lineis tribus marginalibus fuscis, posticis undulatis: posticæ ocellis sex fulvo cinctis, primo, secundo, quinto et sexto nigris albo pupillatis, aliis ovalibus argenteis: corpus thorace fusco, abdomine albido.

Exp. alar. unc. 2.

Hab. River Amazon; Rio Negro (*Coll. Bates*).

B.M.

Allied to *E. nortia*, Hewitson; but at first sight it might appear to be only an extreme variety of *E. ocirrhoë*.

Division V.

Alæ supra fuscæ, aliquando parte albida: subtus maculis ocellaribus diverse formatis, aliquando piriformibus; quandoque sparsis, argenteis, macula magna subanali nigra; rarius mediis, elongatis; aut marginalibus, nigris argenteisque.

Subdivision 1.

Ocellis subtus piriformibus.

106. EUPTYCHIA FURINA.

Euptychia furina, Hewitson, Exot. Butterf. iii. pt. 44. n. 4 (1862).

Hab. Tapajos. ♂, B.M.

Mr. Hewitson, at the end of his description of this species, suggests the possibility of *E. itonis* and *E. furina* being merely sexually distinct. I cannot agree with him in this particular, as we have female insects very much more nearly allied to *furina*, such as *E. gemmula*; but even these are so unlike *furina* and its male allies that I should not dare to place them together without some proof of their identity.

Swainson says of his *Satyrus argenteus*, an insect allied to *itonis*, "the two sexes are perfectly similar."

107. EUPTYCHIA JUNONIA, sp. n.

♂. *Alæ anticae elongatæ, margine postico angulo medio, concavato; alæ supra fuscae immaculatæ, posticæ lineis tribus marginalibus nigro-fuscis duabusque intermediis pallidis: corpus cinereo-fuscum; antennis supra cinereis, subtus flavescens, fascia subapicali nigra.*

Alæ subtus cinereo-fuscae, fasciis duabus mediis, posticarum valde irregularibus fuscis, interna posticarum marginis interni medium vix attingente, externa ocello sexto interrupta; aliter velut in E. furina, ocellis autem paulo minoribus, linea submarginali valde undulata, marginalibusque tenuibus: corpus ochreo-cinereum.

Exp. alar. unc. 2.

Hab. Tapajos.

B.M.

Closely allied to *E. furina*, Hewitson, but quite distinct.

108. EUPTYCHIA GEMMULA, sp. n.

Neonympha gemmula, E. Doubleday, List Lep. Brit. Mus. App. p. 33 (1847); Westw. & Hewits. Gen. Diurn. Lepid. p. 375. n. 9 (1851).

Alæ supra fuscae, margine postico fuscescente: posticæ area anali paulo dilutiore, maculis una duabusve apud disci medium nigro-fuscis; lineis duabus maris nigro-, feminae ferrugineo-fuscis, et margine ipso fusco: corpus thorace cinereo præ rufescente; abdomine fusco; antennis cinereis, subtus albido fasciolatis.

Alæ subtus pallidiores, fasciis duabus mediis ferrugineis tenuibus, anticarum subdirectis, late separatis, irregularibus, posticarum obliquis; lineis duabus marginalibus, angulis alternis undulatis, anticarum fuscis, posticarum ferrugineis; margine ipso nigro tenuissimo, ciliis cinereis: posticæ ocellis maris quinque, feminae sex, ovalibus nigris late fulvo cinctis, secundo et quinto extus nigris, intus viridi-argenteis, aliis viridi-argenteis: corpus cinereo-fuscum.

Exp. alar. unc. 2.

Hab. ♂, Rio Janeiro (Coll. Bates); ♀, Brazil.

B.M.

Allied to the preceding species.

109. EUPTYCHIA DOXES.

Satyrus doxes, Godart, Enc. Méth. ix. pp. 465 & 493. n. 54 (1819).

Euptychia doxes, Westw. & Hewits. Gen. Diurn. Lepid. p. 374. n. 28 (1851).

“*Alis carulescenti-fuscis : subtus strigis duabus ferrugineis : posticis ocellis quinque ovatis et intus argenteo pulverulentis.*”

“A little more than $1\frac{1}{2}$ inch in expanse. The wings brown, bluish in some parts; the upperside of the hind wings has near the anal angle a large blackish spot, and near the outer margin, which is more or less dentated, a double sinuated line, uniformly blackish. Below, each wing has a similar marginal line; and three ferruginous undulated transverse lines may be seen, the outer one separated from the others, but only on the hind wings, by a row of five oval ocelli, the second, third, and fourth very large; these ocelli, which are surrounded by an iris of orange, are black towards the outer margin of the wing, brown, and covered with silver atoms towards the base. The body is of the same colour as the wings; the antennæ are annulated with brown and white; the club reddish, with its point black.”—*Enc. Méth.*

Hab. Brazil.

This species appears to be allied to *E. gemmula*, but differs in size and in several other more important particulars.

110. EUPTYCHIA ERYCINA.

♂. *Alæ supra fusca : posticæ area basali pallidiore, apud apicem albescentes ; maculis quatuor submarginalibus nigris, una ad apicem parva, aliis subanalibus, media majore ; lineis tribus marginalibus nigro-fuscis, media lata : corpus cinereo-fuscum ; antennis supra cinereis, subtus ferrugineis.*

Alæ subtus fusca, posticæ cinereo-albescentes ; lineis duabus mediis, anticarum subdirectis, externa valde irregulari, ab oculo sexto posticarum interrupta, lineis tribus marginalibus velut in E. furina undatis : posticæ ocellis sex, extus nigris, intus argenteis ; quinto maximo, primo sextoque minimis : corpus cinereo-fuscum.

Exp. alar. unc. 2.

Hab. Brazil.

B.M.

Allied to *E. junonia*, but very different.

111. EUPTYCHIA LATIA, sp. n. (Pl. XL. fig. 14.)

♀. *Alæ supra fusca : posticæ macula permagna subapicali ochrea ; maculis quatuor submarginalibus nigris, secunda quartaque minimis ; linea lunulata submarginali ochrea : corpus cinereo-fuscum ; antennis supra fuscis, subtus ferrugineis.*

Alæ subtus fusca, area apicali posticarum albicante ; lineis mediis velut in E. erycina sed latius separatis externaque minus sinuata ; lineis marginalibus velut in E. erycina, margine ipso posticarum fusco : posticæ ocellis sex ovalibus fulvo cinctis, primo, secundo,

quinto et sexto nigris, intus argenteis, aliis argenteis valde elongatis: corpus fuscum.

Exp. alar. unc. $1\frac{3}{4}$.

Hab. Bahia.

B.M.

Allied to the preceding species.

Subdivision 2.

Ala subtus maculis ocellaribus sparsis argenteis, macula magna subanali nigra, maculas argenteas includente.

112. EUPTYCHIA COSMOPHILA.

(*Oreas fimbriata*) *Neonympha cosmophila*, Hübner, Ex. Schmett. Zutrage, nos. 255, 256 (♂) (1806).

Neonympha cosmophila, Westw. & Hewits. Gen. Diurn. Lepid. p. 375. n. 15 (1851).

Satyrys argenteus, Swainson, Zool. Ill. vols. i.-iii. pl. 159 (♀) (1820-23); Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 8 (1851). *E. pagyris*, syn.

Hab. Brazil; Bahia.

B.M.

I think there can be little doubt that the above insects are sexes of one species, they only differ in depth of colour.

113. EUPTYCHIA PAGYRIS.

Satyrys pagyris, Godart, Enc. Méth. ix. pp. 464 & 491. n. 46 (1819).

Euptychia pagyris, Westw. & Hewits. Gen. Diurn. Lepid. p. 373. n. 8 (1851).

“*Alis supra fuscis: subtus strigis duabus ferrugineis undatis; posticis basi grisescentibus, tunc flavescentibus, maculis argenteis nigraque bipunctata.*

“Expanse about $1\frac{1}{2}$ inch. The upperside brown, somewhat dark. The front wings entire and without spots; the hind wings dentated, whitish towards the anal angle, with a series of three black spots, the middle one very large.

“The underside of the front wings is the same colour as above, with two ferruginous lines, transverse and waved, independent of which there is along the outer margin a series of nine or ten silver spots, rather brilliant. The underside of the hind wings is greyish towards the base, with two ferruginous lines, being a continuation of those in the front wings; becoming yellow towards the apex, with seven silver spots, five of them somewhat globose, placed parallel to the outer margin; the two others, especially the one near the interior margin, elongated and touching the ferruginous line; between the fourth and fifth globose spots there is a large oval black one placed transversely and enclosing two large silver spots; upon the outer margin, which is of the same grey as the base, is a double blackish flexuous line.”—*Enc. Méth.*

Hab. Brazil (Coll. Hewitson).

E. pagyris differs from *E. cosmophila* in being larger, with the

black spots in the hind wings on the upperside more distinct, and placed much further from the margin, they also do not slant downwards towards the anal angle. The underside differs in having the elongate ocellate spots pupillated with silver spots and lunules, and encircled by an interrupted brown line; the central bands reddish, the inner one straight, the outer one curved outwardly; the marginal lines distinct, black, and bisinuate between each two nervures. The hind wings have the central bands reddish, placed nearer to one another, the outer one with zigzag waves; the basal half brownish; the apical half broader and distinct from the outer central line; and all the markings more defined; the wings with long cilia, and the hind wings deeply sinuated.

114. EUPTYCHIA ITONIS.

Euptychia itonis, Hewitson, Exot. Butterf. iii. pt. 44. f. 3 (1862).
Hab. Para; Ega (*Coll. Salvin*). B.M.

115. EUPTYCHIA CLORIMENA.

Papilio clorimena, Stoll, Suppl. Cramer, Pap. Exot. p. 60, pl. 13. f. 2, 2 b (1791).

Neonympha clorimene, Herrich-Schäffer, Ind. Lep. Exot. p. 59. n. 12 (1864).

Neonympha clerimene, Hübner, Verz. bek. Schmett. p. 65. n. 624 (1816); Westw. & Hewits. Gen. Diurn. Lepid. p. 375. n. 16 (1851).

Hab. Surinam.

The arrangement of the silver spots on the underside in this species appears to be almost the same as in *E. pagyris*.

116. EUPTYCHIA SALVINI, sp. n. (Pl. XL. fig. 13.)

Alæ supra fuscæ pallidæ, area apicali posticarum albicantibus, lineisque duabus nigris: corpus cinereum, antennæ ferrugineis.

Alæ subtus albidæ; alæ omnes fascia basali obliqua brevi, duabus mediis subintegris minus obliquis, anticæque fascia ovali, maculas tres serie contigua positas argenteoque atomatas includente, fuscis; margine postico anticarum lineis duabus nigris submarginato: posticæ area apicali flava fusco marginata, maculas quinque subapicales argenteas, duas apicales intus nigro punctatas ocellosque tres subanales argenteos late nigro cinctos includente, ocello externo maximo globoso, aliis parvis elongatis; lineis duabus marginalibus et margine ipso nigris: corpus albido-fuscum.

Exp. alar. unc. $1\frac{5}{8}$.

Hab. Panama (*Coll. Salvin*).

Allied to *E. itonis*, but very dissimilar in pattern.

Subdivision 3.

Alæ subtus maculis ocellaribus elongatis, mediis argenteo atomatis.

117. EUPTYCHIA AREOLATA.

Papilio areolatus, Smith & Abbot's Lep. Georgia, p. 25, t. 13 (1797).

Satyrus areolatus, Godart, Enc. Méth. ix. pp. 465 & 494. n. 58 (1819); Boisd. & Leconte, Icon. Léop. Am. Sept. pl. 63. figs. 5 & 6, 7 & 8 (metam.) (1833).

Neonympha areolatus, Westw. & Hewits. Gen. Diurn. Lepid. p. 375. n. 6 (1851).

Oreas (fimbriata) helicta, Hübner, Samml. exot. Schmett. Bd. i. pl. 95 (1806).

Neonympha helicta, Hübner, Verz. bek. Schmett. p. 65. n. 622 (1816).

Hab. Georgia, United States.

Var. *Alæ anticæ subtus immaculatæ, posticæ ocellis quatuor vel quinque elongatis, tribus mediis longioribus.*

Papilio phocion, Fabricius, Ent. Syst. iii. pt. 1. p. 218. n. 683 (1793).

Satyrus phocion, Godart, Enc. Méth. ix. pp. 465 & 494. n. 59 (1819).

Neonympha phocion, Westw. & Hewits. Gen. Diurn. Lep. p. 375. n. 6 (1851).

Hab. United States.

B.M.

This species is exceedingly variable in marking, as the following list of the number of ocellate spots in the various figures and descriptions will show:—

Smith & Abbot's 'American Insects,' f. w. 4, h. w. 6.

Godart, 'Encyclopédie Méthodique,' f. w. 4, h. w. 6.

Hübner, 'Sammlung exotischer Schmetterlinge,' f. w. 2-3, h. w. 5.

Boisduval et Leconte, 'Histoire des Lépidoptères,' f. w. 1, h. w. 4.

Fabricius (*E. phocion*), 'Entomologia Systematica,' f. w. 0, h. w. 3.

Coll. Brit. Mus. (*E. phocion*), three specimens, f. w. 0, h. w. 4-5.

The figure of this species given by Dr. Boisduval appears to have been badly coloured; it does not agree in tint with any of the other figures or with our specimens.

Subdivision 4.

Alæ subtus maculis ocellaribus marginalibus, nigris argenteisque.

118. EUPTYCHIA PYRACMON, sp. n.

♀. *Alæ supra fuscæ, linea post alarum medium posita fusca, extus rubro marginata, anticarum subintegra, posticarum lunulata: anticæ margine postico paulo fuscescente, ciliis cinereis: posticæ margine apicali paulo fuscescente, margine anali rufescente, maculis tribus submarginalibus nigris, interna minima: corpus cinereo-fuscum; antennis supra fuscis, subtus albidis, præ flavescentibus, cinereo fasciatis.*

Alæ subtus ochreæ cinereo variæ, fasciis duabus mediis irregularibus ferrugineis: anticæ linea submarginali undulata apicem non attingente: posticæ linea submarginali lunulata argentea, apud marginem analem intus ferrugineo marginata, ad apicem maculas

duas binas argenteas formante, maculis duabus mediis marginalibus nigris, macula permagna subanali cinerascete : corpus ochreocinereum.

Exp. alar. unc. $1\frac{1}{6}$.

Hab. Oajaca (Mexico).

B.M.

Closely allied to *E. gemma*, from which it differs in being much larger, having the apex of the front wings subangulated and the outer margin of the hind wings sinuated; the wings above reddish in some parts, with much larger marginal black spots; below, the central streaks are more distinct, reddish, and different in outline.

119. EUPTYCHIA GEMMA.

Neonympha gemma, Hübner, Exot. Schmett. Zutr. f. 7, 8 (1806); Westw. & Hewits. Gen. Diurn. Lepid. p. 375. n. 8 (1851).

Satyrus gemma, Boisduval et Leconte, Hist. des Léop. pl. 62. f. 1-3, 4 & 5 (metam.) (1833).

Hab. United States; Polochic Valley (*Coll. Salvin*).

B.M.

Division VI.

Alæ supra fuscæ immaculatæ; anticæ subtus plerumque immaculatæ; posticæ ocellis nigris sæpius ovalibus, atomis argenteis pupillatis.

120. EUPTYCHIA SAUNDERSII, sp. n. (Pl. XL. fig. 17.)

Alæ supra fuscæ, lineis duabus marginalibus valde indistinctis : corpus cinereo-fuscum, antennis ferrugineis.

Alæ subtus pallidiores, violascentes, area apicali posticarum virescente vel violascente, lineis duabus mediis fuscis, ad costam anticarum divergentibus, externa posticarum medio angulata, margine tenuissime fuscescente, linea marginali tenui alteraque submarginali fuscis : posticæ ocellis quinque ovalibus et rarissime uno minimo apicali, primo et quinto minoribus, nigris, brunneo cinctis, fusco circumcinctis et atomis argenteis pupillatis : corpus cinereo-fuscum.

Exp. alar. unc. $2\frac{1}{4}$.

Hab. Ega (*Coll. Bates*); Pernambuco.

B.M.

Closely allied to *E. pacarus*, but apparently differing in the position of the lines below, and in size.

121. EUPTYCHIA MIMA, sp. n.

Præcedenti simillima, sed minor, lineis mediis subtus ad costam anticarum magis approximantibus, externa posticarum medio excavata : anticæ oculo purvo apicali : posticæ paulo violascentes, ocellis sex minoribus marginem approximantibus.

Exp. alar. unc. $1\frac{1}{6}$.

Hab. Tapajos (*Coll. Bates*).

Very like the preceding species, from which it differs in being much smaller, with the lines below differently formed, and the ocelli smaller and nearer to the outer margin.

122. EUPTYCHIA FUMATA, sp. n.

In the collection of W. C. Hewitson.

Very similar in general aspect to *E. saundersii*.

123. EUPTYCHIA PACARUS.

Satyrus pacarus, Godart, Enc. Méth. ix. pp. 465 & 495. n. 61 (1819).

Neonympha pacarus, Westw. & Hewits. Gen. Diurn. Lep. p. 375. n. 4 (1851).

“*Alis integris, nigricanti-fuscis, supra immaculatis: subtus anticis strigis duabus obscurioribus undatis, posticis tribus, ocellisque quinque atomis pupillaribus argenteis.*”

“About 2 inches in expanse. Wings entire, brown, blackish in some parts; upperside without spots. Underside, near the margin, with two lines darker than the ground-colour; the hind wings have a third similar line, placed transversely towards the middle, and separated from the others by a row of five round ocelli, very black, with a pupil formed of silver atoms, and a brownish iris surrounded by a darker circle; the front wings have no ocelli.”—*Enc. Méth.*

Hab. Brazil.

124. EUPTYCHIA INSIGNIS, sp. n. (Pl. XL. fig. 12.)

Alæ supra fuscæ, linea marginali alteraque submarginali valde indistinctis; posticæ ocello subanali, per alas conspicuo: corpus fuscum, antennis fuscis.

Alæ subtus pallidiores: anticæ lineis duabus velut supra fuscis aliaque brevi interrupta indistincta post cellam oblique posita: posticæ medio albicantes; lineis duabus ante alarum medium oblique positis, interna apud marginem internum paulo undulata, externa minime irregulari; linea marginali alteraque submarginali undatis; ocellis tribus discalibus serie recta positis, argenteis, nigro cinctis ochreoque promiscue circumcinctis, medio maximo: corpus pallidum.

Exp. alar. unc. $1\frac{4}{16}$.

Hab. — (Coll. Bates):

This species may be allied to *E. nortia*, but only agrees with it in a few particulars of coloration.

I am told that the following species has been mistaken for the *antonœ* of Cramer, with which it has no connexion whatever.

Division VII.

Alæ anticæ margine postico excavato; posticæ margine postico subdirecto, angulo anali distincto: supra fuscæ, subtus margine postico albicante, ocellis posticarum lunulis pupillatis.

125. EUPTYCHIA ERICHTHO, sp. n. (Pl. XL. fig. 15.)

Alæ supra fuscæ, anticæ lineis duabus, posticæ tribus marginalibus fuscis: corpus fuscum; antennis supra fuscis, subtus ferrugineis.

Alæ subtus pallidiores, margine postico violaceo-albicante; lineis duabus mediis, interna apud costam intus currente, fuscis; lineis duabus marginalibus nigris tenuibus, unaque submarginali, anticarum irregulari, posticarum sinuata: anticae ocellis fuscis medio nigris, pupillis violaceo-argenteis, ochreo cinctis et fusco circumcinctis: posticae ocellis sex similibus, pupillis plerumque lunulatis: corpus fuscum.

Exp. alar. unc. $1\frac{15}{16}$.

Hab. Pernambuco, Rio, Ega, Para (B.M.); Ega (Colls. Bates and Salvin).

126. EUPTYCHIA ARCHEBATES.

Satyrus archebates, Ménétré, Nouv. Mém. Soc. Nat. Moscou, iii. p. 38.

Euptychia archebates, Westw. & Hewits. Gen. Diurn. Lep. p. 374. n. 25 (1851).

Hab. Antilles.

The book in which this insect was described was, I am told, destroyed in the great fire at Moscow; and I am therefore unable to determine the species.

The following species probably do not belong to this genus:—

127. PAPILIO FLORIMEL.

Papilio florimel, Fabricius, Ent. Syst. iii. 1. p. 215. n. 673 (1793); Donovan's Drawings in Bibl. Hope. Oxford.

Satyrus florimel, Godart, Enc. Méth. ix. pp. 469 & 512. n. 106 (1819).

Neonympha florimel, Westw. & Hewits. Gen. Diurn. Lep. p. 375. n. 19 (1851).

Hab. —?

From the description given by Fabricius I should suppose this insect to be an *Erebia*; I have, however, had no opportunity of seeing Donovan's drawings, and may therefore be mistaken. I know of no species of *Euptychia* anything like it.

128. PAPILIO PERIBÆA.

Papilio peribæa, Fabricius, Ent. Syst. iii. 1. p. 234. n. 730 (1793).

Neonympha peribæa, Westw. & Hewits. Gen. Diurn. Lep. p. 376. n. 24 (1851).

Satyrus peribæa, Godart, Enc. Méth. ix. pp. 463 & 486. n. 29 (1819).

Hab. Surinam (Fabricius).

If it were not for the locality, I should have imagined this insect, from the description, to be a *Mycalesis*. I do not know of any species of *Euptychia* with a large ocellus at the inner margin of the front wings on the upperside.

129. PAPILIO HALYMA.

Papilio halyma, Fabricius, Ent. Syst. iii. p. 243. n. 758 (1793).

Satyrus halyma, Godart, Enc. Méth. ix. pp. 463 & 487. n. 32 (1819).

Neonympha halyma, Westw. & Hewits. Gen. Diurn. Lep. p. 376. n. 25 (1851).

Hab. in Indiis (*Fabricius*); West Indies (*Westwood*).

This species may be a *Debis*. I believe that *Fabricius* occasionally uses the locality "in Indiis" instead of "in India."

130. PAPILIO CANTHUS.

Papilio canthus, Linnæus, Syst. Nat. ii. p. 768. n. 129 (1766); *Fabricius*, Ent. Syst. iii. pt. 1. p. 157. n. 484 (1793).

Satyrus canthus et cantheus, Godart, Enc. Méth. ix. pp. 465 & 493. nos. 55, 56 (1819).

Neonympha canthus, Westw. & Hewits. Gen. Diurn. Lep. p. 375. n. 13 (1851).

Papilio eurydice, Linn. Amœn. Acad. vi. p. 406 (Centuria Insectorum) n. 65 (1789).

Hab. United States.

B.M.

This species appears to me to be allied to *Lasiommata dejanira* (Europe); it bears a strong resemblance to *Debis portlandia* (United States).

Linnæus, in his 'Systema Naturæ' (1766), briefly characterizes this species, and refers for a fuller description of it to the 'Amœnitates Academicæ,' published in 1749. *Fabricius* refers to *P. arganthe* (sic), Cramer, i. pl. 17. t. 204. f. C, D, as his species. This figure, however, does not at all agree with his description.

The following species does not belong to the genus *Euptychia*, but is identical with *Chionobas bore*, Oehsenheim. See *Fabricius*'s type in the Banksian Collection:—

131. PAPILIO POLIXENES.

Papilio polixenes, *Fabricius*, Ent. Syst. iii. 1. p. 152. n. 466 (1793).

Neonympha? polixenes, Westw. & Hewits. Gen. Diurn. Lepid. p. 376. n. 22 (1851).

Hab. North America (*Coll. Banks*).

B.M.

EXPLANATION OF PLATES XXXIX., XL.

PLATE XXXIX.

Fig. 1. *Euptychia terrestris*, p. 462.

2. ——— *usitata*, p. 463.

3. ——— *picria*, p. 463.

4. ——— *austera*, p. 464.

5. ——— *erigone*, p. 466.

6. ——— *criphule*, p. 468.

7. ——— *electra*, p. 468.

8. ——— *variabilis*, p. 469.

9. ——— *affinis*, p. 469.

10. ——— *ambigua*, p. 472.

11. ——— *huebneri*, p. 473.

Fig. 12. *Euptychia atalanta*, p. 474.

13. ——— *undulata*, p. 475.

14. ——— *binalinea*, p. 475.

15. ——— *coüs*, p. 477.

16. ——— *pharella*, p. 478.

17. ——— *harmonia*, p. 478.

18. ——— *phineus*, p. 478.

19. ——— *saturnus*, p. 479.

20. ——— *vesta*, p. 479.

21. ——— *palladia*, p. 461.

22. ——— *enyo*, p. 480.

PLATE XL.

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| Fig. 1. <i>Euptychia marmorata</i> , p. 471. | Fig. 10. <i>Euptychia callichloris</i> , p. 490. |
| 2. — <i>pilata</i> , p. 483. | 11. — <i>ayaya</i> , p. 492. |
| 3. — <i>divergens</i> , p. 464. | 12. — <i>insignis</i> , p. 501. |
| 4. — <i>hewitsonii</i> , p. 491. | 13. — <i>salvini</i> , p. 498. |
| 5. — <i>calestis</i> , p. 484. | 14. — <i>latia</i> , p. 496. |
| 6. — <i>urania</i> , p. 484. | 15. — <i>erichtho</i> , p. 501. |
| 7. — <i>gigas</i> , p. 486. | 16. — <i>batesii</i> , p. 493. |
| 8. — <i>agatha</i> , p. 492. | 17. — <i>saundersii</i> , p. 500. |
| 9. — <i>brixiola</i> , p. 483. | |

14. Catalogue of Longicorn Coleoptera collected in the Island of Penang by James Lamb, Esq. By FRANCIS P. PASCOE, F.L.S., F.Z.S., &c., late Pres. Ent. Soc.

(Part II.)*

(Plates XLI., XLII., XLIII.)

CERAMBYCIDÆ.

LEPTURINÆ.

CAPNOLYMMA.

Capnolymma, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 265.

CAPNOLYMMA STYGIUM, Pascoe, *op. cit.* p. 266.

This insect has also been taken in Borneo, flying at sunset, by Mr. Wallace, and in Java by Dr. Horsfield.

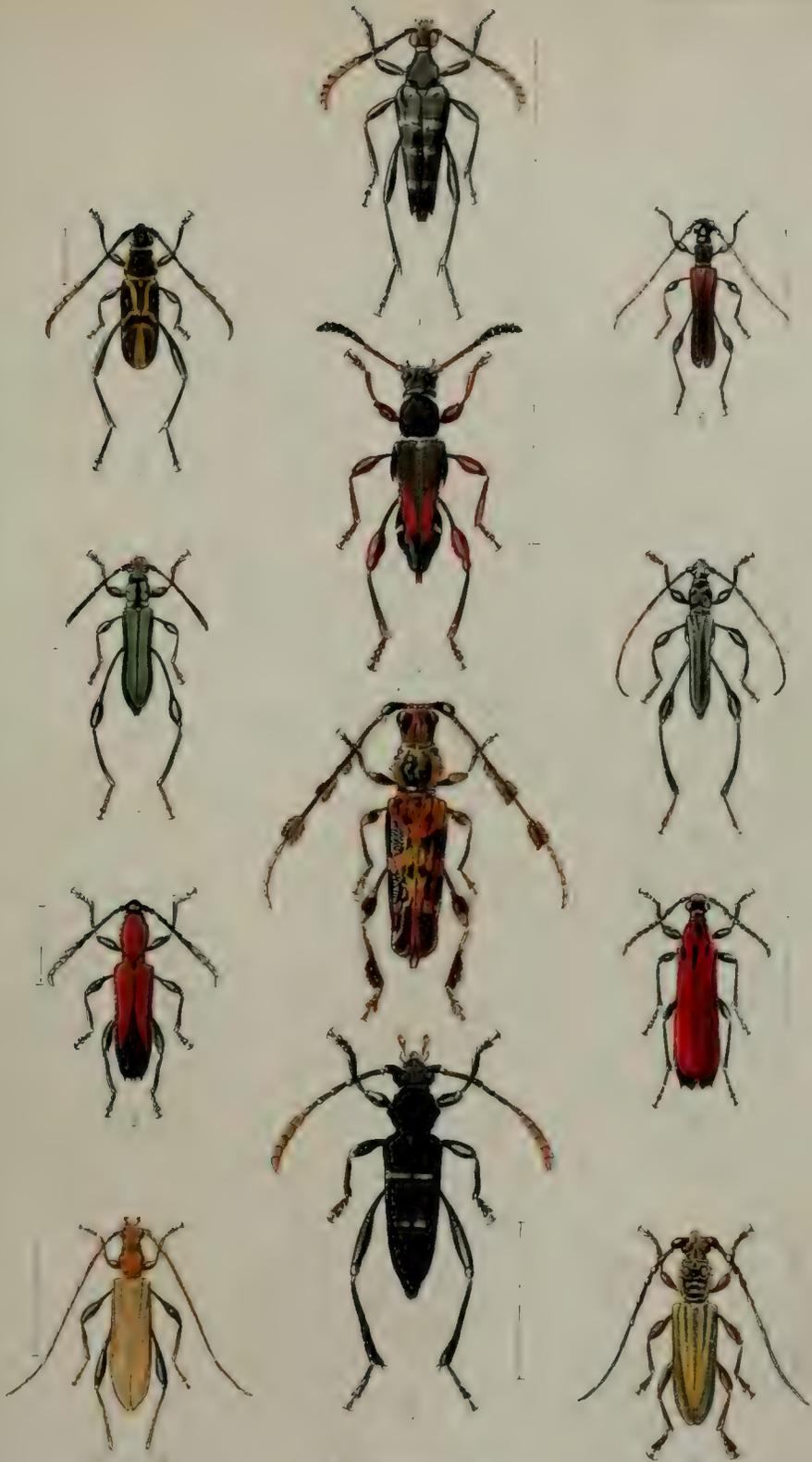
CAPNOLYMMA CAPREOLA. (Pl. XLII. fig. 1.)

C. testaceo-brunneum, *pube grisescente tectum*; *humeris apice rotundatis*.

Pale testaceous brown; head and prothorax darker, with a coarse pale grey pile; head narrowly elongate, very pubescent except behind the eyes; prothorax scarcely constricted behind the anterior margin, the lateral tooth prominent, disk covered with glossy black granules, the pubescence forming two lines united anteriorly but diverging behind; scutellum subscutiform but rounded posteriorly, covered with a dense yellowish pubescence; elytra truncate at the apex, not apiculate, closely punctured, each puncture with a setiform hair crossing it longitudinally; body beneath and legs pale testaceous, finely pubescent; antennæ much longer than the body, the basal joint slightly clavate. Length 6 lines.

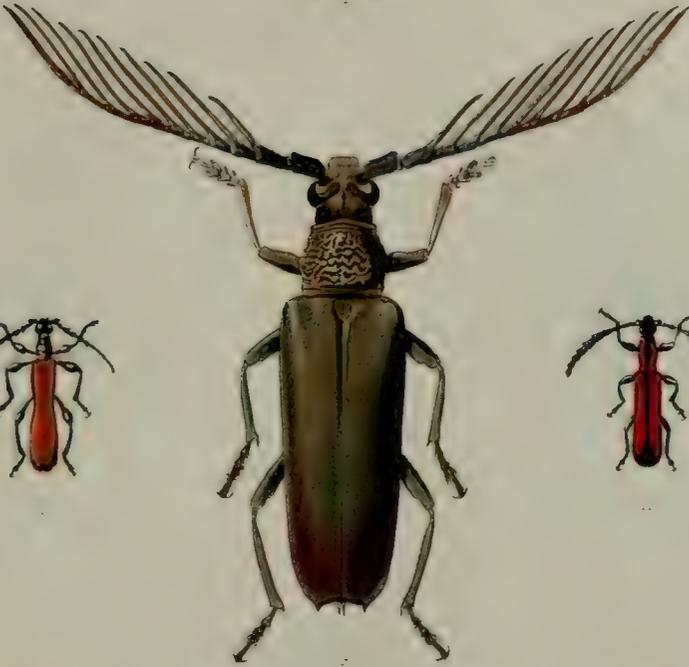
A well-marked species, differing in size, colour, and certain structural points—notably in the rounded apex of the shoulder, not produced into a sharp tooth-like process as in *C. stygium*. The genus

* For Part I. see *antèa*, p. 222.



J. W. F. ... Deuts.





F. S. ...





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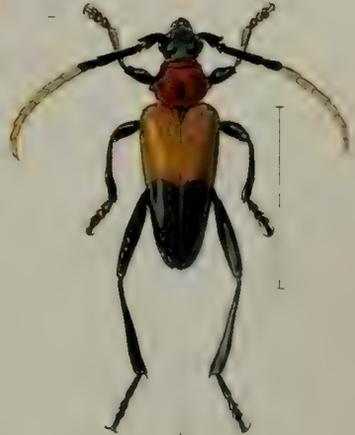


Plate 110



is allied to *Leptura*, but is distinguished by several important characters, such as the elongate-ovate, not truncate, terminal joints of the palpi, the large facets of the eyes, the long basal joint of the antennæ and its insertion considerably anterior to the eye—thus making a very important step towards the curculionid type, and a very marked departure from its own. The anterior coxæ are scarcely conical or elongate, but are inserted into their largely angulated cotyloid cavities something after the manner of the *Prionidæ*.

ASILARIS.

Caput ante oculos angustatum, productum.

Antennæ basi approximatae, apicem versus lateraliter dilatatae, scapo breviusculo.

Palpi maxillares articulo ultimo elongato-ovato.

Femora in medio incrassata.

Head constricted directly behind the eyes, narrowed and produced anteriorly. Eyes nearly entire, very prominent, the facets very minute. Antennæ shorter than the body, inserted between the eyes, the scape rather short and slender; third joint longest; fifth at the apex and succeeding joints gradually unilaterally dilated from the base; the last notched and simulating an additional joint. Maxillary palpi slender, lengthened, the last joint elongate-ovate; labial palpi short, truncate. Prothorax subobconical, its posterior angles produced, the base bisinuate. Elytra gradually attenuated. Legs unequal, the posterior longest; femora thickened in the middle; tarsi of the anterior and intermediate pair with the basal joint dilated in the male, of the anterior only in the female; basal joint of the posterior tarsi long and compressed in both sexes. Anterior coxæ stout, subconical or subcylindrical. Abdomen slender, imperfectly covered by the elytra.

Nearly allied to *Ocalemia*; but in that genus the maxillary palpi are truncate, the posterior femora elongate and linear, and the antennæ have the joints longer and only partially dilated towards their apices. Both genera, owing to the structure of the prothorax, are nearer *Strangalia* than *Leptura*.

ASILARIS ZONATUS. (Pl. XLI. fig. 1.)

A. ater; elytris quadrifasciatis, fascia postica flavescente, alteris albis; antennis articulis ultimis sex ochraceis.

Deep black, very slightly pubescent, except the four coloured bands on the elytra, and exceedingly closely and minutely punctured; muzzle rather glossy about the mouth; palpi and maxillary lobes dull testaceous; prothorax rather longer than broad, considerably narrowed at the apex; scutellum exactly triangular, and having the white basal band of the elytra continuous across its whole surface; elytra obliquely truncate at the apex, the outer angle very acute, the basal and two median bands white, the præapical yellowish; body beneath with a scanty silvery white pubescence; antennæ with the last six joints ochraceous. Length 7 lines.

EPHIES.

Antennæ basi subremotæ, dilatatæ.

Oculi prominuli, fere integri.

Femora simplicia, basi paulo angustiora.

Elytra parallela.

Head constricted a little behind the eyes, moderately produced anteriorly. Eyes prominent, nearly entire, with minute facets. Antennæ much shorter than the body, rather remote at the base, inserted between the eyes; the scape short, obconical, slightly curved; the third joint much larger and longer, and with the following dilated, principally on one side; the last joint entire. Palpi small, the last joint of the maxillary elongate and truncate. Prothorax shortly subconical, its posterior angles produced, the base bisinuate. Elytra elongate, their sides nearly parallel. Legs unequal, the posterior longest; femora not clavate; basal joint of the anterior tarsi short, of the intermediate and posterior elongate. Anterior coxæ conical. Abdomen stout, embraced by the elytra.

In habit similar to *Euryptera*, a genus with which it might almost be conjoined, but for its antennæ. The type, described below, is by far the broadest of the four species (all new) now before me.

EPHIES CRUENTUS. (Pl. XLI. fig. 9.)

E. ater, elytris, apice excepto, prothoraceque, vitta mediana excepta, læte sanguineis; prothoracis lobo prope scutellum emarginato.

Black, body beneath and legs glossy, elytra and prothorax bright blood-red, except at the apex of the former and a median stripe on the latter; head covered with a short woolly pubescence, a pale brownish spot on the forehead and two on the neck; palpi and upper lip pitchy black; prothorax slightly angular at the side, the base strongly bisinuate, the middle lobe broadly emarginate; scutellum narrowly elongate and triangular; elytra closely covered with a very shaggy pubescence, the sides incurved but rounded towards the apex, a slightly impressed line along the middle of each, the apex emarginate; antennæ about half the length of the body, dull black. Length 6 lines.

There is a true *Leptura* in the collection, belonging to a small section of the genus, differing principally in coloration, and of which I have two more undescribed species from Singapore and Macassar respectively. The specimen, however, wants the hinder legs.

PHILUS.

Philus, W. Wilson Saunders, Trans. Ent. Soc. ser. 2. ii. p. 110.

PHILUS RUFESCENS (♀).

P. rufo-ferrugineus; prothorace utrinque rotundato, fere obsolete marginato, disco linea elevata mediana longitudinali.

Reddish ferruginous, nearly glabrous; head closely and finely

punctured; prothorax closely punctured, transverse, broader than the head, its sides rounded, and only very imperfectly margined, the disk with a median elevated longitudinal line not extending to the apex or base; scutellum small, subtriangular; elytra much broader than the prothorax, closely punctured, the punctures larger than elsewhere, and occasionally confluent, two slightly elevated longitudinal lines on each; body beneath brown; legs brownish ferruginous, slightly hairy; antennæ about half as long as the body in the female, in the male probably longer than the body, as in *P. antennatus*, Gyll. (*P. inconspicuus*, W. W. Saund.).

Philus was referred by Mr. Saunders to the *Prionidæ*, near *Erioderus* and *Tragosoma*; but I think it is more correctly placed by M. J. Thomson with the true *Lepturinaæ*, near *Centrodera* and *Vesperus*. The marginal costa, marking the separation of the prothoracic pleuræ from the pronotum, one of the most important characters of the *Prionidæ*, is almost obliterated in the species just described, and, according to M. Thomson, there is not the least trace of it in another species from Northern India described by him (*P. globulicollis*). *Philus antennatus*, Gyll. (Schön. Ins. App. p. 280), is an old Chinese species, with which Mr. Saunders's *P. inconspicuus* is said to be identical.

STENODERINÆ.

DEJANIRA.

Dejanira, J. Thomson, Syst. Ceramb. p. 134.

DEJANIRA QUADRIPUNCTATA, J. Thomson, *l. c.*

M. Thomson's specimen of this fine Longicorn and one in my own collection are from Java. The antennæ of the female are only about two-thirds the length of the body.

DEJANIRA BIAPICULATA.

D. rufo-ochracea; *elytris in medio oblique fulvo maculatis, apice singulis biapiculatis.*

Reddish ochraceous; head and prothorax covered with a rich golden-yellow silky pubescence, the vertex with a short keel between the eyes, and a few punctures; spines of the prothorax moderately produced, triangular, the disk irregular, with two antemedian subapproximate tubercles; scutellum black, narrow, rounded behind, slightly grooved in the middle; elytra rather narrow, finely punctured, covered with a short dense pubescence, an oblique yellowish patch on each towards the outer side, the apices shortly biapiculate; body beneath with a delicate yellowish pubescence; legs slender; antennæ reddish ochraceous; eyes black. Length 7 lines.

There are three specimens, or perhaps species, in Mr. Lamb's collection, all differing in the prothorax, but otherwise, allowing for the usual differences in sex and size, apparently identical. It would be necessary to examine a larger series before this can be decided; and therefore I will only mention here that one of the three has a

large, very distinct, scar-like patch, strongly punctured, just above the spine, and the other has the disk closely punctured, except a smooth narrow stripe on each side advancing from the base.

DIOSYRIS.

Caput antice transversum, inter antennis projectum, pone oculos elongatum, haud angustatum.

Antennæ basi subapproximatæ, inter oculos insertæ.

Oculi rotundati, a basi antennarum remoti.

Prothorax suboblongus, antice posticeque latitudine æqualis.

Femora abrupte clavata; tarsi brevisculi, subæquales.

Head elongate and not narrowed behind the eyes; face short and transverse, antennary tubers approximate, forming a ridge in front, situated between but not near the eyes. Antennæ as long as or longer than the body, plumiferous; scape moderately long, clavate, curved; the third joint longer, also curved; fourth and fifth shorter; the sixth longest of all; the rest very considerably shorter in the female, much less so in the male. Eyes rounded, nearly entire. Palpi short, equal, linear, obtuse. External maxillary lobe plumose. Prothorax rather longer than broad, the anterior and posterior margins of nearly equal width, toothed at the sides, the disk irregular. Elytra broadest at the base, very irregular, the sides slightly narrowing posteriorly, the apices rounded. Legs, the intermediate and posterior pairs gradually longer; femora abruptly clavate, the posterior much shorter than the abdomen; tibiæ slender; tarsi rather short, nearly equal. Anterior coxæ globose. Anterior acetabula largely angulated. Prosternum raised to the level of the coxæ. Mesosternum declivous.

Evidently allied to *Mythodes*, J. Thoms., but differing in several respects from the characters of the genus as given by its author.

This genus is as remarkable as any other in the series of nearly isolated genera comprised in this and some of the allied subfamilies. It seems scarcely advisable to retain the *Rhagiomorphinæ*, which can only be recognized by their emarginate or lunate eyes from the *Stenoderinæ*, which have rounded entire or nearly entire eyes. The plumosity of the antennæ and of the posterior tibiæ of the species described below is common to both sexes. The male is the smallest, and has the last five joints of the antennæ much more elongated than the female: one of these measures $4\frac{1}{2}$ lines only, while a female measures eleven. The whole insect looks as if highly varnished, excepting, however, the last five antennal joints; and the elytra seem to have contracted or crumpled up in the process.

DIOSYRIS MIRANDA. (Pl. XLI. fig. 7.)

D. fulva, polita, fusco variegata.

Fulvous yellow varied with dark brown, shining as if varnished; head finely punctured, above the mouth a deep Λ -shaped impression, antennary tubers divided by a narrow groove; prothorax constricted anteriorly and posteriorly, the disk with nine callosities, exclusive of

the two lateral teeth, the five middle nearly forming a quincunx, the two foremost of which are elevated and conical; scutellum elongate, triangular; elytra very irregular, longitudinally marked with irregular raised lines, with smaller transverse lines between them, and rather finely punctured, the brown principally forming three large patches on each; body beneath dark glossy chestnut-brown; legs yellowish, shining, the femora at the base, band on the clava, and apex of the tibiæ brown; antennæ yellowish, the first six joints very glossy, the rest pubescent, opaque, the apex of the third beneath, the fourth almost entirely beneath, and the sixth at the apex generally tufted with dark fulvous hairs. Length $4\frac{1}{2}$ -11 lines.

DISTENIINÆ.

NOËMIA.

Noëmia, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 111.

NOËMIA FLAVICORNIS, Pascoe, *l. c.*, pl. 22. f. 8.

Found also by Mr. Wallace at Singapore and Sarawak. A specimen from the latter locality has a slender vertical spine on each side of the mesosternum, immediately above the coxa.

NOËMIA CHALYBEATA.

N. toto cyaneo-chalybeata; capite transversim sulcato et punctato; elytris apicibus bimucronatis.

Entirely bright steel-blue, with an almost imperceptible greyish pile; head finely and closely punctured, behind the eyes the punctures occasionally contiguous, forming slight transverse grooves; prothorax covered with small closely crowded irregular punctures, the apex transversely striated; scutellum scutiform, concave, finely punctured; elytra strongly punctured at the base, gradually becoming impunctate posteriorly, the punctures in rows, the alternate rows separated by a raised line, the apices bimucronate, the outer mucro produced; body beneath glabrous; legs with a few scattered hairs; antennæ nearly linear, about half as long again as the body. Length 10 lines.

A fine species, very distinct, *inter alia*, from the others hitherto described in its mucronate elytra, a peculiarity which would put it out of the genus as M. J. Thomson has defined it. The above description is from one of Mr. Wallace's specimens taken at Sarawak.

NECYDALINÆ.

MERIONÆDA.

Merionæda, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 238.

MERIONÆDA ACUTA.

M. capite nigro; prothorace luteo; elytris longiusculis, testaceis, extus nigro limbatis; antennis articulis penultimis et antepenultimis flavidis, cæteris nigris.

Head black, nearly impunctate; prothorax bright yellow, with five oblong raised elevations on the disk, and a raised transverse anterior line; scutellum transversely subquadrate; elytra nearly as long as the abdomen, rather suddenly narrowed behind the middle, finely seriate-punctate, testaceous, the outer portion from the shoulders to the apex black; abdomen and postpectus black, antepectus yellow; legs black, femora at the base pale yellow. Length 4 lines.

There are a number of undescribed species in my collection; it is therefore only necessary here to say that the nearest ally of this insect is *M. scitella*, which has much shorter elytra, not suddenly narrowed posteriorly, with the *last two* joints of its antennæ yellowish. The males in this genus have longer and more slender antennæ than the females; but the extraordinarily clavate posterior femora, and the strongly spurred tibiæ of the same pair, appear, judging from my examples, to be alike in both sexes. M. J. Thomson places this genus in his "sous-tribu *Callichromitæ*," notwithstanding that the anterior acetabula are strongly angulated.

OBRINIÆ.

DEUTEROMMA.

Deuteromma, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 98.

DEUTEROMMA TESTACEUM, Pascoe, *op. cit.* p. 111.

To the short characters given in the above work, it is only necessary to add here that this is well distinguished from three or four other entirely testaceous species, not yet described, by the dark brown colour of the two basal joints of the antennæ.

CIOPERA.

Oculi fere integri.

Antennæ setaceæ, scapo cicatricoso.

Prothorax elongatus.

Head short and subtriangular in front, rather longer behind. Eyes oblong, nearly entire, prominent. Antennæ setaceous, longer than the body; the scape strongly cicatricose; the third joint longer; the fourth shorter than the third; the remainder longer than the third and subequal, or a little shorter towards the apex. Palpi with the terminal joint thicker, truncate. Prothorax elongate, not wider than the head. Elytra narrow, imperfectly embracing the abdomen at the sides. Legs slender; anterior shortest, posterior longest; femora thickened beyond the middle; tarsi much shorter than their tibiæ. Anterior coxæ produced, subconical, their acetabula strongly angulated.

A very distinct genus, like *Deuteromma* in habit, but with entire eyes, or in the slightest degree emarginate, and the scape with a strongly marked cicatricose apex. The posterior tarsi are, unfortunately, absent, it being, like many others of its subfamily, a fragile species.

CIOPERA DECOLORATA. (Pl. XLI. fig. 10.)

C. testacea, subtiliter pubescens; femoribus tibiisque basi infuscatis.

Testaceous, a little darker anteriorly, covered with a loose delicate pubescence; head and prothorax minutely and closely punctured, a short median line between the antennæ terminating in a semicircular impression above the mouth; prothorax slightly constricted anteriorly; scutellum oblong, narrow; elytra finely punctured, the punctures finer and more dispersed posteriorly, apices slightly dehiscent and pointed; body beneath pale testaceous; legs testaceous, the femora and bases of the tibiæ brownish; antennæ slight pilose. Length 6 lines.

RHINOTRAGINÆ.

EPIANTHE.

Antennæ apicem versus incrassatæ, scapo obconico.

Elytra integra, parallela.

Tarsi postici elongati.

Head not elongate anteriorly, slightly constricted behind, the forehead rather broad. Eyes narrowly emarginate, lateral, not approximate above. Antennæ thickened towards the apex, half as long as the body; the scape short, obconical; the second joint half the length of the scape; third longest of all; fourth, fifth, and sixth short; the last five shortest and forming a thickened continuous cylinder. Prothorax oblong, as broad as the head, slightly constricted near the base and apex. Elytra flattish, entire, nearly parallel at the sides. Legs unequal; femora thickened towards the apex; tibiæ slender; posterior tarsi with the basal joint as long as the rest together.

No member of the *Rhinotraginæ* was known from Asia until M. J. Thomson published his three genera *Plutonesthes*, *Artimpaza*, and *Cleomenes*; four more are here added, all very distinct from one another. These are all confined to single examples. Mr. Wallace's collections, too, contained but two specimens, each representing a genus; one of them, however, is *Artimpaza odontoceroides*, J. Thomson. From the individual rarity of these insects it is very likely that the group in Tropical Asia is much more extensive than it appears to be at present. It is probable that, when more of the species shall be known, some modifications of the characters of the genera here given will be requisite, especially of the antennæ. All the genera in Mr. Lamb's collection have the elytra entire—that is to say, neither shortened nor dehiscent at the suture, although, as in the subfamily generally, only imperfectly covering the abdomen at the sides.

EPIANTHE VIRIDIS. (Pl. XLI. fig. 5.)

E. viridi-metallica; pedibus anticis rufis.

Rich metallic green, scarcely shining, with numerous crowded punctures; upper lip, mandibles, and fore legs red; prothorax about half as long again as broad, the middle with a darker or bluish stripe; scutellum black, triangular; elytra with a golden tinge along the suture, the apex rounded; body beneath with silvery-white pubescence; antennæ black; legs, except the anterior, blackish, the tarsi paler. Length 4 lines.

MYDASTA.

Antennæ apicem versus incrassatæ, scapo obconico.

Elytra integra, postice angustata, lateribus haud declivibus.

Tibiæ robustæ; tarsi subæquales.

Head slightly produced anteriorly, not constricted behind. Eyes shortly ovate, not approximate above, strongly emarginate. Antennæ half as long as the body, distant at the base, arising close to the eyes; the scape shortly obconic; the third joint twice as long as the scape; the fourth considerably shorter; the remainder thickened and, as far as the penultimate, slightly produced at the apex; the last joint conical. Prothorax oblong, strongly constricted at the apex and base, the intermediate portion rounded. Elytra narrowed posteriorly, contiguous at the suture, not bent down at the sides. Legs very unequal, the posterior pair by far the longest; femora strongly incrassated towards the apex; tibiæ stout; tarsi subequal, moderately dilated. Abdomen contracted at the base, the first segment nearly as large as the rest together.

This genus has almost exactly the habit of *Acyphoderes*, Serv., but, *inter alia*, is without its muzzle, and with non-dehiscent elytra.

MYDASTA DISCOIDEA. (Pl. XLI. fig. 4.)

M. capite chalybeato; prothorace aterrimo, antice posticeque, scutello fasciisque (subtus) argenteo-albis; elytris æneo-nigris, ferrugineo plagiatis.

Head bluish black, strongly punctured, especially in front, where the punctures are divided by short vertical lines; lip brown, bordered with yellowish; prothorax intensely black, deeply and closely punctured, the anterior border dark blue, behind this border, on each side, a band of silvery-white hairs, a similar band on the constricted portion behind; scutellum oblong, with a dense silvery pubescence; elytra entirely glabrous, brassy black at the base, a large patch of reddish ferruginous (varying in size) occupying the middle and posterior portion, the apex rounded, deep bluish black, punctures at the base almost contiguous, becoming smaller and more distant posteriorly; body beneath dark purplish blue, the metasternum posteriorly and edge of the first segment of the abdomen silvery white; legs brownish red, shining, the base of the posterior femora and the middle of their tarsi dark brown; antennæ reddish, the last six joints black. Length 7 lines.

SESTYRA.

Antennæ lineares, scapo pyriformi.

Caput collo constricto, prothorace latius.

Tarsi subæquales.

Head broad, rather short anteriorly, constricted behind, the forehead concave. Eyes narrowly emarginate, lateral, not approximate above. Antennæ sublinear, nearly as long as the body; the scape rather short, claviform; third joint twice as long as the scape; the rest gradually shorter to the eighth or ninth. Prothorax subcylindrical, narrower than the head, sulcately constricted at the anterior third and at the base. Elytra narrow, entire, subparallel. Legs unequal, slender; femora thickened towards the apex; tibiæ slender; tarsi subequal.

The broad head, strongly constricted behind into a distinct neck, and the pyriform scape are peculiarly characteristic of the curious little Longicorn forming the type of this genus.

SESTYRA CEPHALOTES. (Pl. XLI. fig. 3.)

S. nigra; prothorace albo bifasciato; elytris fusco-nigris, basi brunneo plagiatis; pedibus articulisque duobus basalibus antennarum nitidis.

Black, nearly glabrous; head finely punctured, a few silvery hairs in front; prothorax closely punctured, silvery-white hairs lining the grooves and forming two bands; scutellum narrow at the base, gradually widening behind and truncate, covered with a silvery-white pubescence; elytra closely punctured, each puncture with a short white procumbent hair, at the base an oblong patch of reddish brown extending nearly to the middle, the apex pointed; body beneath with a close silvery pile; legs glossy black, the anterior tibiæ and tarsi luteous; antennæ with the basal and second joints black, shining, the remainder pale brownish. Length 4 lines.

MIMISTENA.

Antennæ setaceæ, scapo pyriformi.

Caput collo subconstricto, prothorace angustius.

Tarsi postici et intermedii elongati.

Elytra integra.

Head not elongate anteriorly, slightly constricted behind, the forehead broad. Eyes lateral, narrowly emarginate, not approximate above. Antennæ setaceous, longer than the body, ciliated beneath; the scape pyriform; third joint longest; the fourth short; the next two gradually increasing in length; the seventh to the tenth slightly decreasing; the eleventh as long as the third. Prothorax broader than the head, subcylindrical, but flattish above, constricted anteriorly. Elytra not wider than the prothorax, rather contracted behind the shoulders, entire. Legs unequal; femora thickened towards the apex; tibiæ slender; tarsi with the basal joint of the intermediate and posterior pair elongate.

The longer setaceous antennæ and entire elytra will distinguish this genus from any of the Asiatic *Rhinotraginæ*. Whether the South American genera *Rhopalophora*, *Cosmisoma*, *Disaulax*, and others should be kept apart, as M. J. Thomson has done in his 'Essai,' although not in his more recent 'Systema,' is a question that I will not at present undertake to decide. Certainly *Mimistena* would point to their union.

MIMISTENA FEMORATA. (Pl. XLI. fig. 6.)

M. nigra, nitida; scutello niveo; elytris viridi-metallicis; antennis in medio pallidis.

Black, glabrous, shining; head finely punctured, with short raised vertical lines in front and between the antennæ; prothorax impunctate anteriorly, the disk behind the constricted portion irregular and finely punctured; scutellum rounded, covered with a snowy-white silky pubescence; elytra dark metallic green, irregularly punctured, the apex pointed; body beneath and legs glossy black; antennæ with the sixth, seventh, and eighth joints nearly white. Length 5 lines.

PLUTONESTHES.

Plutonesthes, J. Thomson, Syst. Ceramb. p. 160.

PLUTONESTHES CROCATA. (Pl. XLII. fig. 2.)

P. nigra, pilosa; prothorace elytrisq[ue] aurantiacis; corpore infra cyaneo-chalybeato.

Black, with long scattered erect hairs; head closely punctured, much constricted behind the eyes; prothorax narrow, covered with a silky orange pubescence; scutellum triangular; elytra four times as long as the prothorax, the sides parallel at the base, but gradually expanding before the middle, and rounded at the apex, covered with a coarse silky orange-coloured pubescence, darker or brownish at the apex; body beneath bright steel-blue; legs glossy black; antennæ opaque black, hairy at the base. Length $4\frac{1}{2}$ lines.

M. J. Thomson's *P. rufipennis* differs from the above, according to his description, in its roughly punctured prothorax. He makes no mention of the long scattered hairs and glossy steel-blue of the under surface; and therefore I do not hesitate in considering it distinct. Another nearly allied species is in my collection from Singapore with shorter legs and apex of the elytra blue black.

ERYTHRINÆ.

ERYTHRUS.

Erythrus, White, Catal. Long. Brit. Mus. p. 142.

Pseudoleptura, J. Thomson, Essai, &c., p. 148.

ERYTHRUS IGNITUS.

E. niger; prothorace coccineo, utrinque vittis duabus nigris; elytris coccineis, lateraliter fortiter declivibus, apice nigris.

Black; head closely punctured; prothorax closely granulated, bright vermilion, its anterior border and a lateral stripe on each side, not reaching to the base, black; scutellum small, transverse; elytra brilliant vermilion, posteriorly black, covered with finely granular points, strongly declivous at the side, the sutural angle at the apex slightly produced; body beneath black, the sterna subnitid, the abdomen opaque; legs and antennæ black. Length 9 lines.

ERYTHRUS LACERTOSUS.

E. niger; *prothorace coccineo, nigro bimaculato*; *elytris coccineis, lateraliter fortiter declivibus, tertia postica nigris*.

Black; head small, finely and closely punctured; prothorax vermilion, slightly nitid, rather coarsely punctured comparatively, the intervals subgranulose, two black closely punctured round slightly elevated spots on the middle, the space between them shortly keeled; scutellum subtriangular; elytra bright brick-red, opaque, minutely punctured throughout, the intervals subgranulose, sides distinctly declivous, the posterior third or nearly so black, the apex dehiscient, the suture produced into a short triangular point; body beneath from the anterior coxæ black, the pectus anterior to them red; legs and antennæ short. Length 12 lines.

ERYTHRUS APICULATUS.

E. niger; *prothorace coccineo, nigro bilineato*; *elytris coccineis, lateraliter fortiter declivibus, apice nigris, ad suturam elongato-productis*.

Black, except the prothorax, scutellum, and elytra; head with a few reddish hairs on the vertex and around the eyes; prothorax reddish vermilion, covered with shallow punctures, the middle with two mamilliform tubercles, and two black stripes with an intermediate subobsolete spot, the sides black; scutellum transverse, rounded behind, reddish; elytra vermilion, black at the apex, covered with numerous shallow minute punctures and a fine sparse vermilion pubescence, the sides declivous, apex at the suture strongly produced; body beneath opaque black; legs short; antennæ with the third joint somewhat dilated. Length 8 lines.

ERYTHRUS ATRICOLLIS.

E. omnino niger, elytris exceptis; *prothorace carina postica instructo*; *elytris apice subchalybeato-nigris, lateribus vix declivibus*.

Entirely black, except the elytra; head more elongate below the eyes, the neck granulose; prothorax closely punctured, an elevated median line or carina posteriorly; scutellum transverse, pointed behind; elytra vermilion, the apex black tinged with blue, closely punctured, the intervals granulose throughout, the conjoined apices rounded; body beneath black, with a slight silvery pubescence on the abdomen; legs longer than in the preceding; antennæ with the third joint nearly cylindrical. Length 7 lines.

Erythrus differs from the next genus, *Pyrestes*, principally in its short prothorax; in other characters there are variations: but the two, although closely allied, are distinguishable at a glance. The sculpture of the prothorax and elytra is somewhat peculiar. It consists of minute crowded punctures, especially on the elytra, with the intervals so raised as to give them the appearance of being equally minutely granulated, shagreened as it were; pubescence is almost wanting, except in *E. apiculatus*. *Erythrus* used by Mr. Walker for a genus of *Chalcididæ* was never anything but a catalogue name, and therefore it does not appear to me to be necessary to change Mr. White's.

PYRESTES.

Pyrestes, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 96.

PYRESTES POLITUS. (Pl. XLII. fig. 6.)

P. niger, nitidissimus; elytris impunctatis, apicibus subbimucronatis, læte coccineis, macula præapicali excepta; abdomine rufo, nitido.

Deep black, except the elytra, and very smooth and glossy; head rather broad below the eyes, finely punctured; prothorax at the apex nearly as broad as the head, transversely striate anteriorly, and nearly impunctate; scutellum oblong, very convex, narrowed behind; elytra less than twice as long as the head and prothorax, impunctate, rich glossy vermilion, except a large black præapical spot, the base irregularly furrowed on each side of the scutellum, the sides with a strongly marked raised margin, the apices emarginate, with the sutural angle mucronate, and the external only slightly produced; abdomen dark vermilion, shining, sterna black; legs rather stout; antennæ with the third joint shorter than the scape, fourth shortest of all, except the second. Length 10 lines.

Distinguished, *inter alia*, from *P. eximius*, which are the only two glossy species at present known, by its bimucronate elytra.

PYRESTES SCAPULARIS. (Pl. XLII. fig. 5.)

P. niger, opacus; prothorace elytrisque (sutura, apice scapulisque exceptis) coccineis, his apicibus extus rotundatis, ad suturam mucronatis; abdomine nigrescente.

Head black, narrowed below the eyes and sparingly punctured, the vertex closely punctured; prothorax at the vertex as broad as the head, deep vermilion, black at the sides and the anterior border, with deep crowded punctures; scutellum narrowly triangular, concave; elytra bright vermilion, the suture, shoulders, and apex black, closely punctured, the punctures coarser at the base, the intervals subgranulose, the apices rounded externally but slightly mucronate at the suture; body black, but having a reddish tinge on the abdomen; legs short; antennæ with the third joint longer than the scape, the fourth not shorter than the four or five terminal joints. Length 8 lines.

PYRESTES VIRGATUS. (Pl. XLII. fig. 4.)

P. niger, opacus; prothorace elytrisque coccineis, illo vitta nigra mediana, his sutura apice scapulisque nigris, apicibus conjunctim rotundatis.

Black, except the prothorax and elytra; head a little narrowed below the eyes, and comparatively rather coarsely punctured; prothorax longer and narrower than in any of the above, its posterior border scarcely broader than the anterior, vermilion, with a narrow median stripe and its sides black, coarsely and deeply punctured, the interstices anteriorly forming slightly waved transverse lines; scutellum narrowly triangular; elytra rather narrow at the base, vermilion, the suture, shoulders, and apex black, closely and deeply punctured and much more coarsely at the base, the apex rounded and without any mucro; body beneath black; legs short; antennæ with the third joint longer than the scape, the fourth as long as the penultimate, the sixth to the tenth inclusive broadly dilated. Length $4\frac{1}{2}$ lines.

PYRESTES NIGRICOLLIS.

P. niger, opacus; elytris (sutura, apice scapulisque exceptis) coccineis, apicibus extus rotundatis, ad suturam submucronatis; abdomine apicem versus rufescente.

Black, except the elytra; head narrow and elongate below the eyes, closely punctured on the vertex; prothorax black, rather suddenly constricted anteriorly and as broad as the head, covered with deep somewhat crowded punctures; scutellum narrowly triangular, raised at the sides; elytra rather narrow, scarcely broader posteriorly, vermilion, the suture, shoulders, and apex black, closely punctured, the punctures much coarser at the base, the intervals subgranulose, the apex of each rounded externally, but having a slight mucro at the suture; body beneath black, the last two or three abdominal segments reddish; legs rather slender; antennæ with the third joint longer than the scape, the fourth as long as the last four or five joints. Length 6 lines.

All the species (eight) of this genus are very distinct, as a comparison of their diagnostic characters will show. Mr. Wallace appears to have met with only a single example, *P. eximius*, at Sarawak. Mr. Bowering found *P. cardinalis* not uncommonly at Hong Kong. The other two, *P. miniatus* and *P. hæmaticus* are from Northern India and Northern China respectively.

CALLICHRONINÆ.

CHLORIDOLUM.

Chloridolum, J. Thomson, Syst. Ceramb. p. 174.

CHLORIDOLUM THOMSONI.

Callichroma thomsoni, Pascoe, Trans. Ent. Soc. ser. 2. v. p. 24.

Taken also by Mr. Wallace at Singapore and Sarawak. One of Mr. Lamb's specimens is an inch in length.

CHLORIDOLUM CINNYRIS.

C. angustatum, aureo-viride; prothorace apice subtilissime transversim striato; scutello obsolete punctato; elytris vittis tribus cyaneo-viridibus ornatis; antennis pedibusque chalybeato-cyaneis.

Narrow, golden-green; head finely punctured, and slightly vertically striated between the eyes; prothorax oblong, broader than the head, finely transversely striated, on the depressed apical portion the striæ are nearly obsolete; scutellum triangular, scarcely punctured; elytra covered with small crowded punctures, the suture and sides striped with bluish green; body beneath greenish golden-yellow; legs glossy chalybeate blue, the posterior very long, the intermediate and anterior femora greenish; antennæ with the scape green, the remaining joints purplish blue deepening into blackish. Length 6 lines; posterior legs 10 lines.

A more slender form than *C. thomsoni*, the apex of the prothorax very faintly striated, not more strongly than the rest as in *C. thomsoni*, and the scutellum so finely punctured that it might almost be said to be impunctate, while in *C. thomsoni* the punctures are coarser than those on the elytra. *Chloridolum* has been separated from *Aromia* (*Callichroma*) on account of its more slender antennæ and legs. As in many other cases, this is only a question of degree; but these characters, vague though they be, appear to mark a tolerably natural section of the old genus *Callichroma*. It is worth remarking that, taking *Callichroma* in its widest sense, Mr. Wallace found twenty-nine species scattered among the islands of the Malayan archipelago, including New Guinea, while only a single specimen (*C. cinderella*, White) is known from Australia. In other respects the genus is cosmopolitan.

There is also in the collection a single female of a species belonging apparently to M. Thomson's genus *Leontium*.

PACHYTERIA.

Pachyteria, Serville, Ann. Soc. Ent. de France, t. 11. p. 553 (1834).

Niræus, Newman, Charlesworth's Mag. Nat. Hist. iv. p. 194 (1840).

PACHYTERIA EQUESTRIS.

Niræus equestris, Newman, Entom. p. 79.

Mr. Newman described this magnificent insect from a specimen, without a locality, in the then collection of this Society. It differs from the next species in its more transverse prothorax strongly angulated at the sides, the distinctly separated punctures, the rounded non-dehiscent elytra, and antennæ with the five terminal joints black. In their bright and strongly contrasted colours they are otherwise almost alike.

PACHYTERIA SPECIOSA. (Pl XLIII. fig. 5.)

P. subglabra, coccinea, nitida; capite dimidio apicali, elytris et corpore infra viridi- vel cyaneo-chalybeatis; pedibus atris; antennis flavis, articulis duobus basalibus luteis.

Nearly glabrous, shining; head dark metallic green, closely and finely punctured; lips luteous; mandibles and eyes black; prothorax bright scarlet, sharply sulcated anteriorly, closely punctured, the punctures more or less confluent, the intervals, especially at the sides, thrown up into well-marked transverse corrugations, sides rounded and with a short tooth-like angle in the middle; scutellum black, narrowly triangular; elytra with the basal half bright scarlet, the rest dark metallic green, closely punctured, gradually tapering from the base, the apices narrow, slightly dehiscent, and subtruncate; body beneath glossy bluish or greenish; legs black; antennæ lemon-yellow, the two basal joints luteous. Length 12 lines.

PACHYTERIA LAMBII. (Pl. XLIII. fig. 6.)

P. subglabra, subnitida; prothorace rufo; elytris subflavis, dimidio apicali pedibusque viridi- vel chalybeato-nigris; antennis subflavis, articulis quatuor basalibus nigris; corpore infra violaceo.

Nearly glabrous, subnitid; head dark green, thickly punctured; lip and mandibles dark glossy brown; eyes black; prothorax dull red, slightly sulcated anteriorly, closely punctured, the disk corrugated laterally, sides with a strong tooth-like angle; scutellum black, narrowly triangular; elytra lemon-yellow on the basal half, the rest black with a greenish tint, closely punctured, the dark posterior half very minutely, gradually tapering from the base, the apices somewhat narrow and slightly dehiscent; body beneath and legs dark blue- or violet-black; antennæ lemon-yellow, the four basal joints black. Length 10 lines.

PACHYTERIA VIRESCENS. (Pl. XLIII. fig. 2.)

P. subglabra, viridi-metallica; prothorace læte rufo-brunneo; antennis flavis, articulis quinque basalibus, scapo excepto, nigris.

Nearly glabrous, bright metallic green; head closely punctured; mandibles black; prothorax of a rich chocolate-brown colour, doubly sulcated anteriorly, with well-marked transverse corrugations over the entire disk, the intervals finely punctured, the sides strongly angulated, the angle terminating in a short tooth; scutellum narrowly triangular; elytra gradually narrowing from the base, finely punctured throughout, the apices rounded; body beneath and legs glossy metallic green; antennæ with the scape dark green, the four succeeding joints black, the remainder lemon-yellow. Length 14 lines.

PACHYTERIA SPINICOLLIS. (Pl. XLIII. fig. 4.)

P. hirsuta, brunneo-lutea; capite prothoraceque æneo-fuscis, hoc

confertim punctato et utrinque fortiter spinoso; scutello nigro; corpore infra toto violaceo.

Covered with minute erect stiffish hairs, dark but very clear luteous, approaching to chestnut-red on the elytra; head and prothorax dark brassy brown, with numerous small crowded punctures, the latter with a very strong angular spine on each side; scutellum narrowly triangular, black; elytra covered with minute crowded punctures, each with three slightly raised longitudinal lines, the apices broadly truncate; body beneath and anterior and intermediate coxæ dark glossy violet; antennæ and legs uniformly brownish luteous, the posterior coxæ black. Length 18 lines.

PACHYTERIA INSIGNITA.

P. hirsuta, brunneo-lutea; capite prothoraceque æneo-fuscis, hoc rugoso-punctato et utrinque angulato; elytris apicem versus nigricantibus; medi-pectore et abdomine violaceis.

Resembles the last, but the prothorax with the punctures more or less confluent, giving it a rugose surface, and its sides rounded anteriorly and produced into a broad angular process, terminating in a blunt tooth or tubercle, the posterior third of the elytra bluish black, their apices narrowly emarginate, the middle of the posterior thighs and three terminal joints of the antennæ black, the ante- and medipectus of the same brassy colour as the prothorax, and the coxæ more or less luteous. Length 18 lines.

PACHYTERIA STRUMOSA. (Pl. XLIII. fig. 3.)

P. hirsuta, brunneo-lutea; capite æneo-fusco, prothorace rugoso-punctato, utrinque valde rotundato, mutico, in medio æneo-fusco; elytris apicem versus nigrescentibus.

In many respects similar to the two preceding, but the prothorax strongly rounded at the sides, without any spine or tooth, luteous chestnut, with the greater part of the disk dark brassy brown, the same colour as the head, and this portion as distinctly defined as if it had been a piece let in; posterior third of the elytra or thereabouts black, tinged with purple, their apices narrowly emarginate; intermediate femora and posterior legs, except their tarsi, blackish; abdomen and postpectus glossy violet; medipectus and prosternum dark brassy brown; antennæ luteous, with the last three and part of the eighth joints black. Length 15 lines.

I am unable to separate in any way Mr. Newman's genus *Niræus*, founded on a species from the Tenasserim coast, from *Pachyteria*, which was at that time probably unknown to him. The genus is one of the handsomest among the Coleoptera, and hitherto has been limited, excluding the *Niræi*, to *P. fasciata*, Fab., and *P. bicolor*, Parry*. The latter, from Java, is allied to *P. insignita*. All the species here mentioned discharged a yellowish acrid fluid when handled—Mr. Lamb believes, from the abdomen. The genus is cha-

* Trans. Ent. Soc. v. p. 182, pl. 18. f. 5.

acterized, *inter alia*, by the clypeus or lowermost part of the face being produced so as to form a kind of pedicel for the lip.

CLYTINÆ.

CLYTANTHUS.

Clytanthus, J. Thomson, Syst. Ceramb. p. 190.
Anthoboscus, Chevrolat.

CLYTANTHUS ANNULARIS.

Callidium annulare, Fabricius, Mant. Ins. i. p. 156; Olivier, Entom. iv. no. 70. p. 48, pl. 7. f. 74.

This species ranges from India and South China to Sydney. It is the type of M. Chevrolat's genus *Chlorophorus*, which, according to its author, only differs from the present in its more slender antennæ and very globose prothorax. Another species in the collection is allied to *Clytanthus glaucinus*, Bois. (*Perissus*, Chev.), and a third species to *C. sumatrensis*, Lap. et Gory. A new genus, of which I have four or five species, is also represented in the collection.

XYLOTRECHUS.

Xylotrechus, Chevrolat, Ann. Soc. Ent. de France, 1860, p. 456.

XYLOTRECHUS AUSTRALIS.

Clytus australis, Laporte de Castelnau et Gory, Monog. du G. Clytus, p. 99, pl. 19. f. 118.

This species is also very widely distributed. I have specimens from Sumatra, Borneo, Celebes, Amboyna, Aru, and New Guinea; latterly I have received it from Queensland.

DEMONAX.

Demonax, J. Thomson, Essai, &c., p. 226; Syst. Ceramb. p. 191, sub *Acrocyrta*.

DEMONAX MACILENTA.

Acrocyrta macilenta, Chevrolat, Rev. et Mag. de Zool. p. 82.

M. Chevrolat places this species, together with several others, in my genus *Acrocyrta*; and, in his 'Systema,' M. Thomson sinks *Demonax* as a synonym of it. I am not prepared at present to adopt this view, as I think *Acrocyrta*, in the short broad basal joint of the anterior tarsi, long antennæ, with the terminal hook in the males, and the short clytra, is sufficiently distinct. M. Chevrolat, in his "Clytides d'Asie," &c., published in the 'Memoirs' of the Liège Society, misquotes the volume and page of the work in which my description was published, and makes me write *Apocyrta*. Another and much smaller species is in the collection.

BICON.

Oculi *rotundati, integri.*

Antennæ *breves, articulis terminalibus septem dilatatis.*

Prothorax *ovatus.*

Tarsi *breviusculi, æquales.*

Head not constricted behind, quadrate in front, slightly prolonged into a muzzle, a carina on each side below the antennary tuber. Eyes round, entire. Antennæ short, distant at the base; the scape shortly cylindrical; third joint longest; the rest gradually shorter and more or less dilated unilaterally, especially from the sixth; the last broadly ovate, pointed. Prothorax oblong, ovate, convex, bisinuate at the base. Elytra rather elongate, narrow. Legs moderate; femora rather thickened towards the apex, the intermediate and posterior of equal length; tarsi short, equal. Anterior acetabula nearly entire. Pro- and meso-sterna simple.

Allied to *Epipedocera*, Chev., but with differently formed antennæ and prothorax. In the former respect it approaches *Euryarthrum*, and so far serves to connect that genus with the more normal forms of the *Clytinæ*.

BICON SANGUINEUS. (Pl. XLI. fig. 8.)

B. niger; prothorace elytrisque, apice excepto, sanguineis; subtus argenteo pilosus; abdominis segmentis tribus apicalibus glabris, fusciscentibus.

Black; prothorax and elytra, except at the apex, blood-red; body beneath covered with a close silvery pubescence, the last three segments of the abdomen glabrous, brownish; head finely and thickly punctured; antennæ also punctured, towards the end paler, with a delicate silvery pile; prothorax not much broader than the head, covered with coarser and more crowded punctures; scutellum subcordiform; elytra subseriate-punctate, more irregularly posteriorly, the intervals more or less granulose, the apices bimucronate; femora and tibiæ coarsely punctured, clothed with a few whitish hairs; intermediate and posterior tibiæ slightly curved; tarsi with a sparse silvery pile. Length 5 lines.

DERE.

Dere, White, Catal. Long. Brit. Mus. p. 248.

DERE MARGINATA.

D. rubra; capite, lateribus prothoracis et elytrorum nigris.

Brick-red; head, and prothorax and elytra at the sides, black; body beneath silvery white; antennæ black, greyish towards the apex; legs blackish, with a silvery pubescence, which is densest at the base of the femora; head and prothorax covered with close shallow punctures; elytra with a closely granulated surface, the apices much more decidedly bimucronate than in *D. thoracica*. Length 4 lines.

Dere thoracica, the type of the genus, was originally discovered

by Mr. Fortune in the north of China, and it has since been found commonly on the coasts of Mantchuria mixed with numerous European or boreal forms. The occurrence, therefore, of a second species so remote from the locality of the first is very interesting.

SIGEUM.

Caput inter oculos planatum, subdilatum.

Antennæ apicem versus serratæ, art. tertio scapo longiore.

Pedes postici graciles, elongati.

This genus differs from *Euryarthrum*, Bl. (*Blemmya*, Pasc.), in its longer and narrower antennæ, more distant at the base, the broader flattish forehead, and long attenuated posterior legs. The elytra are in no wise carinated; and, owing to the weaker and more slender form, the habit is notably dissimilar.

SIGEUM HUMERALE. (Pl. XLI. fig. 2.)

Blemmya humeralis, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 99.

In Mr. Lamb's specimen the lines on the elytra, instead of being white, are yellow. Mr. Wallace once took it in Singapore.

EURYARTHNUM.

Euryarthrum, Blanchard, Hist. Nat. des Insectes, t. ii. p. 149 (1845).

Blemmya, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 42 (1856).

No less than six new species are in this collection, all with the terminal joints of the antennæ from the sixth, or in two from the seventh, inclusive, ochreous yellow. Two of these species, *E. carinatum* and *E. lambii*, are in other respects almost identical with *E. albocinctum* and *E. bifasciatum* respectively, confined, so far as we know at present, the former to Singapore and Sarawak, the latter to Sarawak only. In general form and coloration they are strikingly alike, and in the latter respect are imitated by *Asmedia*, which, as we shall see, has the antennæ of *Pachyteria*, some species of this genus having those organs coloured precisely in the same remarkable manner. All the *Euryarthra* are intensely black, very closely and finely punctured, especially on the prothorax, and are furnished above with one or more bands of silky white or yellowish hairs. The under surface is clothed with a thin delicate silvery pile, the shade varying according to the light; but generally it is more condensed, forming well-marked lines, on the edges of the abdominal segments and sterna. The pubescence is so slight on the legs that it can only be detected by a good lens. In many individuals the basal abdominal segment is very large, the others being reduced to mere rings. I am not satisfied whether this is merely sexual or not. The most striking peculiarity, however, of this genus is a well-marked rim round the elytra similar to that of some of the *Tenebrionidæ* amongst the Heteromera, but not closely embracing the abdomen.

EURYARTHURUM NODICOLLE. (Pl. XLII. fig. 7.)

E. atrum; *prothorace lateraliter subtrinodoso*; *elytris bifasciatis, supra planatis, apice singulatim biapiculatis*; *antennarum articulis ultimis sex rufo-ochraceis*.

Black; mesial line on the vertex nearly obsolete; prothorax irregular at the side, slightly trinodose, a yellowish line along the posterior margin; scutellum small, triangular, yellowish; elytra flat above, declivous at the sides, the apex of each biapiculate, the inner apiculus a prolongation of the sutural line, two yellowish bands at equal distances from each other and the base and apex; antennæ with the last six joints reddish yellow. Length 11 lines.

EURYARTHURUM LAMBII.

E. atrum; *prothorace lateraliter obsolete nodoso*; *elytris bifasciatis, planatis, apice singulatim biapiculatis*; *antennarum articulis ultimis quinque rufo-ochraceis*.

Black; mesial line confined to a narrow well-marked impression between the eyes; prothorax slightly irregular at the sides, a white line along the posterior margin; scutellum subtriangular, black; elytra flat above, declivous at the sides, the apex of each biapiculate, two white bands at equal distances from each other and the base and apex; antennæ with the last five joints reddish yellow. Length 8-10 lines.

EURYARTHURUM CARINATUM.

E. atrum; *prothorace latiore, lateraliter obsolete nodoso*; *elytris medio unifasciatis, planatis, depressis, utrinque carinato-declivis, apice singulatim biapiculatis*; *ant. art. ult. sex rufo-ochraceis*.

Black; mesial line well marked between the eyes, and joining the transverse impression below them; prothorax much broader and more transverse than in the two preceding species, obsoletely nodose at the side, bordered with a white line posteriorly; scutellum triangular, white; elytra flat or almost concave above, especially posteriorly, the angle at the commencement of the declivous portion strongly marked, or even ridged, the apex of each shortly biapiculate, a single whitish band nearly in the middle, slightly interrupted, however, as it crosses the ridge; antennæ with the last six joints reddish yellow. Length 6-7 lines.

EURYARTHURUM INTERRUPTUM.

E. atrum; *prothorace lateraliter rotundato*; *elytris bifasciatis, planatis, depressis, utrinque minus declivis, apice obsolete truncatis*; *ant. art. ult. sex rufo-ochraceis*.

Black; mesial line deeply cut between the eyes and joining the transverse impression below them; prothorax rounded at the sides, bordered with white posteriorly; scutellum small, triangular; elytra flat, particularly at the base, less declivous, and without trace of a

ridge, the apex nearly rounded or very slightly truncate, two white bands, the anterior interrupted at the suture and declivous portion, and placed midway between the base and posterior band, the latter continuous or nearly so, and much nearer to the anterior band than to the apex; abdomen sometimes entirely black; antennæ with the last six joints reddish yellow. Length 6-7 lines.

EURYARTHURUM EGENUM.

E. atrum; *elytris bifasciatis, basi paulo planatis, haud declivis, apice rotundatis*; *ant. art. ult. quinque vel sex rufo-ochraceis*.

Black, with a narrow mesial line between the eyes, and a circular impression beneath them; prothorax slightly produced at the sides, margined with white posteriorly; scutellum small, triangular; elytra depressed at the base, very slightly flattened, not declivous at the sides, the apex rounded, two white bands, the anterior interrupted at the suture and side, the posterior continuous, the first a little nearer the base than the second is to the apex; antennæ from the apex of the sixth or seventh joints reddish yellow. Length 6 lines.

EURYARTHURUM ATRIPENNE.

E. supra totum atrum, margine postico prothoracis excepto; elytris planatis, apice oblique truncatis; *ant. art. ult. sex rufo-ochraceis*.

Black, with a deeply impressed mesial line between the eyes and a circular impression beneath them; prothorax somewhat oblong, the sides nearly round, the posterior margin edged with white; scutellum small, subtriangular; elytra entirely black, flattened, the sides doubly declivous (forming two lines), the apex obliquely truncate; antennæ with the last six joints reddish yellow. Length 6 lines.

ASMEDIA.

Antennæ apicem versus crassiores, articulis haud planatis.

Prothorax lateraliter angulatus.

Prosternum haud productum.

Head elongate, rather concave below the eyes; mandibles produced. Eyes large, lateral, narrowly emarginate. Antennæ shorter than the body, moderately distant at the base; the scape short, obconic; the third joint longest; the remainder gradually thicker to the eighth, not flattened or produced at the apex. Prothorax short, broader than the head; the sides angulated. Elytra narrow; the sides gradually receding to the apex. Legs unequal; the posterior pair elongate. Anterior coxæ globose; their acetabula narrowly angulated. Prosternum not produced. Mesosternum simple.

The species on which this genus is founded bears an extraordinary resemblance to *Euryarthrum*, but its antennæ are those of *Pachytetia*, two genera certainly very different in general appearance, notwithstanding many characters in common; and, the latter being closely related to *Callichroma*, we might be led to regard all these

genera as portions of one group (*Callichrominæ*) as M. Thomson, without any knowledge of the species before us, has done. Again, looking to the genera connected with *Euryarthrum* (such as *Homalomesas* and *Prothema*), and in a less degree with *Dere*, *Obrida*, and *Typhocesis*, we are led away to the *Clytinæ* without being able to draw any satisfactory line between them. Such facts may serve to show the risk of our failing to recognize any affinity between two genera apparently widely different, but connected by intermediate forms (in many instances remaining to be discovered), and prepare us for the discrepancies which may occur in the views even of the same author.

ASMEDIA MIMETES. (Pl. XLI. fig. 11.)

A. atra; *elytris albo bifasciatis*; *antennis apicem versus ochraceis*.

Deep black; head and prothorax finely and very closely punctured; scutellum triangular; elytra very minutely punctured, two narrow white hairy bands dividing them into nearly three equal parts, the apex rounded; body beneath dark steel-blue, with a short silvery white pubescence; antennæ gradually passing into ochraceous yellow from the fourth joint, the last five entirely ochraceous. Length 9 lines.

CERAMBYCINÆ.

CERAMBYX.

Cerambyx, Linné, Syst. Nat. ed. 12. i. s. 2. p. 621; Serville, Ann. Soc. Ent. de Fr. iii. p. 13.

CERAMBYX PRUINOSUS.

C. purpureo-fuscus; *elytris confertissime punctatis, pilis subtilissimis dispersis, apicibus emarginatis, extus mucronatis*; *antennis pedibusque rufescentibus*.

Dark purplish brown, subnitid; head finely punctured, grooved between the antennæ, the middle of the groove with a short strongly marked carina, below this a transversely impressed circular line; prothorax about equal in length and breadth, with a small prominent spine on each side, the disk with numerous short irregular corrugations; scutellum triangular; elytra minutely punctured, the punctures very close together between very delicate short transverse ridges, each mostly having at its base a short silvery hair (giving an appearance to the naked eye suggestive of the bloom on the plum), apices slightly emarginate, the outer angle with a short stout mucro; body beneath dark chestnut-brown, minutely pubescent; legs yellowish brown, the tibiæ and tarsi paler, a dark ring at the extremity of the femora; antennæ not longer than the body (♀?), pale reddish, darker at the base. Length 11 lines.

The sole example in the collection appears to be a female, and is, I think, more suggestive of *C. denticornis** of Fabricius than of any European species.

* This and a few other species will, however, scarcely fit into any of the genera into which latterly even the restricted genus *Cerambyx* has been divided.

NEOCERAMBYX.

Neocerambyx, J. Thomson, Essai, &c. p. 194.

NEOCERAMBYX LAMBII.

N. fuscus; prothorace in medio longitudinaliter bisulcato, transverse profunde striato, striis subcurvatis, regularibus; elytris velutinis, griseo-argenteis, apicibus fortiter bispinosis.

Dark brown; head broadly grooved between the eyes, with a strongly marked longitudinal crest dividing it, under each antennary tuber a deep fovea; prothorax with two longitudinal grooves meeting anteriorly, space between them and the sides regularly and deeply striated transversely, the striæ slightly curved, these and the impressions on the head clothed more or less with glossy yellowish hairs; scutellum triangular; elytra closely covered with a velvety greyish-silvery pubescence, varying in large dark and silvery patches according to the light, apices strongly bispinose; body beneath and legs dark brown, with a greyish pile; antennæ in the male very long, the third and fourth joints nodose, the fifth and some of the following with a short spine at the apex. Length 16 lines.

Nearly allied to *N. aurifaber*, White, but the transverse striæ on the prothorax fewer, larger, and not at all twisted or intermixed as in that species.

NEOCERAMBYX? INTRICATUS.

N. fuscus; prothorace profunde foveato-impreso, interstitiis intricato-reticulatis; elytris subtiliter griseo pubescentibus, sericatis, apicibus oblique truncatis, ad suturam mucronatis.

Dark brown, mostly covered with a delicate greyish pubescence having a silky texture, particularly on the elytra; head finely grooved between the eyes, a transverse ring-like impression in front; prothorax covered with deep slightly oblique foveæ, the intervals forming a twisted net-like series of lines clothed with greyish hairs; scutellum triangular; elytra somewhat silky, uniformly greyish, but varying in certain lights, the apices oblique, with the sutural angle mucronate; body beneath and legs brown, shining, with a sparse greyish pile; antennæ (♂) twice as long as the body, with the third joint two or three times as long as the scape, scarcely nodose, (♀) scarcely longer than the body, third joint twice as long as the scape, the fifth and following joints dilated on one side. Length 17 lines.

This species can only be provisionally retained in *Neocerambyx*, as it forms an exception on account of the long third joint of the antennæ, but the whole subfamily requires a thorough revision; all I can see clearly is that we have either too many or too few genera. Since M. J. Thomson proposed *Neocerambyx* in his 'Essai,' he has separated from it *Hoplocerambyx*, *Pachydissus*, Newm., *Conothorax*, and *Tapinolachnus*, leaving the characters he would now assign to it doubtful. *N. lambii*, however, and several others, including the

type *N. paris*, appear to form a natural group sufficiently distinct from the European typical *Cerambyces*.

HOPLOCERAMBYX.

Hoplocerambyx, J. Thomson, Syst. Ceramb. p. 229.

HOPLOCERAMBYX RELICTUS.

H. fuscus, *pube grisea tectus*; *capite pone oculos breviuscula*, *fronte haud impressa*; *prothorace transverse striato*, *interstitiis interruptis*, *pubescentibus*.

Dark brown, with a fine greyish pubescence; head but slightly lengthened behind, rather strongly grooved between the eyes, without, or with a very indefinite impression in front; prothorax with transverse shallow striæ, the interstices interrupted and pubescent, except at the base and apex; scutellum triangular; elytra with a delicate slightly silky pubescence, the light reflecting broad transverse wavy bands, the apices oblique, mucronate at the suture; body beneath and legs dark brown, shining, with a thin greyish pile; antennæ in the female about two-thirds as long as the body, the scape slightly shorter than the third joint. Length 18 lines.

I have described this from a specimen in my own collection from Singapore, but I am not certain that it may not turn out to be a small example of *H. morosus*. It is quite evident that the species of this and the two preceding genera are very variable; and I question, if a large series could be obtained, if many of them would be found to have any reliable specific characters at all. The males of this genus have, so far as I have seen, naked and strongly punctured antennæ, while in the females they are pubescent and, except the scape, impunctate.

DIALEGES.

Dialeges, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 46.

DIALEGES PAUPER, Pascoe, *op. cit.* p. 47, pl. 16. f. 7.

Found also in Sarawak by Mr. Wallace.

IMBRIUS.

Antennæ *in utroque sexu plus minusve serratæ*; *scapo integro*.

• *Oculi grosse granulati*, *ad os approximantes*.

Prothorax oblongus, *muticus*.

Pedes æquales; *femora in medio incrassata*.

Head small, narrow, more or less exserted. Eyes broadly emarginate, almost contiguous above and approximating to the mouth below, the facets large. Antennæ as long as the body; the scape short, entire at the apex; third and fourth joints generally not longer than the scape, more or less nodulous in the males; the rest, except the last, dilated unilaterally towards the apex. Prothorax oblong, scarcely broader than the head, subcylindrical, the sides rounded and unarmed, the base nearly straight or only slightly sinuated.

Elytra narrow, nearly parallel at the sides, the apex truncate or entire. Legs short, equal; femora thickened in the middle; tarsi as long as their tibiæ, the posterior with the three basal joints subequal. Pro- and meso-sterna simple.

Among the *Cerambycinæ* with an unarmed prothorax this genus will be distinguished by its serrated antennæ, which cuts it off from *Calpazia*, *Dialeges*, and others; and its large faceted eyes will prevent its being confounded with *Lachnopterus*. I have already published a member of this genus under the name of *Cerambyx mica-ceus* (Trans. Ent. Soc. ser. 2. iv. p. 237), at the same time pointing it out as a "form apart" from the true species of *Cerambyx*. In all there is a deep groove on the vertex extending to between the upper portions of the eyes, which it just divides. The three species here described are distinguished by the sculpture of the prothorax and the form of its apex.

IMBRIUS LINEATUS. (Pl. XLI. fig. 12.)

- I. *fusco-brunneus*; *prothorace profunde et irregulariter sulcato, inter sulcos tuberculis sitis, apice producto, bidentato; elytris vittis griseo pubescentibus indutis.*

Reddish brown; head with scattered greyish hairs; eyes separated above only by the deep vertical groove; palpi and antennæ ferruginous, the latter with the third, fourth, and fifth joints nodulous in the male, and the third longer than the second; in the female the second is longest; prothorax subcylindrical, slightly rounded at the sides, the anterior and posterior borders of equal breadth, the disk deeply grooved transversely and longitudinally, so as to present four transverse series of tubercles; scutellum broadly triangular; elytra finely punctured, covered with several oblique stripes of greyish pubescence; body beneath and legs pale ferruginous, with a thin greyish pile. Length 8 lines (♂), $6\frac{1}{2}$ lines (♀).

IMBRIUS EPHEBUS.

- I. *ferrugineus, elytris omnino griseo pubescentibus; prothorace profunde in medio longitudinaliter bisulcato, lateribus transverse sulcatis, apice subproducto, integro.*

Pale rusty brown, the elytra with a delicate uniformly greyish pubescence; head with scattered greyish hairs; eyes nearly approximate above; antennæ with the second joint longest in the female (♂ unknown to me); prothorax subcylindrical, slightly rounded at the sides, the disk with two longitudinal grooves including three or four oblong tubercles; the sides transversely grooved, all the tubercles clothed with a yellowish woolly pubescence; scutellum triangular; elytra finely punctured; body beneath and legs ferruginous, with a scattered greyish pubescence. Length 9 lines.

IMBRIUS STRIGOSUS.

- I. *fuscus, nitidus, pube interrupta grisea tectus; prothorace transverse sulcato, apice haud producto.*

Glossy brown, with an irregular or interrupted greyish silky pubescence; head with scattered greyish hairs, more condensed around the eyes, which are nearly approximate above; antennæ with the third joint longer than the fourth, which is equal in length to the fifth; prothorax strongly rounded at the sides, the anterior border narrower than the posterior, the disk grooved transversely, the grooves slightly undulating; scutellum semicircular; elytra impunctate, the hairs forming the pubescence oblique or occasionally transverse, and sufficiently condensed in parts to assume the appearance of stripes; body beneath and legs reddish ferruginous, the antennæ dark, all with a rather close greyish pile. Length 10 lines.

A female specimen of another species, differing slightly from the genus, is in the collection.

CYRIOPALUS.

Antennæ 12-articulatæ, pectinatæ.

Prothorax muticus, corrugatus.

Pedes breviusculi; femora haud incrassata.

Head exserted, narrower than the prothorax. Eyes large, strongly emarginate, the facets small. Antennæ twelve-jointed; the scape short, triquetrous; the second joint abbreviated; the third nearly as long as the scape, furnished like the rest, except the last, with a long subulate spine at the apex; fourth and fifth joints rather longer, the sixth to the eleventh gradually increasing in length; the twelfth simply subulate. Prothorax shortly subovate, corrugated, the sides unarmed. Elytra depressed, subparallel. Legs rather short, nearly equal, except that the anterior pair is the shortest; femora not thickened. Pro- and meso-sterna simple.

The remarkable character of the twelve-jointed antennæ will at once distinguish this genus. Mr. Lamb has only a single specimen; and this is also the case with Mr. Wallace, who took it at Sarawak. Without dissection there is nothing to suggest the sex, but there is a breadth in the outline of both that looks feminine. In the event of a second species being discovered, it is probable that the comparative lengths of the antennal joints may be found to be somewhat different. In both specimens there is a short strong tooth on the lower margins of the intermediate and posterior femora, that seems pinched out so as to leave a corresponding cavity in the site it would have occupied had the femora been entire, and this cavity is filled with a pale dense pubescence.

CYRIOPALUS WALLACEI. (Pl. XLII. fig. 3.)

C. fuscescens, pube grisea subtilissima dense tectus.

Brownish, everywhere covered with a very delicate greyish pubescence; head impunctate, deeply grooved on the vertex; eyes, mandibles, and scape dark brown; prothorax rather longer than broad, narrowest at the apex, transversely and irregularly corrugated; scutellum triangular; elytra much broader at the base than the prothorax, impunctate, their apices emarginate, the angles strongly

mucronate; body beneath brownish luteous, finely pubescent; legs brown; antennæ about as long as the body, brown, with subulate processes luteous and finely fringed on each side in the direction of their axis*. Length 20 lines.

RHYTIDODERA.

Hammaticherus, White, Cat. Long. Brit. Mus. p. 132.

RHYTIDODERA SIMULANS.

Hammaticherus? simulans, White, *op. cit.* p. 132.

It is difficult to say why this species, except for its transverse instead of longitudinal prothoracic striæ, was placed (even though doubtfully) with *Hammaticherus*, seeing that *Rhytidodera*, to which it naturally belongs, is proposed for a nearly cognate species immediately after it, and to which indeed Mr. White compares it. *Hammaticherus*, a name coined by Megerle, in compliance with a most faulty principle, to supersede the old name of *Cerambyx*, was first described and applied by Serville to *Plocæderus* of Dejean, *Cerambyx* being properly retained by the same author for the European species, which are naturally the most familiar, and, in the usual sense, the most typical.

RHYTIDODERA CRISTATA. (Pl. XLIII. fig. 1.)

R. supra pube purpureo-fusca dense vestita; prothorace utrinque longitudinaliter bicarinato, in medio crista pilosa elliptica instructo.

Densely covered above with a dark purplish-brown pubescence; head with a coarse irregular pubescence; prothorax broader than the head, sulcated at the base and apex, the intermediate part with three smooth longitudinal grooves on each side, enclosing two well-marked ridges, between the two series of grooves an elevated elliptical protuberance densely covered with perfectly erect hairs; scutellum subtriangular, truncate at the apex; elytra more than three times the length of the prothorax, broadest behind the middle, the apices emarginate with each angle shortly mucronate; pubescence slightly mixed with greyish hairs, especially at the sides; body beneath and legs reddish chestnut, with a thin greyish pile; antennæ considerably shorter than the body, the third to the eighth joints nodose at the apex, scape more densely pubescent. Length 13 lines.

The *clothes-brush*-like crest on the prothorax is very remarkable and peculiar. The protuberance that forms the basis appears to be deeply constricted all round, and the upper surface to be somewhat convex. The elytra are more or less clouded, according to the light, the dark spots being more particularly visible on each side behind

* A nearly allied genus has been recently described by M. Kaup (Einige Ceramb. der Grossherzog. Sammlung zu Darmstadt) under the name of *Westwoodia*. This name has, however, been twice previously used; I have therefore to propose *Aprodictus* in its stead, under which it has long stood in my cabinet waiting publication in the 'Longicornia Malayana.'

the middle; but these characters probably vary according to the individual.

EBURIINÆ.

CERESIMUM.

Ceresium, Newman, Entom. p. 322.

CERESIMUM RARIPILUM, Newman, *l. c.*

Mr. Newman's type was from Manilla.

CERESIMUM VESTIGIALE.

C. nigrum, subnitidum, pilis sparsis griseis tectum; prothorace longitudine latitudine fere æquali; femoribus valde clavatis.

Black, subnitid, covered with rather long scattered greyish hairs; head and prothorax finely punctured, the latter about equal in length and breadth, contracted anteriorly, a smooth central longitudinal line and two irregular smooth spots on each side; scutellum triangular, covered with white hairs; elytra rather finely punctured, nearly parallel at the sides, the apex rounded; body beneath and legs glossy black, with a thin greyish pubescence; antennæ about as long as the body, the third and fourth joints shorter than the scape and fifth joint. Length 5 lines.

A shorter species than the former and unicolorous, the third joint of the antennæ much shorter than the scape (as long or longer in *C. raripilum*), and the femora much more clavate.

CERESIMUM ZEYLANICUM, White, Cat. Long. Brit. Mus. p. 246.

The type is from Ceylon. Mr. Wallace has also taken it at Sarawak.

CERESIMUM SIMPLEX.

Stenochorus simplex, Gyllenhal in Schön. Syn. Ins. App. i. 3. p. 178.

Æmona philippensis, Newman, Entom. p. 247.

Very generally distributed in the Indian and many Pacific islands, but is wanting in Australia. This species has also been published by M. Blanchard under the ill-judged name of *Diatomocephala maculaticollis*. I cannot see that it is generically distinct from *Ceresium*.

CERESIMUM? VERSUTUM.

C. brunneum, albo pilosum; capite brevissimo; prothorace fusco, confertim foveolato; art. tertio antennarum scapo longiore; pedibus rufo-ferrugineis, nitidis.

Reddish brown, covered with long scattered loose whitish or yellowish-white hairs; head dark brown, rugosely punctate; palpi and lip pale ferruginous; prothorax dark brown, with crowded irregular impressions, the intervals intricately corrugated; scutellum rounded behind, brown; elytra considerably broader than the prothorax,

closely punctured, the intervals at the base thrown into transverse granulous folds, each puncture with a whitish hair at the base, apex rounded; body beneath glossy brown, paler on the abdomen; legs reddish ferruginous, shining, clothed with a few long whitish hairs, especially on the tibiæ and tarsi; antennæ ferruginous, much longer than the body, the basal joint paler, shining, punctured, all clothed with loose scattered hairs. Length $5\frac{1}{2}$ lines.

This is one of a number of undescribed species allied to *Ceresium*, which it will be necessary to separate when they are worked up. It differs from the true *Ceresia* in the short broad face, and long third joint of the antennæ. It is also a native of Borneo.

PURPURICENINÆ.

PURPURICENUS.

Purpuricenus, Serville, Ann. Soc. Ent. de Fr. ii. p. 568.

PURPURICENUS SANGUINOLENTUS.

Cerambyx sanguinolentus, Olivier, Entom. iv. no. 67. p. 93, pl. 20. f. 155.

This species occurs also in India. The genus, with which Mr. White's *Cyclodera* appears to me to be identical, is found all over the world.

EURYPHAGUS.

Euryphagus, J. Thomson, Syst. Ceramb. p. 700.

Eurycephalus, Laporte de Castelnau, Hist. Nat. des Ins. ii. p. 430 (nec G. Gray).

EURYPHAGUS MAXILLOSUS.

Cerambyx maxillosus, Olivier, Entom. iv. no. 67, pl. 20. f. 147 (♂).

Cerambyx nigripes, id. pl. 20. f. 149 (♀).

The male of this species has an unusually large head, with corresponding mandibles, and is generally paler and more unicolorous than the female. The latter is bright red, with the posterior portion of the elytra black; the prothorax has sometimes a large black spot on the centre of the disk. Mr. Wallace has specimens from Borneo, Sumatra, and Lombok. It is also found in India and the Philippine Islands.

EURYCLEA.

Euryclea, J. Thomson, Syst. Ceramb. p. 196.

EURYCLEA CARDINALIS.

Eurycephalus cardinalis, J. Thomson, Essai, &c., p. 211.

There is no apparent difference in the numerous examples I have seen of this magnificent species from Singapore and Sarawak, where it was originally taken by Mr. Wallace. The male has the large head and mandibles characterizing the preceding species. *Euryclea* has

been separated from *Euryphagus* by M. J. Thomson, principally on account of the greater length of the posterior legs, and their simple, almost linear femora.

CERASPHORINÆ.

STROMATIUM.

Stromatium, Serville, Ann. Soc. Ent. de Fr. iii. p. 80.

STROMATIUM ASPERULUM, White, Cat. Long. Brit. Mus. p. 300.

A common Malay species, found also at Hong Kong. In Mr. Wallace's collection there are specimens from Macassar, Amboyna, Batchian, and Banda.

NOSERIUS.

Noserius, Pascoe, Trans. Ent. Soc. ser. 2. iv. p. 95.

NOSERIUS TIBIALIS, Pascoe, *l. c.* pl. 23. f. 4.

Mr. Lamb's specimen differs from my type in being more rufescent, the prothorax less transverse, and the third joint of the antennæ *only* being dusky. It was one of Mr. Wallace's captures in Borneo.

GNATHOLEA.

Gnatholea, J. Thomson, Essai, &c., p. 375.

GNATHOLEA EBURIFERA, J. Thomson, *l. c.*

The male of this remarkable species has the mandibles prolonged and their upper surface so raised as to enclose the lip behind them. The elytra have two or more raised ivory spots, as in the South American genus *Eburia* and its allies.

XYSTROCERA.

Xystrocera, Serville, Ann. Soc. Ent. de Fr. iii. p. 69.

XYSTROCERA GLOBOSA.

Cerambyx globosus, Olivier, Entom. iv. no. 67. p. 27, pl. 12. f. 81.

A well-known insect, extending from the Isle of France to India and Java.

XYSTROCERA ALCYONEA.

Viridi-vel cyaneo-metallica; *antennis articulis quinque basalibus tuberculato-spinosis.*

Glabrous, shining, metallic green or blue; head with oblong punctures between the eyes, the intervals with fine vertical corrugations, the punctures on the vertex crowded, the intervening lines becoming rather oblique towards the median groove; prothorax slightly broader than long, transversely corrugated, the middle of the disk near the anterior impressed line smooth and impunctate, on each

side below the disk a longitudinal V-shaped scar-like depression; scutellum triangular; elytra covered with small crowded punctures, divided by short transverse lines, or, in other words, transversely corrugated, each elytron indistinctly marked with two raised lines, its apex obliquely truncate; body beneath glossy golden green; legs blue, or violet-blue; antennæ dark blue, the first five joints covered more or less with short tuberculate spines. Length 8 lines.

This seems to be a variable species, so far as size and amount of spinosity on the antennæ are concerned. Generally the coxæ are reddish; but I have a small specimen, with much less rugose antennæ, in which the colour is scarcely to be distinguished from that of the femora. The example described above is from Sarawak, where, as well as in Singapore, the species was taken by Mr. Wallace.

PRIONIDÆ.

REMPHAN.

Remphan, Waterhouse, Trans. Ent. Soc. ser. 1. i. p. 67.

REMPHAN HOPEI, Waterhouse, *l. c.* pl. 8. f. 1.

Remphan appears to differ from *Macrotoma* solely in the greater length of the scape, which is thus rather longer than the third joint—a character directly opposed to the true *Macrotomæ*. The remarks of M. Guérin Méneville on this genus are so apposite, and are so much more applicable at the present time, that we think we are doing some service in calling attention to them here. He says, “The genus *Remphan* of Mr. Waterhouse, it seems to us, ought to be placed near *Macrotoma*. The author has forgotten to state its affinities, after having given its generic characters, commencing with the head and finishing with the abdomen, just as is the custom with many entomologists, and which is very convenient for celerity. In fact, in thus freeing one’s self from the researches which ought to be really made in order to fix the place of a new genus, the task is reduced to almost mechanical work; for it is only to say all or almost all that can be seen of an insect to describe it, and leave to the poor reader the care and perplexity of picking out whatever seems good to him”*. Mr. Waterhouse is, however, one of the last that we can complain of in this respect; but the systematic determination of some to content themselves with the barest descriptions, without giving the slightest clue to the position of their new genera, ought to disentitle them to the right of priority in the event of any of these genera being afterwards described in a conscientious and recognizable manner. Of course, it is a different matter when it is stuted of any new genus that its affinities are doubtful or unknown to its author. As M. Guérin Méneville observes, these mechanical descriptions can be done by any one; the real test of competency will be found in the observations which every conscientious writer will feel it his duty to make in instituting, or proposing to institute, a new genus.

* Iconographie du règne Animal, Insectes, p. 212.

ÆGOSOMA.

Ægosoma, Serville, Ann. Soc. Ent. de Fr. i. p. 162.

ÆGOSOMA MARGINALE.

Cerambyx marginalis, Fabricius, Entom. Syst. ii. p. 264.

This appears to be a common species in Malacca. It is represented in Europe by *Æ. scabricorne*, and in North China by *Æ. sinicum*, both very nearly allied. Mr. Bowring finds it at Hong Kong, and Mr. Wallace at Macassar, as well as in Bouru and Amboyna.

MEGOPIS.

Megopis, Serville, Ann. Soc. Ent. de Fr. i. p. 161.

MEGOPIS PROCERA.

M. elongata, pallide ferruginea; *elytris tricostatis*, *costis liberis*; *genubus concoloribus*.

Elongate, pale ferruginous, glabrous, tips of the mandibles black; head and prothorax opaque, covered with numerous small granules; scutellum subscutiform, rounded behind; elytra parallel, closely punctured, each puncture with a small whitish scale at the base, with three costæ, exclusive of the raised suture and the submarginal raised line externally, the inner costa shortest, but not connected with the intermediate, nor the latter with the outer costa, apices mucronate at the suture; body beneath with a short greyish pile; legs finely punctured, glabrous; antennæ glabrous, half as long as the body, the third joint three times as long as the scape. Length 13 lines.

Longer than *M. costipennis*, White, with the costæ on the elytra free throughout, not connected behind the middle, and the metasternum with a short pile like the rest of the under surface. An undescribed species is found at the Cape of Good Hope. The type *M. mutica* is from the Isle of France.

EXPLANATION OF PLATES XLI., XLII., XLIII.

PLATE XLI.

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|---|---|
| Fig. 1. <i>Asilaris zonatus</i> , p. 505. | Fig. 7. <i>Diosyris miranda</i> , p. 508. |
| 2. <i>Sigeum humerale</i> , p. 523. | 8. <i>Bicon sanguineus</i> , p. 522. |
| 3. <i>Sestyra cephalotes</i> , p. 513. | 9. <i>Ephies cruentus</i> , p. 506. |
| 4. <i>Mydasta discoidea</i> , p. 512. | 10. <i>Ciopera decolorata</i> , p. 511. |
| 5. <i>Epianthe viridis</i> , p. 511. | 11. <i>Asmedia mimetes</i> , p. 526. |
| 6. <i>Mimistena femorata</i> , p. 514. | 12. <i>Imbrius lineatus</i> , p. 529. |

PLATE XLII.

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| Fig. 1. <i>Capnolymma capreola</i> , p. 504. | Fig. 5. <i>Pyrestes scapularis</i> , p. 516. |
| 2. <i>Plutonesthes crocata</i> , p. 514. | 6. — <i>politus</i> , p. 516. |
| 3. <i>Cyriopalus wallacei</i> , p. 530. | 7. <i>Euryarthrum nodicolle</i> , p. 524. |
| 4. <i>Pyrestes virgatus</i> , p. 517. | |

PLATE XLIII.

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|---|---|
| Fig. 1. <i>Rhytidodera cristata</i> , p. 531. | Fig. 4. <i>Pachyteria spinicollis</i> , p. 519. |
| 2. <i>Pachyteria virescens</i> , p. 519. | 5. — <i>speciosa</i> , p. 519. |
| 3. — <i>strumosa</i> , p. 520. | 6. — <i>lambii</i> , p. 519. |

15. Notes on Birds collected in Tenasserim and in the Andaman Islands. By ARTHUR, Viscount WALDEN, F.L.S., F.Z.S.

Dr. Selater has placed in my hands for publication the ornithological portion of a zoological collection which Captain Beavan is engaged in making in Tenasserim, and the firstfruits of which he has recently transmitted to this country. With the exception of six species obtained in the Andaman Islands, the specimens sent were collected in the neighbourhood of Moulmein and in the valley of the lower course of the Salween River. The collection is accompanied by some interesting notes of observations made by the collector, most of which, if, indeed, not all, convey new information. These notes I have transcribed in full; and it is to be hoped that during his stay in the Tenasserim provinces Captain Beavan will continue the useful practice of recording such observations as it is only within the power of the field-naturalist to make. An exhaustive catalogue of the Avifauna of the Tenasserim provinces has yet to be compiled. The identity of rarer species with the types from the neighbouring countries has in the majority of cases yet to be determined; and where differences occur, the degree and nature of the variation have in many instances still to be made known. In nearly all the species the exact limits of their areas of distribution remain a desideratum; and it is only by means of local collections, such as the one Captain Beavan is now engaged in making, that any progress in these branches of knowledge can become possible. Mr. Blyth, it is true, has amassed a large number of facts bearing on these subjects; but they are scattered through so many papers and different periodicals, that, until they are brought together and systematically arranged, much time will have to be spent by the student before full benefit can be derived from their undoubted value. In Europe little has been done, chiefly in consequence of the want of authentic specimens from different localities, and sufficiently large series of the specimens sent. As a result of this paucity of local specimens in our museums, or rather in one and the same collection, many species inhabiting the continent of India for instance, remain still bearing titles originally bestowed on forms foreign to that country; and an absolute identity, as far as these species are concerned, is thus assumed to exist between birds, not migratory, inhabiting regions widely apart. And yet, on comparison being made between actual specimens from distant localities, certain differences are frequently, and in many genera invariably, discovered, which, whether of specific value in the opinion of some naturalists or not, still seem to go far in showing that absolute stability and immutability of specific forms in birds does not exist.

The numbers and sexes given at the head of each species in this paper are those attached to the specimens by Captain Beavan. I commence with the Tenasserim specimens.

1. *HARPACTES ORESKIOS*, (Temm.)?*Trogon oreskios*, Temm. Pl. Col. 181.

No. 26. Salween Valley.

"Bill blue, also skin of eyes and feet. Found this beautiful Trogon plentiful on Korkarit Island, Salween River. It lives in thick forest jungle, where there is but little underwood; but the trees above have their boughs matted together, and bound up by tangled creepers, creating a deep shade below, to the great convenience of the observer. These Trogons go about in parties of seven or eight, sometimes more, and are very silent and quiet in their movements. No call-note is heard; but a bird suddenly darts from a low bough, seizes an insect near the ground, and, returning to its perch, leisurely devours it before you, without showing any signs of alarm at the presence of an intruder on its domains. He will then sit there so quietly that, if once lost sight of, it is difficult to find his whereabouts again, so similar is the colour of the plumage to that of the leaves. The female is much like the male, but altogether duller in plumage, especially about the under parts. In the same kind of forest may frequently be seen, on the highest trees, the grand Hornbill (*Buceros homrai*, Hodg.) ; while on the damp ground below, wherever, here and there, a passing shower has left a few small half-dried pools of water, the Blue Ground-Thrush (*Pitta cyanoptera*) marches about in all his glory, flying up to the nearest bough on your too near approach."

I have no Javan specimen wherewith to compare. Mr. Blyth (Ibis, 1865, p. 32) considers the Burmese race conspicuously different. Arakan is the furthest recorded northern limit of this species.

2. *MEROPS VIRIDIS*, Linn. S. N. ed. 12. p. 182. n. 2.

No. 52, ♀. Moulmein.

"Common in neighbourhood of Moulmein." The specimen sent belongs to the race named *ferrugiceps* by Hodgson (Gray, Zool. Misc. 1844, p. 82), and which, Dr. Jerdon observes, forms the prevalent race in Burmah. Mr. Blyth has also remarked that *M. viridis* in Burmah has a redder head than in India (J. A. S. B. 1863, p. 74). The entire head and nape of this specimen is of a bright rusty, with a tinge of green; the throat is green, edged with blue on the cheeks. The upper plumage is darker green than in Candeish and Ceylon specimens; and in them the throat is bright turquoise blue, with green predominating over the rufous of the head and nape. But the validity of the specific distinctions cannot be satisfactorily established from a single specimen, and therefore for the present I prefer retaining the Tenasserim form under *M. viridis*. It seems, however, to be a link of transition between the true *M. viridis* and *M. quinticolor*.

3. *LORICULUS VERNALIS*, (Sparrm.).*Psittacus vernalis*, Sparrman, Mus. Carls. 1787, pl. 24.

Nos. 23, 24, 25, ♀. Salween River.

"Irides white in some, light brown in others, the latter probably

young birds; bill orange; legs yellow." Malabar, Subhimalayan, and Burmese individuals are regarded as identical by Messrs. Blyth and Jerdon. Mr. Blyth also, in his catalogue, identified Indian with Javan specimens preserved in the Calcutta Museum—an interesting fact; for the intermediate countries of the Malay peninsula are inhabited by a distinct species, *L. galgulus*, (Linn.). The line of contact between the two species has yet to be recorded. An analogous fact is the existence of a third distinct species (*L. asiaticus*) in Ceylon, to which small area it is confined; while north of the Straits of Manaar the country of *L. vernalis* commences.

4. *GEVINUS VIRIDANUS*, (Blyth).

Picus viridanus, Blyth, J. A. S. B. 1843, p. 1000, ♂; 1844, p. 394, ♀.

No. 20. Schouay Goon, Salween River.

"Irides dark purple; bill dark horny above, greenish yellow beneath, except tip, which is darker; legs and claws dull greenish yellow." A male in full plumage with scarlet crest. Mr. Blyth (Cat. Calc. Mus.) subsequently identified his *G. viridanus*, which was founded on Arakan specimens, with the Javan *dimidiatus*, Temm. But I cannot find any note of his having compared specimens from the two localities, and Javan specimens did not exist in the Calcutta Museum when the catalogue was framed. Malherbe has followed Mr. Blyth, but without assigning a reason; and Sundevall (Consp. Av. Picinarum) has adopted the same view. In the India Museum, however, both Mr. Blyth's type and the Javan bird are preserved; and in their catalogue of that collection Messrs. Horsfield and Moore enumerate them as distinct, an opinion in which I concur. Pegu specimens of the nearly allied *G. striolatus*, Blyth, are preserved in the British Museum.

5. *YUNGIPICUS CANICAPILLUS*, (Blyth).

Picus canicapillus, Blyth, J. A. S. B. 1845, p. 197.

No. 29, ♀. Schouay Goon, Salween River.

"Bill horny; legs greenish." The presence of a red streak on each side of the head of the specimen sent inclines me to regard Captain Beavan's determination of the sex as erroneous. This bird is nearly related to the Javan form, the *moluccensis* of Blyth and of Horsfield and Moore, but not of Malherbe, which is, according to that author, from the Philippines and Moluccas. According to Mr. Blyth, the form which inhabits the peninsula of Malacca is identical with the Java bird; and specimens from both regions existed in the Calcutta Museum. In the specimen sent the crown is of a light greyish brown, readily distinguishable from the dark-rufous-brown occiput of a Javan male in my collection. The bill is equal in length, but much stouter; the wings are perceptibly longer; the longitudinal streak on the breast-feathers is broader and of a darker brown; and the general shade of the brown plumage is deeper than in my Javan specimen. Malherbe has omitted to notice the Javan form; but, on Mr. Blyth's assertion of its identity with the Malaccan bird

(an opinion shared in by Horsfield and Moore), it will probably have to take the name of *auritus*, Eyton (Ann. Nat. Hist. 1845, p. 228), described from the Malacca species.

6. *MEGALAIMA HODGSONII*, Bp. Consp. 1850, i. 144. no. 19.

Megalaima lineata, (Vieill.) Jerdon, Birds of India, i. 309. no. 192. No. 22, ♀. Kyodan, Salween River.

“Frequents tops of highest trees.” Captain Beavan’s specimen appears to belong to the Subhimalayan race, referred by Blyth, Horsfield and Moore, and Jerdon to Vieillot’s *Capito lineatus*, a species described by that author (Dict. d’Hist. Nat. iv. 500) as from “l’Australasie.” Vieillot’s account is so vague that it will apply equally well to other races of the Green Barbets. I therefore prefer rejecting Vieillot’s title, and adopting that given by Prince Bonaparte, founded upon Nipalese specimens in the Leyden Museum. Blyth and Jerdon give Sumatra as the origin of Vieillot’s type; but I have failed in finding their authority for the statement. Prince Bonaparte, with doubt, made it equal to *Bucco corvinus*, Temm.; but this is a very distinctly marked species, unlike any of the continental Green Barbets. It is possible, however, that the Subhimalayan form, which extends into Assam and the countries east of Bengal, and, according to Dr. Jerdon, into the whole Indo-Chinese region, may prove to be the same as the *B. faiostriatus*, Temm. (Pl. Col. 527), said to be from Cochin China; but the broad green band under the eyes, which is a chief character in Temminck’s species, is wanting in the Indian and Tenasserim birds. A Cambodja specimen in my collection agrees tolerably well with the Tenasserim bird, especially in having the distinguishing pure albescent chin and throat. The length of the wings is equal; but the bill is shorter and much stouter. A second specimen from the same locality has the wings three-fourths of an inch shorter and the bill less massive. Neither possesses a green subocular band.

7. *POLYPHASIA TENUIROSTRIS*, (J. E. Gray).

Cuculus tenuirostris, J. E. Gray, Hard. Ill. Zool. 1833, ii. pl. 34. f. 1.

No. 63, ♂. Moulmein.

“Irides dull red or brown red; legs yellow, with greenish tinge on upper parts.” An adult with chin and throat only grey; upper breast, as well as entire under surface, pure rufous. Dr. Jerdon does not record the colour of the iris in this race, but states that of the grey-bellied Indian race to be “fine ruby red, in some brownish red.” He considers the species from Burmah to be identical with that of Bengal.

8. *ARACHNOTHERA MAGNA*, (Hodgs.).

Cinnyris magna, Hodgs. Ind. Rev. 1837, p. 272.

No. 28, ♂. Kyodan.

“Shot this specimen at Kyodan, Salween Valley, whilst busily feeding on the flower of the common plantain. Irides dark brown;

legs bright orange-yellow; bill black." Jerdon gives the irides as light brown, but does not state in what locality his specimen was obtained. Compared with a Darjeeling skin in my collection no difference is to be detected. The southern limits of this species have yet to be determined.

9. *ÆTHOPYGA MILES*, (Hodgs.).

Cinnyris miles, Hodgs. Ind. Rev. 1837, p. 273.

Nectarinia goolpariensis, Royle, Ill. Him. Bot. 78, pl. 7. f. 1, 1839. Nos. 68, ♂, 43, ♀. Moulmein; Salween Valley.

"Frequents *Amherstia*-trees in flower. Note, a loud piping. Observed on Salween trip in villages feeding on the flowers of the cocoa-nut palm." "Not only frequents flowering trees, but low bushes and annuals near the ground when in flower. Secured a specimen on the common *Costus argyrophyllus*."

No. 43 is marked a female; but as it has the feathers of chin, throat, and breast strongly tinged with crimson, I am inclined to regard it as a young male, the females of the species, according to both Hodgson and Jerdon, being soberly plumaged, without any of the brilliant colours of the male. I have been unable to compare Himalayan specimens, which furnished Hodgson with his types; but Jerdon states that the Himalayan bird is found in the Burmese countries. If Tickell's *Nect. seheriæ* (J. A. S. B. 1833, p. 577), founded on a Borabhúm specimen, should prove to be identical with the Himalayan form, Hodgson's title of *miles* will have to give way. The utmost southern limits of this bird have yet to be defined. As yet it does not appear to have been discovered in the Malay peninsula.

10. *ARACHNETHRA FLAMMAXILLARIS*, (Blyth).

Nectarinia flammixillaris, Blyth, J. A. S. B. 1845, p. 557.

Nos. 37, 45, 46, ♂; 38, 39, 51, 70, ♀. Kyodan, Salween Valley; Moulmein.

"A distinct semicircle of dull brick-red on breast, below the steel-blue neck-patch; below it, again, a few black feathers; irides reddish brown; feet and legs black. The female is pale olive-green, with a yellow breast, and wants the steel-blue throat of the male." Specimen no. 51 is assuming the steel-blue plastron, and has the orange-coloured axillary tufts fully developed. It is therefore probably a young male. The remaining three female specimens are in the sober plumage described above. In the colouring of the whole upper surface they closely resemble the male—so much so that, if specimens of the two sexes are viewed together only from above, it is difficult to detect any distinction. The tails in both, above and below, are alike, the white tips of the outer rectrices being equally prominent on the under surface. The only features which really distinguish the males are the bright flame-coloured tufts, the steel-blue plumage of the chin, throat, and breast, and the brick-red semicircle on the breast, which is difficult to detect in skins that have not been carefully prepared.

This species is nearly allied to the Javan *N. pectoralis*, Horsf. =

N. eximia, Temm., but is to be readily distinguished by the absence of the frontal steel-blue patch of the Java bird, which, also, has the abdominal plumage of a much deeper yellow, and consequently the axillary tufts do not contrast so strongly as in the Tenasserim species. The Philippine species, *N. jugularis*, (Linn.), founded on Brisson's *Certhia philippensis minor*, is not to be distinguished by description from the Tenasserim bird; and Mr. Blyth, in 1843, identified specimens from Tenasserim with the *N. jugularis*, Vieill., of Sir W. Jardine's *Nectariniadæ*. Two years later he announced the Tenasserim form as belonging to an undescribed species, giving it the designation I have adopted, but without stating his reasons for no longer considering it the same as *N. jugularis*, Vieill., apud Jardine. Having been unable to compare with a Philippine specimen, I cannot form an independent opinion; but we may with almost certainty assume that the specimens from the two localities will be found to specifically differ; indeed it will be a remarkable coincidence if they do not. Meyen has regarded *jugularis*, Linn., and the Javan *pectoralis*, Horsf., as young females of his *N. philippensis*, which appears to be equal to the *N. coccineogastra*, Temm.; but the two Philippine birds are almost certainly distinct, and Horsfield's title of *pectoralis* was given to a mature Javan male. *Cinnyris frenata*, Müll., from the Sula Islands, closely resembles the Tenasserim *flammaxillaris*, Blyth, in the distribution of its colours, but it is considerably larger. On the upper surface, like the Tenasserim bird, it wants the steel-blue frontal patch of the Javan *pectoralis*, Horsf.; but on the under surface the colour of the plumage is not distinguishable from that of the Javan bird. *N. solaris*, Temm., from Flores, is another of the same group; but where in *flammaxillaris* the abdominal plumage is pale yellow, and in *pectoralis* and *frenata* it is deep yellow, in *solaris* it is orange-red; while the frontal patch and the throat- and breast-plumage are metallic green (and not blue) black.

I refer *N. flammaxillaris* to the genus *Arachnethra*, of which *Certhia lotenia*, Linn., is the type, in preference to separating it from that group and making it form a fifth species of Dr. Cabanis's genus *Chrysostomus*, founded for the reception of *C. jugularis*, Linn., *N. pectoralis*, Horsf., *N. frenata*, Müll., and *N. solaris*, Temm.; for it, as well as these four species, seem to me to be closely allied to the steel-blue Sun-birds of India and Ceylon, *A. lotenia* and *A. asiatica*. The character of the plumage in all these species evinces a common hereditary relationship. In *A. asiatica*, Lath., the entire plumage is metallic black; and in that species we find the blackness at its maximum; in *flammaxillaris* it is at its minimum, being confined to the pectoral plastron. *N. zenobia*, Less., exhibits an intermediate stage; for in it we find the whole under surface black, the upper being barely distinguishable from that of the Tenasserim bird.

On Mr. Blyth's authority, *A. flammaxillaris* is very common in Tenasserim. Arakan is its furthest known northern limit. Penang specimens do not appear to differ. How much further south it extends remains to be determined. To the west, in India proper, it is unknown.

11. LEPTOCOMA BRAZILIANA, (Gm.).

Certhia braziliana, Gm. S. N. ed. 13, 1788.

Certhia brasiliensis violacea, Briss. Orn. iii. 662. n. 30, pl. 32. f. 4.

Nectarinia hasseltii, Temm. Pl. Col. 376. f. 3, ♂.

Nectarinia phayrei, Blyth, J. A. S. B. 1843, p. 1008.

No. 65, ♂.

“Moulmein. Irides dark brown; bill and legs black. Shot feeding on low flowering shrubs. Note, a low piping call.” The single specimen sent has some of the chin- and throat-feathers white, the rest being of the brilliant amethystine purple of the species. The metallic occipital feathers consist chiefly of blue-green plumes, the outer only being yellow green. When compared with Sumatran specimens its plumage does not appear quite so brilliant; and the shades of the metallic portions somewhat differ in colour. It closely resembles a Malaccan skin in my collection, and which is in perfect plumage. In this also the occipital feathers are bluer green than yellow green; and the throat-feathers appear to differ in their metallic glance from those of the Sumatran race. The bill likewise is slenderer, and all the dimensions are somewhat less.

Brisson described this bird in the clearest language from a skin in Réaumur's collection, to whom it was presented by M. de Vergène, who, according to Brisson, received it from the Brazils. Upon Brisson's authority Gmelin founded its title *braziliana*, and, although geographically inappropriate, I prefer adhering to the law of priority. At some future time some authoritative body of naturalists will have to agree upon those titles, of the older authors, which ought to be expunged. Temminck's type was from Java. Mr. Blyth's *N. phayrei* was described from an Arakan specimen.

I concur with Dr. Cabanis in placing this species in his genus *Leptocoma*. The female and young plumage is unrecorded. It has not hitherto been found further north than Arakan, and is unknown to the west in India proper.

12. ANTHREPTES SINGALENSIS, (Gm.).

The Green Warbler, Brown, Zool. Ill. p. 82, pl. 32. f. 2.

Motacilla singalensis, Gm. S. N. ed. 13. p. 964. n. 86.

Sylvia cingalensis, Lath. Ind. Orn. ii. p. 533. n. 92.

Nectarinia phoenicotis, Temm. Pl. Col. 108. f. 1, ♂; 388. f. 2, ♀.

Anthreptes phoenicotis, Blyth, J. A. S. B. 1843, p. 279.

Nos. 41, 42, 64, ♂. Moulmein; Salween Valley.

“Frequents the tops of flowering trees, and has much the habits of a *Dicaeum*. Female a little duller-coloured than male; generally seen in pairs. Irides dark red; bill brown; legs and claws dirty greenish yellow.” The slightness of the distinction described by Captain Beavan between the sexes is interesting; but the three specimens sent are those of males. When compared with a Sumatran skin they appear less brightly and richly coloured. In the latter bird the rufous of the breast and throat is deeper in tone and descends lower down; it is separated from the yellow of the abdominal region

by a more trenchant line. In the Tenasserim specimens the rufous dies away into the yellow; in them also the bill is decidedly longer, while in all the other dimensions they are inferior to the Sumatran bird.

Brown figured and described this species, in his 'Illustrations,' from a specimen said to have been from the "East Indies." Gmelin, in error, gave Ceylon as its habitat, although he founded his *M. singalensis* on Brown's description and plate. Latham fell into the same mistake; and hence in all the authors we find Ceylon recorded as the native country of Gmelin's species. Temminck, fully aware that Gmelin had previously described it, gave it another name; and Mr. Blyth, in 1843, unconscious that it had been previously named, gave it as a new name the one already used by Temminck. Mr. Blyth was the first author who referred the species to Swainson's genus *Anthreptes*, instituted for the reception of *Certhia malaccensis*, Scop. = *Nectarinia javanica*, Horsf., and chiefly characterized by the stouter and straighter bill—with which species it appears to me to be closely allied. Dr. Cabanis has, in the 'Museum Heineanum,' separated it from *Anthreptes*, and made it the type of a new genus, *Chalcoparia*.

Tippera is the most northern region from which this species has hitherto been recorded. It is unknown in India to the westward of that country; and we possess no authentic record of its occurrence in Ceylon. Motley and Dillwyn state that this species occurs in Labuan; but specimens have to be compared.

13. DICÆUM CRUENTATUM, (Linn.).

Certhia cruentata, Linn. S. N. ed. 12, 1766, p. 187.

Certhia coccinea, Scop. Del. Fl. et Faun. Insub. 1786, pars 2. p. 91. n. 63.

Nos. 56, 58, 66, 78, ♂; 49, 57, 69, ♀. Moulmein.

"♀. Bill and legs dark leaden; irides dark brown. Some black hairs on the head mixed with the scarlet feathers. Has the usual habits of the genus, frequenting high trees in flower. An especial favourite is a *Cathartocarpus* (*Cassia florida*, Vahl) when in flower. The call is a shrill piping, something like the ticking of a loud watch, but of course not regular, and more quickly repeated. It occasionally descends to flowering shrubs in the gardens. Tolerably common about Moulmein, but very difficult to procure, as it is almost impossible to see it amongst thick foliage without the aid of glasses. The note described above is generally uttered when starting in flight; another note when at rest may be syllabized tee-tee-tee."

Dr. Jerdon gives Scopoli's title the precedence; but that of Linnæus, founded on Brisson's description of Edwards's plate, is senior. Sonnerat's species, Scopoli's type, was said by that traveller to be from China. By Mr. Blyth (J. A. S. B. 1845, p. 558, in note) the Indian species is said to be common at Malacca. Specimens from that peninsula that I have seen slightly differ, by being smaller, having a shorter bill, and by the black portion of the plumage being deep blue (rather than deep green) black; the red plumage is also

of a richer tone. The complete range of the species has yet to be determined.

14. *DICEUM TRIGONOSTIGMA*, (Scop.).

Certhia trigonostigma, Scop. Del. Fl. et Faun. Insub. 1786, ii. p. 91. n. 64.

No. 54, ♀. Moulmein.

“Upper mandible pinkish brown, and tip of lower the same, graduating to yellow underneath; irides dark brown; legs leaden.” In another note the gape is described as orange. Does not differ from Malaccan specimens of the female. This species has not been found further north than Arakan, and is unknown on the continent to the westward. Mr. Blyth states that it is found in Sumatra.

15. *PITTA CYANOPTERA*, Temm. Pl. Col. 218.

Pitta malaccensis, Blyth, J. A. S. B. 1843, p. 960, nec Scopoli. Nos. 13, ♂, 14, juv. Korkarit Island, Salween River.

“Irides dark brown; skin behind eye leaden; legs pinkish fleshy; bill brown-black. Young bird: gape and tip of bill crimson-red; legs fleshy.” Arakan, Tenasserim, and Malayan specimens of the form to which the examples sent belong have hitherto always been regarded by Indian ornithologists as of the same species as the Javan bird which furnished Temminck’s type. But as yet no actual comparison with Javan specimens appears to have been made, and until that is done the question of identity must remain in doubt. The young bird is sordid in all its plumage, and has the first quill entirely black, the second with only a white spot. A Sumatran specimen in the Indian Museum has the white on the primaries very much restricted; it is also a larger bird, and may be specifically separated.

16. *GRAUCALUS MACEI*, Less. Trait. d’Orn. p. 390.

No. 62. Moulmein.

When compared with specimens from Central India, the one sent exhibits no difference of plumage; and the dimensions are identical, save those of the bill being somewhat less.

17. *DISSEMURUS PARADISEUS*, (Linn.)?

Cuculus paradiseus, Linn. S. N. ed. 12.

No. 19. Salween Valley.

A single specimen and in moulting plumage is sent. It represents one of the numerous races of which *C. paradiseus*, Linn., may be taken as the type. But it is in such indifferent order, the outer rectrices being absent, that without further specimens it is impossible to determine its position among the numerous races of the Racket-tailed Drongos.

18. *BUCHANGA INTERMEDIA*, (Blyth)?

Dicrurus intermedius, Blyth, J. A. S. B. 1846, p. 298.

Nos. 27, 55, 60, 74, 79, ♂. Moulmein.

“This is the commonest species of *Dicrurus* in the gardens about Moulmein, and extends to my knowledge some distance up the Salween Valley. It is a pretty songster. Irides crimson-red. On the same trees as *Chaptia anea*.” These specimens belong to one of the numerous races of which *Dicurus leucophæus*, Vieill., = *D. cineraceus*, Horsf., ex Java, may be considered the type. They may be termed Ashy Drongos, from the bluish ashy hue which, in darker or lighter shades, characterizes their plumage. They are very closely allied to another group of Drongos, the type of which is *B. longicaudata*, (A. Hay); and although between some of the races of the two species the distinguishing characters are not at once apparent, yet individuals belonging to the group of Ashy Drongos are always to be recognized by their general ashy (rather than black) tone of colour, by the upper surface of the rectrices, especially the central pair, being greyish and only becoming black towards the tips, by the entire under surface of the body being dull ashy, without any silky gloss, save a slight indication on the breast, and by the tail being much less deeply forked and its feathers considerably broader. The entire body-plumage is also of a looser texture, the webs being decomposed. At the same time the two groups possess many connecting links; and though the most superficial observer could not confound a Malabar specimen of *B. longicaudata* with a Java specimen of *B. leucophæa*, other races, such as this one from Tenasserim, have to be carefully examined before it can be decided to which of the two groups they belong. At the foot of the Himalayas, certainly extending as far to the westward as the Deyra Doon, the two groups are severally represented, and the divergence between the two is very strongly marked; yet the large Ashy Drongo of the Himalaya has hitherto been confounded with *B. longicaudata* of Malabar and its allied races by both Messrs. Jerdon and Blyth. I refer Captain Beavan’s specimens to Mr. Blyth’s species with some doubt. Dr. Jerdon, in his recent work, reduces *D. intermedius*, Blyth, to a synonym of *D. longicaudatus*, A. Hay; yet Mr. Blyth’s description appears to agree better with some individuals of the ashy group. Moreover he mentions that it is intermediate between *D. cærulescens* (Linn.) and *D. longicaudatus*, A. Hay, whence doubtless his designation; and at the time, Mr. Blyth was unacquainted with the true Javan *D. cineraceus*, (Horsf.). Mr. Blyth’s type came from Penang; and as I have never met with a specimen of Ashy Drongo, or of the other species, from so far south in the Malayan peninsula, I am unable to identify Mr. Blyth’s bird; but in his ‘Catalogue of the Calcutta Museum,’ he has enumerated under this title another specimen from Moulmein. I have, however, good reason to believe that a race of the *longicaudatus* group also inhabits Tenasserim; and it is not impossible, it is even probable, that the Malay race is distinct from that of Burmah. Until Penang specimens are actually compared with the Moulmein race, the correct title of the latter must remain undetermined. From the Javan species these specimens differ by being altogether of a darker bluish ashy; the wings are of a greenish black, rather than a greenish ashy; the tail is more deeply forked,

and not so decidedly cinereous on the upper surface; the bill is more compressed. All these points evince an approach to *D. longicaudatus*, and excite a suspicion of hybridism. But they are probably nothing but the characteristics of an intermediate species—a link of transition, many of which are to be found in the unstable family of the *Dicruridæ*. The type of Vieillot's genus *Dicrurus* being *Corvus balicassius*, Linn. (= *Edolius viridescens*, Gould, = *Balicassius philippensis*, Bp., ex Manilla), a totally distinct generic form, the long Fork-tailed Drongos must be referred to the next generic synonym, *Buchanga*, Hodgs., the type of which is *Edolius albirictus*, Hodgs., ex Nipaul. The following are the principal measurements of the Tenasserim race:—

Wing $5\frac{1}{8}$ inches; bill from nostril $\frac{5}{8}$; bill from forehead 1; uropygials $3\frac{7}{8}$; outer rectrices $5\frac{4}{8}$.

Somewhat larger than the Javan bird, it is considerably smaller than the Himalayan *B. pyrrhops*, Hodgs. The Himalayan race of *B. longicaudata* has yet to be described and named. It is a well-marked form, and very distinct from the Malabar type.

19. MIXORNIS RUBICAPILLA, (Tickell).

Motacilla rubicapilla, Tickell, J. A. S. B. 1833, p. 576. no. 27. No. 40. Salween Valley.

The type of this species was procured by Colonel Tickell in Burrubhoom, a district of Central India. When compared with specimens from Maunbhoom, a neighbouring district of Central India, this Tenasserim specimen exhibits no difference beyond that of the bill being perceptibly longer; and when compared with Himalayan specimens no difference whatever can be detected; and Mr. Hodgson's specific titles of *chloris* and *ruficeps* given to the Himalayan race have therefore been correctly superseded by Dr. Jerdon. In the 'Catalogue of the Calcutta Museum' Tenasserim is given as the habitat, not only of this species, but also of *M. gularis*, (Horsf.). This last species is very distinct, and was founded on the *Motacilla gularis*, Raffles, Tr. Linn. Soc. xiii., his type being from Sumatra, and not from Java—a fact which has been overlooked by almost every writer, the mistake probably arising out of Raffles's bird having been figured and described by Horsfield in his 'Zoological Researches in Java.' Sir Stamford Raffles's type specimen still exists in the India Museum. It belongs to a species readily distinguishable from Tickell's bird, by being above almost uniform rufous brown, with a tinge only of olive on the nape and rump. The head, wings, and tail are alike, and of a still darker brown. Underneath it closely resembles the continental species, but is brighter yellow, and has the throat more boldly streaked. A second and fresh specimen from Sumatra is in my collection, and is identical with the type. Malacca possesses a species which is very nearly allied to, if not identical with, the Sumatran form. The Javan race, hitherto by all authors referred to *Timalia gularis*, Horsf., is figured in the 'Planches Coloriées,' and is there described, as also by Prince Bonaparte in the 'Conspectus,' as having the throat white. From both these descriptions it also appears to

possess other characters which distinguish it from the true Sumatran *gularis* and the continental *rubicapilla*. Of the Javan form I have not seen a specimen; but should it prove really as distinct as the descriptions make it, it will require a new designation; for we may assume that it is not *Timalia flavicollis*, Müll., described by Bonaparte in the 'Conspectus' and ranked as a *Mixornis*. Temminck (Pl. Col. pl. 442. f. 1), however, after an examination of thirty specimens sent to him from Java and Sumatra, considered the races from those two islands to be identical.

Prince Bonaparte, having mistaken the Javan bird for Raffles and Horsfield's species, described, in the 'Conspectus,' from a specimen in the Leyden Museum, the Sumatran form as new, under the title of *M. sumatranus*. This title must be expunged. The Malaccan race supplied the type of Mr. Blyth's *Prinia pileata* (J. A. S. B. 1842, p. 204, where he adds that it is also found in Tenasserim). In his catalogue, while making *P. pileata* a synonym of Horsfield's *gularis*, he continues to cite the Tenasserim provinces as its habitat. No Tenasserim specimens of the Malaccan form existed in the Calcutta Museum when the catalogue was compiled; and its occurrence so far north probably will require further confirmation.

The following is a recapitulation of the synonyms of the three species. In the absence of a greater number of examples for comparison, the permanent nature of the slight differences existing between the Tenasserim bird and that of Central India, and between the Malaccan race and that of Sumatra, cannot be established:—

1. *Motacilla rubicapilla*, Tick. Central India.
Mixornis chloris vel *ruficeps*, Hodgs. Nipaul.
No. 40. Beavan's Collection.
2. *Motacilla gularis*, Raffles. Sumatra.
Timalia gularis, Horsf. Sumatra.
Mixornis sumatranus, Bp. Sumatra.
Prinia pileata, Blyth. Malacca.
Mixornis gularis, Horsf. apud Blyth. Malacca.
3. *Mixornis gularis*, (Horsf.) apud Bp. Java.
Myiothera gularis, Temm. Java.

20. GARRULAX BELANGERI, Less., Bel. Voy. aux Indes, p. 258, pl. 4.

Nos. 15, ♂, 17. Salween River; Kyodan.

"Irides dark red; bill black; legs leaden." According to Jerdon the irides of the Himalayan *G. leucolophos* are red brown, and in some brownish yellow. Although without a Pegu example for comparison (Lesson's type being from that country), the specimen sent agrees so well with Lesson's description that I have little hesitation in considering it of the same race. When compared with Darjeeling specimens of *G. leucolophos*, Hardw., the distinctive characters of these two closely allied forms are self evident. A third race, from some part of Siam, is represented by a specimen in my collection. In it the entire under surface is white, the thigh-covers and flanks

only being rufous. The nape is considerably more ashy, and the upper surface much brighter ferruginous, than that of the Tenasserim race. The upper tail-coverts are olive-rufescent, and the primaries are of a ruddier brown, their outer edges being tinged with olive. The wing, which in *G. leucolophos* and *G. belangeri* measures 5 inches, somewhat exceeds that length. The bill is equal in length to that of *G. belangeri*, but is longer by an eighth of an inch than that of *G. leucolophos*. The tarsus in all three is equal. I propose the specific name of *leucogaster* for this race.

21. GARRULAX CHINENSIS, (Scop.).

Le petit geay de la Chine, Sonn. Voy. aux Indes, ii. p. 188, pl. 187.

Lanius chinensis, Scop. Del. Fl. et Faun. ii. p. 86. n. 17.

No. 16, ♀. Salween River.

“Shot in company with *G. leucolophos*, (Hardw.)” (*G. belangeri*, Less.). “Irides crimson-red; legs dirty brown.” Tenasserim and, perhaps, some of the regions to the north appear to be the true and only habitat of this species.

22. PYCNONOTUS? FINLAYSONII, Strickl.

Pycnonotus finlaysonii, Strickl. A. N. Hist. 1844, p. 411.

Nos. 53, ♂, 73, ♀. Moulmein.

“This bird is certainly very common, in small parties of three or four; they seldom venture far from thick cover, and have a pleasant call. Like *P. nigropileus*, Blyth, it occasionally frequents low bushes. Irides brown; legs bluish plumbeous; bill dark horny plumbeous.” No distinction to be observed between the sexes. The specimens sent most certainly belong to Strickland’s species, the type of which was from, to him, some locality unknown, “probably from some of the Malayan islands.” The affinities of this species seem to point to *Ixos*.

23. PYCNONOTUS NIGROPILEUS, Blyth, J. A. S. B. 1847, p. 472.

No. 76, ♂. Moulmein.

“Common, in small parties, about Moulmein, searching for insects amongst flowering creepers. Bill black, with slightly plumbeous tinge; legs more leaden.” A good species. *P. hæmorrhous* (Gm.) is said by Mr. Blyth to replace it in Arakan (J. A. S. B. 1863), while in Bengal we only find *P. pygæus*, Hodgs. But Dr. Jerdon inclines to the opinion that Arakan individuals belong to a distinct race. It would be interesting to know the extreme northern and southern limits of the Tenasserim bird.

24. IORA TYPHIA, (Linn.).

Motacilla typhia, Lin. S. N. ed. 12. i. p. 331. no. 13.

No. 59, ♂. Moulmein.

“Plentiful in thick trees. Irides greyish white; bill leaden blue, darker only on ridge of upper mandible; legs leaden blue; claws brownish, and soles dirty yellow. This specimen agrees with Jer-

don's description of *I. zeylanica* (Gm.) in having the 'bill light plumbeous, darker on the ridge, irides greyish white, and the central tail-feathers partly green and partly black;' but there is no black on the head, and the measurements are nearer *I. typhia*." In the specimen sent the whole of the tail is black. The mixture of green with the black of the tail in *I. zeylanica*, (Gm.), appears only to accompany an imperfect state of the upper plumage. Two specimens from Candeish have the tail-feathers partially edged with green; but they are of moulting birds.

The bill in *I. typhia* is longer. This Tenasserim specimen agrees in every respect with a Central Indian specimen of *I. typhia*. A specimen of a female *Iora*, from Malacca, before me has the bill longer and slenderer than that of the Tenasserim bird, and the wing much shorter. Mr. Blyth gives in his Catalogue both *typhia* and *scapularis*, Horsf., from Malacca; but I am inclined to doubt the occurrence of both forms in the Malay peninsula. My long-billed specimen may be the true *scapularis*, or else belong to a distinct and undescribed Malayan race.

25. *ORIOLOUS MELANOCEPHALUS*, Linn.? S. N. ed. 12. i. p. 160. n. 3.

No. 48, ♀. Moulmein.

"Common everywhere. A male in beautiful plumage is only $8\frac{5}{8}$ inches in length. Jerdon makes his $9\frac{1}{2}$. My bird, too, agrees with the description of *O. ceylonensis*, Bp., in having the black patch on central tail-feathers $1\frac{1}{2}$ inch in length, instead of $\frac{1}{2}$ an inch, as said by Jerdon to be the case with *O. melanocephalus*." As a female specimen only is sent, it is difficult to decide to which of the two nearly allied races this one, from Moulmein, belongs. I have compared it with a number of female skins from Ceylon, and can detect no distinction in either colouring or dimensions. It is also smaller than Central Indian female specimens of true *melanocephalus*. Mr. Blyth (J. A. S. B. 1863, p. 79) remarks that the race found in Burmah and extending down to the Malayan peninsula is quite similar to *O. melanocephalus* of Bengal. But the variations of the Black-headed Orioles throughout Southern Asia require further investigation.

26. *COPSYCHUS SAULARIS*, (Linn.)?

Gracula saularis, Linn. S. N. ed. 12. i. p. 165. n. 6.

No. 72, juv. Moulmein.

"Abundant about Moulmein."

27. *KITTACINCLA MACROURA*, (Gm.)?

Turdus macrourus, Gm. S. N. ed. 13. i. p. 820. n. 67.

No. 44, ♂ juv. Salween River.

"The specimen is two-thirds grown, and was killed in thick forest jungle on the Salween at Meezain."

This and the last species are represented by specimens too immature to enable their identity with the types to be established.

28. *PRINIA BEAVANI*, sp. nov.

Nos. 35, 36, ♂. Schouay Goon, Salween River.

“Irides reddish yellow; legs fleshy; beak black, horny. Shot in low jungle.”

The two specimens sent belong to a species unknown to me; nor do they agree with the descriptions of any of the Wren Warblers inhabiting India given by Dr. Jerdon. And I have failed in finding exactly similar specimens in the British Museum and other London collections. It is a well-marked form, having the head and nape dull cinereous brown, contrasting distinctly with the slightly ruddy brown of the dorsal plumage. The upper surface of the wings and tail is of a similar colour, the outer edges of the primaries being edged with ferruginous. From the nostril, and extending over and a little beyond the eye, a bold pure-white band. The chin, throat, cheeks, breast, and belly pure white. The under wing-coverts, under tail-coverts, thigh-coverts, and flanks fulvous. The rectrices, which in the specimens sent are comparatively short, are tipped with dirty white, which edges a dark brown terminal spot, showing through to the upper surface. The remaining under surface of the rectrices is pale brown, similar in hue to the under surface of the quills, the inner edges of these latter being pale ferruginous. The tail consists of ten feathers, which are graduated; the first primary is about two-thirds the length of the second, which is considerably shorter than the third; the fourth is longer than the third, and but slightly shorter than the fifth, which and the sixth are equal and longest; the seventh is equal to the fourth.

Wing $1\frac{1}{6}$ inch; tail $1\frac{6}{8}$; bill from forehead $\frac{4}{8}$, from nostril $\frac{5}{16}$; tarsus $\frac{6}{8}$; hallux $\frac{2}{8}$; middle toe $\frac{7}{16}$.

This species appears to be most closely allied to *P. cinereo-capilla*, Hodgs.

29. *CORYDALLA RUFULA*, (Vieill.).

Anthus rufulus, Vieill. Dict. d'Hist. Nat. 1818, xxvi. p. 494.

No. 71, ♀. Moulmein.

The specimen sent is not distinguishable from Central Indian examples. *Anthus malayensis*, Eyton, is a somewhat smaller bird; but although regarded as distinct from *C. rufula* by Messrs. Horsfield and Moore, I find a difficulty in detecting the specific differences.

30. *MELANOCHLORA SULTANEA*, (Hodgs.).

Parus sultaneus, Hodgs. Ind. Rev. 1836, p. 31.

No. 21, ♂. Kyodan, Salween River.

“In small flocks, rather noisy, in dense tree-jungles. Irides dark brown; bill greenish black.” A young male in immature plumage, the yellow crest hardly extending beyond the nape, and the dark portion of the plumage being of a dull greenish brown. Specimens from Penang and Darjeeling do not differ, and the geographically intermediate Tenasserim race seems to be identical with them. I give Mr. Hodgson's designation precedence over that of Lafresnaye,

on the authority of the date cited by Dr. Jerdon. Sumatran specimens have yet to be compared with continental, and if found to be specially distinct will have to take Lafresnaye's title of *flavo-cristatus*. Prince Bonaparte ('Conspectus') keeps the two separate, but gives no other distinction than that of size, Hodgson's species being, according to the Prince, the smallest. However, this statement is not quite reliable, for the Prince records them both from the Himalayas.

31. *MUNIA ACUTICAUDA*, Hodgs. As. Res. xix. 1836, p. 153.

No. 67, ♂. Moulmein.

A larger bird than Darjeeling specimens in my collection. Bill stouter and longer; colouring much deeper. Above not to be distinguished from Malabar specimens of *M. striata*, (Linn.), but wanting the uniform deep-brown breast and pure-white belly of that species. Formosan specimens agree much better with the Himalayan race.

32. *MUNIA UNDULATA*, (Lath.).

Loxia undulata, Lath. Ind. Ornith. i. p. 387.

Nos. 30, 31, 50. Moulmein; Schouay Goon, Salween River.

"Irides dark sienna; legs light violet; beak plumbeous, and eyelids the same. Common along the banks of the Salween River. *Thórza* or *Tow-za*, Burmese, *i. e.* Jungle-Sparrow." The continental race is considered by Horsfield and Moore as distinguishable from the Javan bird (*Loxia punctularia*, Linn., = *F. risoria*, Temm.) by the whitish grey on the rump, upper tail-coverts, and tail of the Javan race being exchanged for glistening fulvous in the continental species. From want of authentic Javan specimens I am unable to confirm this opinion; but a Flores specimen in my collection has the upper tail-coverts and margins of the rectrices glistening fulvous as in the Indian race, but of a paler hue. It is also a smaller bird than these Tenasserim specimens.

33. *CRYPHIRHINA VARIANS*, (Lath.).

Corvus varians, Lath. Ind. Orn. Supp. 1790, p. 26.

Nos. 61, ♂, 47, ♀. Moulmein.

"Tolerably common in the neighbourhood of Moulmein, frequenting large trees in parties of seven or eight. Has a rather harsh call. Irides bright blue?" The sexes do not appear to differ. Compared with a Javan specimen I can detect no further distinction than in the greater lustre of the Java bird's plumage. The dimensions are equal. It has not been discovered lower in the Malay countries than Mergui.

34. *ACRIDOTHERES FUSCUS*, (Wagler).

Pastor fuscus, Wagler, Syst. Av. 1827. sp. 6.

No. 75, ♂. Moulmein.

"Irides bright yellow; bill and legs bright yellow, the former with a bluish-green tinge at base of lower mandible." Tenasserim individuals are regarded by Mr. Blyth as identical with those inhabiting

Bengal, and agree in having bright yellow irides; while those from Southern India (*P. mahrattensis*, Sykes, P. Z. S. 1832), otherwise nearly similar in plumage, are distinguishable by having the irides white or greyish white.

From the Andamans.

1. HALCYON CAPENSIS, (Linn.).

Alcedo capensis, Linn. S. N. ed. 12. 1766, i. p. 180. no. 9.

Ispida capitis bonæ spei, Briss. Orn. iv. p. 488. no. 8.

No. 3. Port Blair, Andamans.

If we resolve to regard all the local races of this Kingfisher, or any of them, as constituting so many distinct species, we must dis sever the *A. capensis*, Linn., from the *A. leucocephalus*, Gm. Of the Linneæan species we possess a detailed description in Brisson's 'Ornithologia;' and with it this Andaman specimen very nearly agrees. The upper part of the head is "cinereous inclining to fulvous," and forms a distinct cap. Dr. Jerdon observes, when writing on the Indian form, that specimens from the east, and especially from Tenasserim, have the cap "albescent or dirty brown." Its blues are not pure, but greenish as in Brisson's type. *A. leucocephalus*, Gm., founded on Buffon's 757th plate, represents the form in which the occipital plumage is uniform with that of the neck, nape, and under surface, the cap being therefore absent, and in which the blues are pure, rich, and brilliant. A Sarawak specimen in my collection fully answers to Buffon's account and plate, even to the brown striæ of the occiput, this appearance being the result of each feather having a dark brown centre at its base, and being but narrowly edged with fulvous. When these feathers normally overlap one another, the occiput appears of a colour uniform with the nape, the brown centre of each feather being invisible; but if any of them are disarranged the occiput puts on the appearance shown in Buffon's plate. Thus *A. capensis*, Linn., forms the type of all the races with a coronal patch, and *A. leucocephalus*, Gm., of those in which the cap is wanting. To the first belong the Hindostan and Ceylon birds, the Bengal race having been accurately described by Captain Pearson (J. A. S. B. 1841, p. 633) under the name of *H. gural*; and if all the Indian specimens are, as Dr. Jerdon states, uniformly brown on the head, Pearson's name must be applied to them. A Flores specimen in my collection has the head and crest dark brown, as in Ceylon specimens of mine. But while in the Ceylon bird, which seems to be identical with *H. gural*, Pears., the scapulars and wing-coverts are dingy greenish blue, in the Flores bird the blue is intense and perfectly pure, as in the Sarawak specimen. The variations of this widely extended form have yet to be studied. Dr. Cabanis observes (Museum Heineanum, i. p. 156) that every degree of variation is to be found in a series of specimens of this species; but he does not mention whether he was certain of the localities from which each specimen came. My experience of the form is the same as that of the learned doctor, but with this addition, that the varieties are coincident with changes of loca-

lity, but are never found occurring in specimens from one and the same locality.

2. HALCYON SMYRNENSIS, (Linn.).

Alcedo smyrnensis, Linn. S. N. ed. 12. 1766, i. p. 181. no. 11.

Nos. 9, 12. Port Blair, Andamans.

No. 9 specimen has the bill half an inch shorter than that of no. 12, and yet does not exhibit any traces of adolescent plumage. The bill of no. 12 specimen is much stouter and longer than that of any one of a large series of Ceylon, Camboja, and Central Indian specimens; but does not exceed that of some collected in Candeish. In colour and its distribution I can detect no distinction between it and the specimens I have mentioned. Variation in the depth of the chestnut-brown plumage is to be found in all specimens, but this variation appears to be consequent on the age of the bird. Relying on the opinion of Mr. Strickland, I have not separated the South Asiatic from the West Asiatic forms.

3. TODIRAMPHUS COLLARIS, (Scop.)?

Alcedo collaris, Scop. Del. Flor. et Faun. Insub. ii. (1786) p. 90. no. 56?

No. 11. Andamans.

A single specimen of what I believe to be the same as the Bengal and Malayan form has been sent from the Andaman Islands. The group of local species, of which it forms one, has yet to be worked out. Temporarily I follow Messrs. Jerdon and Blyth in referring the Indian and Malayan race to Scopoli's species, although it must prove eventually to be distinct; for Scopoli's *A. collaris* was founded on Sonnerat's *Martin-pêcheur à collier blanc des Philippines*. *Alcedo chloris*, Bodd., founded on Buffon's 783rd plate, would take precedence of Scopoli's designation, could the origin of Buffon's type be shown. Buffon tells us that it is the same as a species seen by Commerson in the island of Bouru, and described by him. If so, *A. chloris*, Bodd., must belong to the Bouru form, and anyhow takes precedence of *A. chlorocephalus*, Gm., likewise founded on Buffon's 783rd plate. A Bouru specimen in my collection differs widely from the Andaman specimen sent. If the Philippine species does prove to be distinct from the Bengal and Malayan bird, this last will require another title; and that of *occipitalis*, Blyth (J. A. S. B. 1846, p. 23), given by that author to young examples from the Nicobars, may perhaps have to be adopted, unless the Nicobars do possess a race deserving of specific distinction; for, although Mr. Blyth at a later date (Cat. Mus. A. S. Bengal) cancelled the species, according to him it does vary, both in the young and adult state, from the common Bengal bird. If this variation be found to be constant, the Bengal and Malayan will require another name. I prefer following the majority of ornithologists in retaining this species in Lesson's genus rather than separating it under Dr. Cabanis's generic title *Sauropatis*.

4. *PALÆORNIS NICOBARICUS*, Gould, Birds of Asia.

Palæornis erythrogeus, Blyth, J. A. S. B. 1846, p. 23, nec Fraser, P. Z. S. 1850, p. 245.

Nos. 4, 5, 6. Andamans.

These three specimens appear to belong to this species. The type came from the Nicobars, to which islands, according to Mr. Blyth, in 1846 it was supposed to be restricted. Not having been able to compare Captain Beavan's specimens with Nicobar individuals, I am unable to assert their identity positively.

5. *ARTAMUS LEUCOPYGIALIS*, Gould?, P. Z. S. 1842, p. 17.

Nos. 7, ♂, 10, ♀. Andamans.

The male specimen is that of a mature bird. The one marked a female is in the usual dingy brownish speckled plumage of adolescence; it may, however, be a young female. At least four species of Swallow Shrikes, with white rumps and under surface, have up to now been regarded as distinct:—1st, *Lanius leucorhynchus*, Gm., from the Philippines; 2nd, *Lanius leucogaster*, Valenc., ex Manilla and Timor; 3rd, *Ocypterus papuensis*, Temm., ex New Guinea and Timor (apud Bp.); 4th, *Artamus leucopygialis*, Gould, ex Australia. Prince Bonaparte has distinguished the three first from each other solely by their comparative dimensions.

Lanius leucorhynchus, Gm., was founded on *Lanius manillensis*, Briss. (Orn. ii. p. 130), and is equal to *Lanius dominicanus*, Gm., founded on Sonnerat's *Pie-griesehe Dominiquaine des Philippines* (Voy. Nouv. Guin. p. 55, pl. 25, and also figured by Buffon, Pl. Enl. pl. 9. f. 1). This species Valenciennes (Mém. du Mus. 1820, vi. p. 27) partly includes under his *Ocypterus leucogaster*, the characters of which he appears to have drawn, not from Manilla, but from Timor specimens at the time preserved in the Paris Museum. He tells us that, as all the species of the genus have the bill blue, and not white, he preferred altering Gmelin's designation to that of *leucogaster*. I have failed in seeing a Manilla specimen; but Brisson gives the colour of the bill as *gris-blanc*, and Sonnerat states it to be *grisâtre*. Both these authors described the darker portions of the plumage as very dark; the first uses the expression *noirâtre*, while Sonnerat says that they are black; and they are represented as black in both Buffon's and Sonnerat's plates. Valenciennes described his specimens as having the head, throat, wings, and the tail above *ardoisées*. He adds that there is no more reason for adopting the title of *leucorhynchus* than there is for adopting that of *dominicanus*. Thus it would appear that the Manilla species is altogether a darker bird than that of Timor, and that Valenciennes had not seen it.

Specimens obtained by Mr. Wallace, one in Mysol and the other in Lombok, agree in every respect with the description of *A. papuensis*, Temm. (Consp. G. Av. i. p. 342), and the habitat of which is there given as Timor and New Guinea. But may not these really represent the true *leucogaster*, Val.?

The Javan and Sumatran races (*Leptopteryx leucorhynchus*, (Gm.), Horsf. Tr. Linn. Soc. xiii. p. 306) only have been referred by Prince Bonaparte to *leucogaster*, Val.; but as Valenciennes omits all mention of specimens from those islands, the adoption of his designation does not appear to be well founded. If this form does differ from the two preceding, it would seem to be without a title, were it not probable that the Andaman race is identical with it; for on comparing Captain Beavan's specimens with a Moreton Bay example of *A. leucopygialis*, Gould, I can detect no distinctions between them. Actual comparison must, however, be made with Javan and Sumatran individuals.

6. ONYCHOPRION MELANAUCHEN, (Temm.).

Sterna melanauchen, Temm. Pl. Col. 427.

No. 8. Andamans.

In full plumage.

December 13, 1866.

John Gould, Esq., F.R.S., V.P., in the Chair.

The Secretary read a letter addressed to him by Mr. R. Swinhoe, F.Z.S., dated British Consulate, Amoy, China, September 7th, 1866, announcing the shipment to the Society of a Monkey from the island of North Lena, near Hongkong, supposed to be of a new species, which Mr. Swinhoe described as follows:—

“*INUUS SANCTI-JOHANNIS*, sp. nov.

“Eyes bright hazel; face and ears flesh-coloured; cheeks with a black tuft on either cheek like whiskers; skin of under parts tinted with blue, and sparsely covered with hairs of a light grey, the hairs on the belly buff; fur of upper parts greyish brown, washed with buff, which is lighter on the head, and brickdust-red round and about the rump. Tail $4\frac{1}{2}$ inches long, blackish; and callosities flesh-coloured. Face narrow and somewhat projecting.

“Commander St. John writes to me under date Hong Kong, 27 June, 1866, ‘In one of my late cruizes in H.M. Gunboat ‘Oposun’ I put into the North Lena Island, and was fortunate enough to pick up this Monkey for you. It is a female about four months old, and is already quite tame. I tried to shoot an old one, so as to let you have the skeleton; but they were rather tough for the shot I had, and a living specimen will be much better.’”

Mr. P. L. Selater exhibited specimens of *Eustephanus fernandensis* (Gould's Trochilidæ, vol. iv. pl. 267) and *E. stokesi* (ibid.

pl. 266), and read an extract from a letter addressed to him by Herr E. L. Landbeck, Subdirector of the National Museum of Santiago, Chili, in which it was stated that these two apparently very different birds must be regarded as sexes of the same species—*E. fernandensis* being the male, and *E. stokesi* the female. The Museum of Santiago had sent two expeditions to Juan Fernandez; and on each occasion these birds were observed *paired*, and the red and green young ones found together in the same nest. It followed, therefore, that the examples of each of these birds without the metallic crown, spoken of by Mr. Gould, were to be regarded as in the young plumage of each sex. Of these, examples had likewise been transmitted to Mr. Selater by Herr Landbeck.

Mr. P. L. Selater exhibited a small bundle of feathers of a species of Cassowary, supposed to be those of *Casuarium australis*, which had been taken out of a native hut in Northern Queensland, and were of great interest as being the only portion of this bird ever brought to Europe, the skin of the original specimen procured by the late Mr. Thomas Wall having been unfortunately lost*. Mr. Selater stated that he had been informed by Mr. Walter J. Scott, who had an extensive sheep-run in the Valley of Lagoons on the Upper Burdekin River, about 100 miles westward of Rockingham Bay, that this bird was well known in the neighbourhood of Rockingham Bay under the name of the *Black Emu*, but was shy and very difficult to obtain.

In relation to this subject, Mr. Selater read the following extracts from a letter addressed to him by Mr. Walter J. Scott:—

“I fear I can tell you but little about the Black Emus or Cassowaries seen in the neighbourhood of Rockingham Bay, Queensland. I have never had the fortune to come across one myself, but have received information of them being seen on three or four occasions, in spots thirty or forty miles apart. I saw some black troopers of the native police returning from an unsuccessful pursuit of one they had seen about three miles from our Vale of Herbert Station (in lat. 18° S.). They were of course perfectly familiar with the Common Emu, and they informed me the bird they had seen was quite distinct from it. They described it as considerably smaller, and with a red head. It was on a piece of open ground, near a scrub, along a running stream. When they got within about 100 yards of it, it ran into the scrub, and they did not get a shot at it.

“The Superintendent of the same station told me on a former occasion he had seen two Black Emus, thinking they were a mere chance variety. Another person in our employment saw one on the ‘Separation Creek’ of Leichhardt, which is really a tributary of the Herbert River. I think one was also seen in the immediate neighbourhood of Cardwell. I have written to my brother Charles to use every exertion to procure you a specimen, and have told him to offer a reward for one, to stimulate the zeal of any one who may come across one. The Common Emu is very plentiful with us; and my

* See Proc. Zool. Soc. 1857, p. 270, and Gould’s Handb. B. Austr. ii. p. 206.

informants in each of the above cases were men thoroughly able to distinguish them from a Cassowary.

“Our relations with the Wild Blacks are of so unsatisfactory a nature that we can get no assistance from them.”

Mr. Gould exhibited, on the part of Sir William Jardine, a specimen of a new species of Honey-eater, of the genus *Ptilotis*, from Victoria, Australia, proposed to be called *Ptilotis cassidix*, together with some other rare Australian species, amongst which was a skin of the rare Finch, *Emblema pictum*, from Northern Australia.

Mr. St. George Mivart read the first of a series of memoirs entitled “Contributions towards a more Complete Knowledge of the Skeleton of the Primates,” of which the present related to the “appendicular Skeleton of the Orang (*Simia*).”

This paper will be published in the Society’s ‘Transactions.’

The following papers were read:—

1. Note on a Bat from the Azores.

By Dr. W. PETERS, F.M.Z.S.

Mr. Osbert Salvin has had the kindness to send me four specimens of a Bat, collected by Mr. F. Godman, F.Z.S., in Fayal. They are in a very bad state, and they seemed at first sight to belong to a new species of the genus *Vesperugo*, Keys. et Blas.* But on closer examination they turned out to belong to *Vesperugo leisleri*, Kuhl, a species very widely distributed through the Palæarctic region. This species has not the feet entirely free, as described by Blasius, but the wings are extended either to the beginning or to the middle of the metatarsus.

I do not know that any Bats have been described from the Azores; and therefore this notice may perhaps not be without some interest.

2. Note on a Collection of Mice, made by Captain A. C. Beavan at Maubhoum in 1865. By Dr. W. PETERS, F.M.Z.S.

Capt. Beavan’s collection of Mice contains three species, all belonging to the genus *Mus*, as now restricted.

Two of them are indeterminable, each being represented by a single specimen in a very bad state—one being immature and without front

* *Vesperugo* and *Vesperus* are generally by English writers called *Scotophilus*. But this is wrong; for I have lately very carefully examined the original specimen in the British Museum, on which Leach founded his genus *Scotophilus*. I find that it is without any doubt a very young specimen of *Nycticejus temminckii* from India. The name *Scotophilus*, therefore, is to be reserved for the Old World *Nycticeji*, while *Nycticejus* may be restricted to the American species, which are in several respects different, and for which Rafinesque originally proposed this name.

teeth, and the other apparently full-grown, but without tail, and with the head injured. Only so much is to be seen, that they belong to the short-eared Mice, like our *M. agrarius* and *M. minutus*.

A third and seemingly hitherto undescribed species, of very diminutive size, fortunately is represented by numerous specimens in a tolerable good state.

MUS BEAVANII, n. sp.

Above rusty brown, medially black; lips and the whole underside pale ochraceous; feet white, all the hair being slate-coloured at the base; tail above brown, below with white hairs; upper whiskers black, lower white. Rather smaller and more delicately built than our Common Harvest-Mouse. Ears rounded, and, when laid forwards, reaching to the eye. The proportions of the fingers, toes, and nails appear to be the same as in *Mus minutus*; only the outer toe is proportionally a little shorter. The hand-sole has five, and the foot-sole six pads, which are much smaller and more pointed than in that species. The female has five pairs of teats, two between the legs, one before and two behind the armpit. Tail scantily covered with short rigid hair. The teeth have exactly the same form and the same relative proportions as in *Mus decumanus*.

Measurements of a full-grown female with very developed teats, which show that she had been nursing:—

	mètre.
From snout to base of tail	0·058
Length of tail	0·054
——— of head	0·022
From the snout to the eye	0·009
From the eye to the ear	0·006
Length of ear	0·010
Breadth of ear	0·009
Length of hand with claws	0·006
——— of foot with claws	0·014
——— of skull	0·017
——— of row of molars	0·0035

This species cannot be confounded with *Mus minutus*, which has much shorter ears, only four pairs of teats, the outer toe longer, and much broader pads on the soles.

3. Note on the Geographical Distribution of the Narwhal (*Monodon monoceros*). By Prof. W. LILLJEBORG, F.M.Z.S.

In my 'Synopsis of the Cetaceous Mammalia of Scandinavia,' published by the Ray Society (1866), it is stated at page 245 that "there is a drawing at the Landbohögskola, at Copenhagen, representing a Narwhal that was stranded in 1803 in the Kielerbugt." This I find is a mistake, as Professor Reinhardt informs me that the drawing in question really represents a *Hyperoodon*, the specimen

which, according to Voigt (F. Cuvier, Cétacés, p. 244) and Eschricht (Zool.-anat.-phys. Untersuch. u. d. nörd. Wallthiere, p. 24), was taken in the Bay of Kiel in December 1801. This supposed evidence of the appearance of the Narwhal in the Baltic Sea has therefore no foundation.

4. On *Galago murinus*, Murr.

By ANDREW MURRAY, F.L.S.

In 1859 I described, under the name of *Galago murinus*, a small *Galago*, of which I had received a specimen from Old Calabar through my much valued friend the Rev. W. C. Thomson.

From the description and the figure which was published along with it, Dr. Gray came to the conclusion that the animal I had described was only the young of *Galago demidoffii*, Fisch.; and in 1863, in the 'Proceedings' of this Society, he referred to it as synonymous with that species, saying "I am induced to suppose that Mr. Murray's *Galago murinus* from Old Calabar is the young of this species, as the hind foot is figured about $1\frac{1}{4}$ inch long." I should observe that the figure was not very characteristic, and the hind foot is represented in a position which makes it a trifle too long.

This synonymy is adopted by Mr. St. George Mivart in his paper "on the Crania and Dentition of the *Lemuridæ*"—I presume, upon the authority of Dr. Gray's conjecture; and now that it has got into the stream of synonyms, it will of course float on among them, unless I can drag it out before it has got much headway.

Having received two additional specimens, both in spirits, I have presented one of them to the Museum of the Royal College of Surgeons; the other I have taken out of the spirits and show it to the Fellows of the Society this evening; and after it has undergone the scrutiny of their inspection it will be deposited in the British Museum. Both specimens, as well as a third which I received some years ago, although all received at different times, are identical in size and appearance. These specimens will speak for themselves, and I leave the characters which may be drawn from them to the appreciation of mammalogists.

I wish to speak now only to the supposed synonymy with *demidoffii* on the score of youth. On that point the case stands thus. Specimens of a *Galago* of two sizes, not unlike each other, are received from the same coast, the one being nearly as large as a Rat, the other nearly as small as a Mouse; the larger is what is known as *G. demidoffii*; the smaller what I have described as *G. murinus*.

1. Now my first answer to Dr. Gray's conjecture is, that the animals of both sizes are recognized as distinct species by the natives and missionaries.

In a supplementary communication which I made regarding their habits, and which was published in the 'Edinburgh New Philosophical Journal,' in January 1860, I quoted the following passage from a letter of Mr. Thomson's:—

“Young ones of both species are brought to us about this period of the year (July 26). Mr. Robb has a young specimen of the smaller species just now, and about this time last year I became possessed of one of the larger. It was a most interesting and amusing pet, not only quite tame, but manifesting strong attachment. I had it for about six weeks in my possession, when, unfortunately both for myself and it, it took a false leap into a water-barrel and was drowned. It was a very epitome of zoology, of the size and colour of a large rat; it had the tail of a squirrel, the facial outline of the fox, the membranous ears of the bat, the eyes and somewhat of the manners of the owl in its cool odd way of peering at objects, the long slender fingers of a lean old man, who habitually eats down his nails, and all the mirthfulness and agility of a diminutive monkey. It hated its cage at night, but delighted to leap among the bars of the chairs ranged purposely round the table for it. It could clear a horizontal distance of at least 6 feet at a leap; and whenever it fell, as during its short apprenticeship it often did, and from alarming heights too, it gave expression to its parenthetic chagrin by a rough sort of purring. It possessed a curious power of folding its membranous ears back upon themselves, and somewhat corrugating them at pleasure; and it appeared to me that the palms of its hands, all four, were endowed in some degree with the power of suction, such as the walrus is said to possess in perfection. I have seen it maintain itself in positions where the mere lateral pressure of its limbs appeared to be inadequate for the purpose; and I once applied it to the side of a cylindrical glass shade, of which it could not embrace so much as a third of the circumference, and sure enough it maintained its position for some time, gradually sliding down until it gave way. The palm was very much depressed, always clean and glistening, surrounded by five papilliform growths, those near the roots of the fingers serving as points of opposition to them, the fingers never closing beyond the palm.

“Mr. Robb had one of your species in his possession for a considerable while. It devoured grasshoppers and even the fierce *Mantides* greedily, as well as moths, little as it was; but I never saw mine muster courage enough to attack either grasshopper or *Mantis*, though nearly twice as large as Mr. Robb's. No doubt mine would by-and-by have become less particular and more daring.

“With its friends the smaller species, which we have figured, was very familiar, and used to run over their persons with perfect freedom. A favourite place of refuge was up the coat-sleeve of its master; and a still more frequent retreat was under his whisker, and between it and his shirt-collar.”

This sufficiently shows the views of those who have seen these two species in their native country.

2. The next evidence I shall offer is the fact that the small ones breed, which, although it may not absolutely indicate maturity, at least implies nearly full size.

My friend Mr. Thomson has been invalided, and is now in this country. I have not had the pleasure of seeing him since his return;

but in corresponding with him I took occasion to mention Dr. Gray's doubt, and to ask him if he could say whether the specimens which he had sent to me, more especially those which I had last received, were young ones of the larger species, or belonged to the smaller. To this he replied:—"The *Galago* you speak of is most likely to be a sample of your own species: we undoubtedly have two species in Old Calabar, the other being much larger than yours; but of it I have seldom got specimens. I have had individuals of both kinds in captivity a long time. There were three or four of your species, only one of the larger; the former, *though they breed in captivity*, never grew more than about 3 or 4 inches long in the body, from the tip of the muzzle to the root of the tail, the other fellow growing within the year to the size of a large rat, 6 or 7 inches long. I think I have sent you young specimens (one or more) of the larger species, and hence dare not say positively which of the two the specimen in your possession is. If I saw it I should know it at once."

In consequence of this I forwarded the specimen, now on the table, to Mr. Thomson for his opinion, and received the following reply:—"I received the little *Galago* this morning, and have no hesitation in pronouncing it to be one of your species."

3. Another mark of distinction, which, however, is difficult to put into words, is the voice. Mr. Thomson says, "The voice of the little Calabar species, once heard, is easily recognized, that of the larger species being totally different and of very lugubrious tone. Indeed I think the latter is the same that is ascribed to the Awuri (*Tiliqua fernandesi*), the (supposed) venomous lizard of the same place."

I have elsewhere (Proc. Roy. Phys. Soc. Edinb. i. 417) given an account of the cry of this lizard, and the tale which the natives have engrafted upon it.

It appears, from another part of the same letter, that we have not yet exhausted all the treasures of Old Calabar, and that more novelties await the adventurous explorer:—

"When last at Calabar I got possession for an hour or so of a beautiful little creature of a kind rather between the *Galago* and the Mouse than the Monkey and the Squirrel. It was altogether a dumpier little creature than the *G. murinus*, with tail not so long in proportion, and no remarkable disparity between the fore and hind legs. All its hands were armed with claws. The fur had rather less brown in it than that of the *Galago*. While I endeavoured to get a cage for it, somebody removed the shade in which I had put it for the time, and my little friend decamped without saying good-bye. It was a pretty little thing."

5. Further Observations relating to the Anatomy of the Giraffe. By EDWARDS CRISP, M.D., F.Z.S., &c.

It will be remembered that at two meetings of this Society I have described some points connected with the anatomy of the Giraffe (P. Z. S. 1864, p. 63 and p. 269). In my first paper I gave the length of the intestinal canal of three Giraffes, in which I had measured it, and also the length of the alimentary tube of many other ruminants that I had examined, by way of contrast. In the old female Giraffe (eighteen years of age) this canal measured 254 feet, in the young male 209 feet, and in a young male aged two months 107 feet 11 inches. I mentioned in that paper that in the length of the alimentary tube the animals examined by me differed materially from those inspected by Professor Owen, the length of the tube in the three adult animals dissected by him being only 124, 133, and 136 feet ('Transactions,' ii. p. 227). I also in that paper alluded to the account of an examination of a young Giraffe by MM. Joly and Lavocat, as described in the 'Mémoires du Muséum d'Histoire Naturelle de Strasbourg.' These gentlemen were astonished at the great length of the intestinal tube, which they describe as really extraordinary: it measured 65 metres 25 millimetres, or about 211 feet; but it must be remembered that this was a young animal. MM. Joly and Lavocat express their belief that the Giraffe, with the exception of the Sheep, has relatively a longer intestinal tube than any other mammal: but this is a mistake; many mammals, including several ruminants, have, taking the length of the body into account, a longer intestinal canal than the Giraffe: the Pig, Seal, and Porpoise need only be mentioned as examples; I could adduce many others.

In my second paper I described other points relating to the anatomy of the Giraffe, especially that in connexion with the intestinal glands (so called), and also a peculiar ridged appearance of the rectum, of which I showed wax casts, and which I thought at that time was a natural appearance. These descriptions were taken from a fourth specimen I examined, that died in the Society's Collection, probably from spasm of the glottis. In this animal, a young male aged seven months, the alimentary canal measured 123 feet 6 inches.

The Society will pardon me for this repetition; but it is necessary for the proper understanding of the subject.

The recent death of a female Giraffe (the daughter of the one first inspected), aged twelve years, at the Zoological Gardens from fire has enabled me to obtain further information upon two points which I was anxious to investigate,—1st, the length of the alimentary tube; 2ndly, the appearance and size of the so-called cæcal gland in an adult animal. I first ascertained by examination of the rectum that there were no such ridges or elevations as I saw and described in the young Giraffes; so I infer that these ridges are peculiar to the young animal, or that their presence was accidental. I have since seen in several oxen that I have examined that were killed for cattle-plague

the same ridge-like appearance of the rectum ; but I had not previously seen it in any other ruminant excepting the young Giraffes alluded to.

On this occasion I was fortunate in having the assistance of Dr. Murie in the examination and measurement of the intestinal tube of the Giraffe just spoken of, and we found the length as follows :—

	ft.	in.
Œsophagus	6	2
Stomach	5	9
Small intestines	130	6
Large intestines	83	0
	<hr/>	
	225	5

It will be seen that, taking age into account, this animal had as long an intestinal canal as its mother.

I have made a large number of measurements* of the alimentary canal in old, adult, young, and foetal animals, the account of which would occupy too long space in the present paper, but the physiological deductions from which are of great interest. In the five Giraffes alluded to, when the age and size of the animals are considered, the progressive increase of the alimentary tract is made out with tolerable clearness.

I will now allude to the appearance of the cæcal crypts in the adult animal. In the young Giraffe, seven months old, mentioned in my last paper, these crypts occupied a space of about 2 square inches. In the adult animal they extended over a larger surface ; but their increase was not very considerable. It will be recollected that this question, as to the rate of increase of these structures as the animal advanced in age, was thought to be one of great interest at a former Meeting of the Society.

On carefully examining the crypts and sacculi near to the pylorus of the young Giraffe described in my last paper I find, on removing the muscular coat from behind, a number of minute oval-shaped glands, the mouths of which terminate in the sacculi.

The cæcal aggregation of sacculi and crypts is called by Dr. Cobbold (Museum of Natural History, p. 156) a compound gland ; and, as I have before said, he compared seven of the pouches to the water-bags of the Camel ; but they bear little or no resemblance to these, as they are non-elastic and are not extended externally when inflated.

When I first examined these crypts I failed to detect their glandular character ; but after a more minute microscopical examination by daylight I have no doubt respecting their glandular nature. They are composed of globular-shaped crypts, joined by their sides to the neighbouring crypts ; the parietes are composed of small

* In measuring the intestinal canal, as I have stated in former papers, I pull the intestines from the mesentery. If two ruminants, Sheep for example, are examined at the same time, one by the method just described, and the other by *carefully cutting close to every part of the intestines with scissors*, the length will be found to be nearly the same ; the latter method is tedious, and unnecessary when the former can be practised.

oblong glands, which terminate in open mouths something like the proventricular glands of a bird. The mouths of but few of them are distinguishable; but the preparation has been in spirits for two years, and its normal structure is not so readily made out. I speak therefore with some amount of hesitation.

The three agminated patches in the small intestines, alluded to in my former paper (P. Z. S. 1864, p. 269), consist of large villi (as seen in the woodcut fig. 1, magnified 20 diameters). Fig. 2 represents the duodenal glands and crypts of about half their natural size; a small portion of the duodenum only is depicted. The size of the crypts has been diminished by immersion in spirits.

Fig. 1.



Fig. 2.



It will be interesting to compare these with the same structures in an adult animal. Illiger and Swainson placed the Giraffe with the Camels; and these glands, crypts, and villi bear some resemblance to those found in the *Camelidæ*; but the blood-corpuseles of the Camel and many parts of its anatomy differ widely from those of the Giraffe.

As I have mentioned in a former paper, a large agminated cæcal gland is seen in the same situation in many animals; that in the Nylgau (*Antilope picta*) and that in the Jaguar (*Felis onca*) are very remarkable. Its use remains to be determined by future investigators; but it is probably a secretory gland adapted for the special requirements of this part of the tube.

It is worthy of note that in the mother of this Giraffe I found several *Echinococci* in the spleen; in this Giraffe the liver contained one of these parasitic cysts.

Not wishing to interfere with the province of Dr. Murie, I leave other matters to his description. As this animal was in good health when suffocated I took a piece of its flesh and had it cooked in two pieces,—the one as a chop, the other, after being prepared with treacle, nitre, and spice, like the so-called Dutch or “hung beef.” The fresh-cooked meat had rather a musky smell, and the flavour was not so good as that of beef or mutton; the spiced meat was excellent, and equal to that of any beef prepared in the way I have described. I mention this for two reasons,—first, because the Giraffe is not an unlikely animal to be kept hereafter during the summer in some of our English parks; and secondly, because Dr. Livingstone

has stated in one of his works that the flesh of the Giraffe is not good to eat, or that it has not an agreeable flavour.

P.S. Since this paper was read, I have had an opportunity of examining the Hippopotamus that was recently burnt at the Crystal Palace; and in this animal I find a still more remarkable intestinal gland, of the same character as that of the Giraffe.

6. On some Additions to the Catalogue of Birds collected by Mr. E. Bartlett on the River Ucayali. By P. L. SCLATER, M.A., Ph.D., F.R.S., and OSBERT SALVIN, M.A., F.L.S., &c.

Since our previous communication to the Society on Mr. Bartlett's ornithological collections in Eastern Peru*, a second, small collection has been received, amongst which are examples of twenty species which did not occur in the former one, and of which the names with some remarks are now given. We have no exact information as to the locality of the present series; but they are probably from the Lower Ucayali or the vicinity of Nauta. Mr. Bartlett has now moved further up, to Yurimaguas on the Huallaga, and its vicinity.

Fam. TANAGRIDÆ.

1. *PROCNIAS OCCIDENTALIS*, Sclater, C. A. B. p. 55. 1013-16.

Fam. FRINGILLIDÆ.

2. *GUIRACA CYANOIDES* (Laf.); Sclater, C. A. B. p. 101.

Fam. DENDROCOLAPTIDÆ.

3. *ANCISTROPS LINEATICEPS*, Sclater, C. A. B. p. 157.

One example, agreeing with Sclater's type specimen from the same country.

4. *AUTOMOLUS ERYTHROPTERUS*, Sclater, C. A. B. p. 158.

A single example, agreeing well with Sclater's type, which is a Bogota skin.

5. *XENOPS HETERURUS*, Cab. & Hein.; Sclater, C. A. B. p. 159.

A single example of very diminutive size, but otherwise best agreeing with *X. heterurus* ex Bogota. Whether this form be really distinct from the Brazilian *X. rutilus* is perhaps rather doubtful.

Fam. FORMICARIIDÆ.

6. *CYMBILANIUS LINEATUS* (Vieill.); C. A. B. p. 170.

7. *FORMICIVORA QUIXENSIS* (Corn.); C. A. B. p. 182.

* Proc. Zool. Soc. 1866, p. 175.

8. *HYPOCNEMIS FLAVESCENS*, Sclater, P. Z. S. 1864, p. 609.

A single skin, agreeing with Sclater's type specimen, collected by Natterer at Marabitanas in 1831.

9. *MYRMELASTES PLUMBEUS*, Sclater, P. Z. S. 1858, p. 274, pl. CXLIII.; C. A. B. p. 189.

One skin of this scarce species.

Fam. TYRANNIDÆ.

10. *LEPTOPOGON AMAUROCEPHALA*, Cab.; C. A. B. p. 213.

Apparently not different from Brazilian skins. Cabanis has lately separated the northern form (from Mexico and Central America) as *L. pileatus* (Journ. f. Orn. 1865, p. 414).

Fam. COTINGIDÆ.

11. *PIPRA AURICAPILLA*, Licht.; C. A. B. p. 249.

Examples of both sexes of this species.

12. *MACHÆROPTERUS STRIOLATUS* (Bp.); C. A. B. p. 250.

Females, apparently of this species.

13. *CHIROMACHÆRIS MANACUS* (Linn.); C. A. B. p. 252.

One skin, apparently referable to the female of this species.

14. *PHÆNICOCERCUS NIGRICOLLIS*, Sw.; Sclater, C. A. B. p. 253.

A single skin seems referable to the female of this species.

Fam. PSITTACIDÆ.

15. *CHRYSOTIS PÆCILORHYNCHA* (Shaw).

Fam. CHARADRIIDÆ.

16. *CHARADRIUS VIRGINICUS*, Licht. Doubl. p. 70 (1823); Baird, B. N. A. p. 690.

Fam. SCOLOPACIDÆ.

17. *ACTITURUS BARTRAMIUS* (Wilson); Baird, *l. c.* p. 737.

18. *HIMANTOPUS NIGRICOLLIS*, Vieill.; Baird, *l. c.* p. 704.

Fam. ARDEIDÆ.

19. *ARDEA AGAMI*, Gm. *Agamia picta*, Bp. Consp. ii. p. 127.

Fam. RALLIDÆ.

20. *PORZANA EXILIS* (Temm.). *Rallus exilis*, Temm. Pl. Col. 523. *Gallinula ruficollis*, Sw. An. in Men. p. 349.

Agrees with specimens of this species in the British Museum.

7. List of Birds observed at Wellington, Neilgherry Hills, about 6000 feet above the level of the sea, during the months of April and May, 1866. By Captain G. E. BULGER, 10th Regiment, F.L.S., C.M.Z.S.

1. *NEOPHRON PERCNOPTERUS*, Linn. White Scavenger Vulture*. Tolerably abundant.

2. *TINNUNCULUS ALAUDARIUS*, Briss. Kestrel. I only saw four or five, near the top of one of the hills.

3. *MICRONISUS BADIUS*, Gmel. Shikra. Saw two only.

4. *HALIASTUR INDUS*, Bodd. Maroon-backed Kite. Apparently not numerous.

5. *MILVUS GOVINDA*, Sykes. Common Pariah Kite. Plentiful.

6. *HIRUNDO DOMICOLA*, Jerdon. Neilgherry House-Swallow. Tolerably abundant.

7. *HIRUNDO DAURICA*, Linn. Red-rumped Swallow. Appears to be common.

8. *COTYLE CONCOLOR*, Sykes. Dusky Crag Martin.

I saw only a few of these; but met with one nest, on the 15th of April, which contained young ones: it was under a projecting crag, near one of the mountain streams.

9. *CYPSELUS MELBA*, Linn. Alpine Swift.

These noble Swifts were abundant at Wellington and at Conoor; the contrast between their size and that of the common Indian species (*C. affinis*) is very striking.

10. *CYPSELUS AFFINIS*, Gray. Common Indian Swift. Plentiful. Frequenting the same localities as *C. melba*.

11. *PALÆORNIS SCHISTICEPS*, Hodgson. Slaty-headed Parrakeet. I only saw one individual.

12. *CENTROPUS RUFIPENNIS*, Illiger. Common Coucal.

Abundant everywhere in the jungles, where its curious hooting cry (which sounds like *hoo-hoo-hoo-hoo-hoo*, uttered slowly, with a long stress upon the first, third, and fifth syllables) is constantly to be heard. It is a showy bird, owing to the bright chestnut hue of its back and wings.

* The nomenclature is that of Jerdon's 'Birds of India.'

13. *TACCOCUA LESCHENAULTII*, Lesson. Southern Sirkee.

I only met with three of these birds, on one of the slopes of the Dodabetta range of hills, about 6500 feet above the sea-level.

14. *ARACHNECHTHRA ASIATICA*, Latham. Purple Honeysucker.

A common bird at Wellington, and constantly about the gardens. It has a feeble little song, which it frequently entertained us with.

15. *DICÆUM CONCOLOR*, Jerdon. Neilgherry Flowerpecker.

This bird did not appear to be very plentiful, notwithstanding its English name.

16. *UPUPA NIGRIPENNIS*, Gould. Indian Hoopoe.

A pair of these were daily visitants of our garden; I saw no others.

17. *LANIUS ERYTHRONOTUS*, Vigors. Rufous-backed Shrike.

One of these Shrikes resided constantly in our garden, and he was very rarely silent. From the earliest dawn to sunset his curious voice was to be heard, uttering every variety of sound within his power. He generally sat on one of the highest branches of an acacia tree, twittering, and screaming, and chattering away until his harsh tones became positively annoying. His chief note was like "*cover-it-up*," pronounced very quickly; this was repeated several times, and then he usually followed it with "*kee-up*," laying a great emphasis on the first syllable, and running the second rather short. He was also fond of another note, which sounded remarkably like "*give-us-a-bit*," uttered with great rapidity. Occasionally he warbled like a Canary; but it was not often that he condescended to anything so musical, or varied his usual harsh utterances. He was an excellent mimic, and amongst the calls of other birds which he imitated to perfection was the "*did-he-do-it*" of the Red-wattled Lapwing (*Lobivanellus goensis*). All this time the female, for whose pleasure he doubtless exerted his powers of making a noise so incessantly and successfully, was the occupant of a nest which hung from one of the pendulous branches of an acacia tree close by, completely inaccessible to me; otherwise I might have been tempted to appropriate the eggs.

18. *DICRURUS MACROCERCUS*, Vieillot. Common Drongo-Shrike.

The King Crow did not appear to be plentiful.

19. *LEUCOCERCA PECTORALIS*, Jerdon. White-spotted Fantail.

This little bird, to my fancy, sings most melodiously and softly, especially in the early morning, soon after sunrise. One paid our garden at Wellington constant visits, and on such occasions he was seldom silent, but continued to chaunt his sweet little song at intervals of about a minute. His stay was never very lengthened, rarely extending over half an hour or thereabouts. He was a busy, restless little creature, hopping and flitting about amongst the branches without intermission, and spreading out his tail like a fan repeatedly.

His note, which was soft and weak, appeared to me to resemble the words "*pretty Bobby, sweet-oh-sweet : sweetly,*" whistled slowly, and with the first, third, fifth, and seventh syllables of the sentence prolonged.

20. *HYPSSIPETES NEILGHERRIENSIS*, Jerdon. Neilgherry Black Bulbul.

A few only came under my notice.

21. *OTOCOMPSA JOCOSA*, Linn. Red-whiskered Bulbul.

Perhaps the commonest bird about Wellington : I daily saw dozens of them. They are perpetually on the move, and continually exercising their sweet flute-like voices.

22. *PYCNONOTUS HÆMORRHOUS*, Gmelin. Common Madras Bulbul.

Abundant about Wellington.

23. *PRINIA SOCIALIS*, Sykes. Dark-ashy Wren Warbler.

One of these birds only.

24. *PRATINCOLA ATRATA*, Blyth. Neilgherry Black Robin.

A constant frequenter of the gardens and roadsides ; it sings sweetly, and does not manifest much fear of human beings.

25. *ORTHOTOMUS LONGICAUDA*, Gmelin. Indian Tailor-bird.

I only met with one individual of this species.

26. *CALOBATES SULPHUREA*, Bechstein. Grey-and-yellow Wag-tail.

I only saw two or three.

27. *PARUS CINEREUS*, Vieillot. Indian Grey Tit.

These pretty, inquisitive little birds were very common ; and I constantly saw small parties of them wandering about the garden, and even paying visits to the verandah of the bungalow. They are very confiding and familiar in their habits, and I have had them come within 2 feet of where I was sitting.

28. *CORVUS SPLENDENS*, Vieillot. Common Indian Crow.

Seemingly as abundant and as impudent as in other parts of India.

29. *CORVUS CULMINATUS*, Sykes. Indian Corby.

Common.

30. *DENDROCITTA LEUCOGASTRA*, Gould. Long-tailed Magpie.

One only of these birds came under my observation. It had a loud voice and a peculiar call.

31. *ACRIDOTHERES TRISTIS*, Linn. Common Myna.

Most abundant. Dozens were to be seen each day, following at the heels of the natives who were engaged in ploughing up the fields.

32. *MUNIA MALABARICA*, Linn. Plain-brown Munia.

Tolerably common.

33. *ESTRELLA AMANDAVA*, Linn. Red Waxbill.

Two flocks of *Amaduvats* passed close to me one day in the early part of May, the only ones I met with.

34. *PASSER INDICUS*, Jard. & Selby. Indian House-Sparrow.

Common, and familiar as usual.

35. *ALAUDA GULGULA*, Franklin. Indian Skylark.

Common. It sings very sweetly. But those I saw did not soar above fifteen or twenty yards.

36. *PALUMBUS ELPHINSTONEI*, Sykes. Neilgherry Wood-Pigeon.

An inhabitant of the sholas, or forest-patches of the hills; I only saw one bird.

37. *TURTUR RISORIA*, Linn. Common Ring-Dove.

Apparently rare.

38. *GALLUS SONNERATII*, Temm. Grey Junglefowl.

One bird only.

39. *PERDICULA ERYTHORHYNCHA*, Sykes. Painted Bush-Quail.

Abundant. I constantly flushed them from the sides of the roads, especially towards evening.

40. *LOBIVANELLUS GOENSIS*, Gmelin. Red-wattled Lapwing.

The curious cry of this bird, resembling the words "*did-he-do-it*," is very shrill, and audible at a long distance. I found a pair of them in a marshy valley at the foot of one of the higher hills.

8. Notes on the most frequent Fosterparents of the Cuckoos of Australia. By EDWARD P. RAMSAY, of Dobroyde, New South Wales, C.M.Z.S.

1. THE LINEATED ACANTHIZA. *Acanthiza lineata*, Gould's Birds of Australia, iii. pl. 61.

This pretty little species is one of the most common birds in the neighbourhood of Sydney, and, with the exception of *Acanthiza nana*, is the most diminutive of its genus yet known. It shows a decided preference for the leafy tops of the *Eucalypti* and ends of the

branches of almost any tree or bush, where it seeks for minute insects and the larvæ of various minute *Lepidoptera*.



Nest of *Acanthiza lineata*.

The nest of the Lineated *Acanthiza* is one of the most beautiful of those of our Australian birds. It is a neat, oval, compact, and remarkably strong structure, in length $4\frac{1}{2}$ to 5 inches, by 3 inches through, composed of fine shreads of stringy bark, closely interwoven, and frequently ornamented with pieces of white spiders' nests. It is lined warmly with feathers, opossum-fur, or the silky down from the seed-pods of the native cotton-tree.

The nest is suspended to a thin twig at the end of some leafy bough by the top; and the small opening, about 2 inches down the side, is neatly covered with a hood, which excludes both the sun and rain. Some of the nests are without any ornament; others are decorated with pieces of white paper-bark, or with green and white spiders' nests. Long streamers of bleached seaweed are also often used; and when the nests are placed in the gullies of the ranges, a beautiful bright-green string-like *Hypnum* is employed.

We find this species of *Acanthiza* usually the first to commence breeding. I have taken its eggs in July, but for the most part find them from August to September. They are three in number, rather long, and of a beautiful pinky white, zoned at the larger end with minute freckles and irregular markings of a light brownish red, having also a few minute linear dashes of the same colour over the rest of the surface. The zone at the tip of the larger end is extremely characteristic; few specimens are found without it; but some, which I believe to be the eggs of young birds breeding for the first time, are of a pure white without any markings whatever. The average length is $\frac{6\frac{3}{10}}$ and $\frac{7}{10}$ of an inch, by $\frac{5}{10}$ in breadth. This species has two, and sometimes three broods in the year, stragglers breeding as late as December and January, and is perhaps more frequently the fosterparent of the Bronze Cuckoo (*Chalcites lucidus*) than any other species. Two Cuckoo's eggs of this species have more than once been taken out of the one nest at the same time, but we have never found more than one young Cuckoo hatched.

Except during the breeding-season, the Lineated *Acanthiza* is found to assemble in small troops from five to eight or ten in number, traversing the leafy boughs of the *Eucalypti*, turpentine (*Syncarpia*), and almost all trees alike, showing no preference to any species.

This *Acanthiza*, although frequently found building its nests within 2 or 3 feet of the ground, as well as among the higher branches of the trees, is strictly arboreal.

Their song is a slight twitter, or rather a combination of twitterings, very merry and lively, besides a pleasant little warble of short duration, invariably emitted when engaged in conveying a fresh piece of material to its nest.

2. THE YELLOW ACANTHIZA. *Acanthiza nana*, Gould, Birds of Australia, iii. pl. 60.

This species, the smallest of its genus, and doubtless the most diminutive of our Australian birds yet discovered, with the exception of *Smicrornis flavescens*, closely resembles *Acanthiza lineata* in its habits and actions. Seldom, if ever, found on the ground, it may almost always be observed among the thickest and most leafy boughs, creeping about through the foliage, clinging, head downwards, to the ends of the twigs—in every possible position—sometimes fluttering in front of a bunch of leaves, and darting into the midst of them to capture some spider or grub.

It is a noisy little bird, especially during the early part of the morning, at which time it is exceedingly lively and busy searching for food.

The Yellow *Acanthiza* has no continued song; but nevertheless it is very delightful to hear its pleasant twittings among the flowerbeds and fruit-trees, its pleasing and varied sounds being occasionally accompanied by a sharp note resembling "tsze," "tsze," "tsze," "tsze," "tsze," "tsze," &c., hissed through the teeth.

The nest of this species is not by any means as neat a structure as that of *A. lineata*; it is, moreover, placed in situations quite dif-

ferent. It is of an oblong form, and placed among the topmost twigs of some bushy shrub, composed of red shreds of stringy bark and grasses, and often beautifully decorated with green mosses and lichens, and lined with native cotton-tree down, feathers, or fine grasses. The entrance, which is about $1\frac{1}{2}$ inch from the top, having its edges but roughly finished off, and not covered by any hood, is 1 inch in width. The Yellow *Acanthiza* shows a decided preference for the tops of the native tea-trees; but its nest may also be found in various other trees and shrubs, but always placed among the outside twigs. We have taken nests from a species of *Acacia* overhanging the creeks and rivers. Sometimes they are wholly composed of fine strips of stringy bark, which, when new, give them a reddish-brown appearance. At other times they are composed of dry grass, a great quantity of white cobweb being used in all cases. The total length of the nest of *A. nana* is 3 inches, by $2\frac{1}{2}$ in breadth, being somewhat narrower at the bottom. The eggs are three in number, from $\frac{6}{10}$ to $\frac{6\frac{1}{2}}{10}$ of an inch in length and $\frac{4}{10}$ in breadth, strongly blotched, dotted, or freckled with dark dull reddish brown, inclining to chocolate in some, to red in others, and having a few dots of dull lilac towards the larger end.

In some specimens the markings form a zone on the thick end; in others they are equally dispersed over the whole surface, and take the form of irregular blotches. The birds may be found breeding in September and the three following months, and are frequently the fosterparents of the Bronze Cuckoo.

3. THE SCRUB-ACANTHIZA. *Acanthiza pusilla*, Gould's Birds of Australia, iii. pl. 53.

To complete the list of *Acanthizas* I may make a few remarks upon the present species; but I am afraid I cannot add much to the stock of knowledge already given in Mr. Gould's valuable 'Handbook' to his 'Birds of Australia.'

A lover of the scrubs and thick bushes, this species, although plentiful, is not so often met with as the other members of its genus. In its habits it seems to be intermediate between *Geobasileus* and the true *Acanthiza*, being frequently seen on the ground as well as in the trees. I have never noticed it mounting high among the branches, nor does it appear to like thinly wooded districts, showing a decided preference for the brushwood and edges of scrubs. Upon every occasion that we have discovered its nest it has been placed within a few inches of the ground. One I have at present before me is suspended to the underside of a fern (*Pteris aquilina*): it is a closely interwoven, dome-shaped structure, in form closely resembling that of *A. lineata*, but differs from it in the outside being made as rough as possible, with coarse pieces of strong bark and leaves of grasses, which hang down and stick out from it in various directions; it is composed chiefly of stringy bark and the white paper-like bark of the tea-tree, lined with cotton-tree down and feathers; length 4 inches, by 3 in breadth. The eggs, three in number, have a pure-white ground, zoned at the larger end with freckles of light reddish

brown (in tint duller than in those of *A. lineata*), which in some specimens are also distributed over the rest of the surface. Its note is much louder and more varied than that of any other species. Besides being the fosterparent of the Bronze Cuckoo, this species has frequently the pleasure of rearing the young of the Brown Cuckoo (*Cuculus cineraceus*), three nests out of four lately found of this *Acanthiza* having contained an egg of the *C. cineraceus*.

4. YELLOW-RUMPED GEOBASILEUS. *Geobasileus chrysorrhous*, Cab. Mus. Hein. i. p. 32.

We can hardly claim the present species as a resident Sydney bird, having met with it only upon rare occasions in this neighbourhood. We found it breeding, however, at MacQuarie Fields in 1862; but even there it was considered rare, although about twenty miles further inland it is very plentiful. The Yellow-rumped *Geobasileus* is usually met with in small troops of from five to ten in number, nearly always upon the ground, where it searches for insects of various orders.

I found this bird one of the most common upon the banks of the Hunter River, also in the Wellington and Lachlan districts. Its nest is a bulky, rough, oblong structure, composed of grasses and strips of bark interwoven in a loose ragged manner, with a little cobweb and wool; it is lined with feathers and fine grasses. The entrance is about halfway down the side, with rounded and thickened edges, but without any hood. The most peculiar characteristic of the nest is a cup-shaped framework placed upon the top (often a little to the one side), as if formed for the commencement of another nest; this, I found, is made when the framework of the true nest is formed; but I believe it is added to after the nest is lined and while the bird is still laying. The whole structure is 8 inches high by 4 through, the framework on the top being 2 inches by 3 wide. The breeding-season commences sometimes as early as July and ends in December, during which time three broods are often reared; the most usual months are from August to November. Three or four eggs are the number laid for a sitting: they are of a beautiful pure-white colour, having brownish-red dots, centred with a deeper hue, and sprinkled over the surface or forming an indistinct zone upon the larger end. Eggs of this species are often found without any markings whatever. Length $\frac{6\frac{1}{2}}{10}$ of an inch, by $\frac{5}{10}$ in breadth.

Almost any bushy tree or bough affords a safe place for the nest of this species: the ends of the mangrove boughs overhanging a stream, or even those of the casuarina, the branches of the tea-trees, as well as orange-trees, are resorted to. The birds may frequently be found in the gardens and orchards, and not unfrequently hopping over the roofs of the houses.

5. BUFF-RUMPED GEOBASILEUS. *Geobasileus reguloides*, Cab. Mus. Hein. Theil i. 70. 32, note.

This well-marked species is universally dispersed over the whole of New South Wales, and is quite as plentiful near the coast as further inland. It is usually met with in small companies of five or

ten in number, spends the most of its time on the ground, over which it hops with the greatest agility and ease, or may be found traversing the fences, logs, and fallen trees, peering into every crack and crevice in search of insects, spiders, and larvæ of various kinds. On the Murrumbidgee River I found it in company with *G. chry-sorrhous*, which it closely resembles in habits and actions. A pair have built for a number of years in the side of a hollow branch of an old English oak, close to our residence at Dobroyde, and have frequently had the pleasure of rearing a young Bronze Cuckoo. Sometimes a second pair would take up a similar situation in a branch on the opposite side of the old oak tree.

Little or no preference seems to be shown in the selection of a site for the nest. It is a dome-shaped structure, having a small entrance in the side, and composed of grasses and stringy bark, &c., lined with feathers, cotton-tree down, or "possum" fur. It is placed in a tuft of grass, or low bush, or low bushy shrub, but just as often among the loose pieces of bark which, having accumulated in the forks of the gum-trees (*Eucalypti*), hide all except the entrance of the nest.

A hole morticed in the side of a post and the fork of a tea-tree where rubbish has accumulated alike serve its purpose, the shape depending upon the position chosen. The nests resemble those of the *Malurus cyaneus* both in size and shape; they are, however, much more bulky, thicker, and have a great quantity of lining, which renders them much more warm and comfortable. The eggs, which may be taken from August to December, are four in number, $\frac{6}{10}$ or $\frac{7}{10}$ of an inch in length, by $\frac{4}{10}$ or $\frac{5}{10}$ broad, having a delicate white ground-colour, spotted, freckled, or dashed with markings of reddish brown of various tints, and a few of purplish lilac brown, in most forming a zone at the larger end; the eggs of the young breeding for the first or second time are white without markings.

This species has three broods during the season, and if the nest be taken will frequently build another in the same place.

6. WHITE-THROATED GERYGONE. *Gerygone albogularis*, Gould, Birds of Australia, ii. p. 97.

This delicate little bird is only a summer visitant with us, arriving regularly in tolerable numbers every year during September, and remaining to breed, taking its departure again in March and April. Its arrival is at once made known by its soft and varied strain of considerable melody. From its song (not that it at all resembles the notes of any other bird), and partly on account of its yellow breast, it has gained the local name of the "Native Canary." Upon its arrival it betakes itself to the smaller trees and saplings, and almost at once commences to build, selecting some strong twig among the innermost boughs of a bushy tree, to which it suspends its oblong dome-shaped nest, the extremity of which terminates in a well-formed tail of about 3 inches in length, which is extremely characteristic. The body of the nest is in length from 6 to 8 inches, and 4 in breadth; it is composed of fine pieces of stringy bark and grasses closely inter-

woven and matted together with various cobwebs, being lined with the silky down of the cotton-tree or opossum-fur; the entrance, which is about $2\frac{1}{2}$ inches down the side, is 1 inch in diameter, and completely hidden from view in front by a neatly woven hood of $1\frac{1}{2}$ inch in length.

The nests are often placed in trees covered with ants, which insects are often found on the nests themselves, but do not, as far as I am aware, cause the bird any anxiety. The eggs, which are laid from October to December, and sometimes even as late as January, are three in number. Their ground-colour is of a delicate white, but almost hidden by numerous spots, dots, blotches, and freckles of dull red; in some the markings are thicker upon the larger end, where they form a well-defined zone or circular blotch; others are minutely dotted. Upon the whole, both in shape and colour, they closely resemble those of the Blue Wren (*Malurus cyaneus*), but may be distinguished by being more thickly and strongly marked; they are also slightly larger and more lengthened in form.

This species shows a decided preference for the more open parts of the forest, with thickly foliated trees and young saplings of *Eucalyptus*; its actions among the leaves, where it searches for insects, their larvæ, spiders, &c., are very pleasing and graceful,—stopping in its search every now and then to pour forth its curious and varied song, in which it will sometimes stop abruptly and fly off without finishing, as if something had startled it or suddenly attracted its attention. Although well suited for the purpose, the Bronze Cuckoos seldom lay their eggs in the nests of this species. Still it must be numbered among the fosterparents of that bird, although such is rarely the case.

9. Description of Two New Species of the Genus *Bacillus*, Latr. By Dr. J. KAUP, C.M.Z.S.

BACILLUS GERHARDII.

Viridis; capite carina obliqua inter oculos et basin antennarum, vertice punctis duabus nigris intermediis; occipite globuloso; hoc et thorace subgranulatis; meso- et metathorace spinulis parvis armatis; tibiis et tarsis prope basin foliolo parvo acuto instructis.

In the typical male specimen preserved in the Museum at Darmstadt the meso- and metathorax have some short spines, black on the end, which are shorter on the abdominal segments. All the legs are slender, with short spines; two of them, on the underside, next the end of the four hind femora, are larger. The antennæ, twenty-three-jointed, have some black spots.

Mas. Long. corp. $4'' 2'''$, antenn. $6'''$, mesoth. $7\frac{1}{2}'''$, metath. $7'''$, abd., with the short anal styles ($\frac{1}{2}'''$), $22'''$.

Hab. New Zealand (received from Mr. Gerhard Müller, of Invercargill).

BACILLUS GEISOVII.

Viridis; capite carina obliqua inter oculos et basin antennarum; vertice et occipite 10 nigris spinis; proth. granulato; meso- et metathorace et segmentis abdom. spinosis; pedibus spinosis et foliaceis.

Mas. Long. corp. $18\frac{1}{2}'''$, ant. $4'''$, proth. $1'''$, mesoth. $3\frac{1}{2}'''$, metath. $4'''$, abd. lin. $10 + \text{lin. } 1 = \text{lin. } 11$.

Hab. New Zealand.

The ten black spines of the head are placed in three rows. On the end of the prothorax, in the middle, a black spot; and a fine line along the middle of the mesothorax. Some of the irregularly formed and placed spines are black at the ends. The tubercles of the metathorax obtuse and unicolor. The leaves look short; anal styles on both sides in the middle carinated. One of the middle and one of the hind legs in the specimen described are shorter, and have been reproduced.

I have named this small and slender species in honour of the friend of Mr. Gerhard Müller, Mr. Wilhelm Geisow.

Besides these two species there is yet only discovered in New Zealand *Bacillus hookeri*, White, which has no spines on its body.

10. Note on some Species of Butterflies belonging to the Genus *Catagramma*. By A. G. BUTLER, F.Z.S., Assistant, Zoological Department, British Museum.

In consequence of the similarity of many of the species of *Catagramma*, several errors have occurred in their synonymy; forms which could, with proper care, be readily distinguished from each other have been kept together as representatives of one species.

In Mr. Doubleday's 'Genera of Diurnal Lepidoptera,' p. 239. n. 2, I find *Papilio clymena* of Cramer, *Papilio clymenus* of Fabricius, and *Callicore clymena* of Hübner placed together as synonymous; but after having carefully compared all the figures with the Banksian types and with the specimens in our collection, I find that *C. clymena* of Cramer is quite distinct from Fabricius's type, that the latter is identical with *C. janeira* of Felder, and intermediate between *C. anna* and *C. marchalii* of Guérin; and that the species figured by Hübner in his 'Zuträge' is identical with *C. eluina* of Hewitson.

The synonymy of these three species will therefore be as follows:—

1. CATAGRAMMA CLYMENA.

Papilio clymena, Cramer, Pap. Exot. i. pl. 24. f. E, F (1776).

Callicore clymena (part.), Doubl. & Hewits. Gen. Diurn. Lepid. p. 239. n. 1 (1849).

Hab. Essequibo (Cramer); Peru; Bolivia; Para; Nauta; S^{to} Paulo. B.M.

2. CATAGRAMMA JANEIRA.

Callicore janeira, Felder, Verhandl. zool.-botan. Ver. Wien, Band xii. p. 476 (1862).

Papilio clymenus, Fabricius, Spec. Insect. tom. ii. p. 53. n. 232 (1781); Ent. Syst. iii. 1. p. 43. n. 131 (1793); Mus. Banks. (type).

Callicore clymena (part.), Doubl. & Hewits. Gen. Diurn. Lepid. p. 239. n. 1 (1849).

Hab. Rio Janeiro.

B.M.

3. CATAGRAMMA ELUINA.

Catagramma eluina, Hewitson, Exot. Butterf. i. p. 74, pl. 37. f. 30, 31 (1855).

Callicore clymena, Hübner, Verz. bek. Schmett. p. 41. n. 364 (1816); Exot. Schmett. Zuträge, f. 583, 584 (1825); Doubl. & Hewits. Gen. Diurn. Lep. p. 239. n. 1 (part.) (1849).

Hab. Venezuela; Brazil.

B.M.

Again, at page 245 of the 'Genera,' I find *Papilio codomannus* of Fabricius placed as a synonym of *Catagramma astarte*. The type specimen, however, of the former appears to belong to a distinct species intermediate between *C. astarte* of Cramer and *C. cynosura* of Doubleday; it differs from *C. astarte* as follows:—

Upperside—front wings with an orange instead of crimson subapical spot*; hind wings with a narrower central crimson band.

Underside—front wings with longer and slightly broader subapical yellow band; hind wings proportionally longer, the central ocellate spots less angular, the discal ocellate band in the typical form clouded, especially towards the costa, and the yellow submarginal band broader and not waved.

This species differs from *C. cynosura*, on the upperside, in the shorter discal band of the front wings and the elongate band of the hind wings; on the underside in having no orange costal patch in the hind wings, the discal band in the type clouded, and the submarginal yellow band not waved†.

The synonymy of these insects will therefore be—

1. CATAGRAMMA ASTARTE.

Papilio astarte, Cramer, Pap. Exot. iii. pl. 256. f. C, D (1780).

Callicore astarte, Hübner, Verz. bek. Schm. p. 41. n. 363 (1816); Doubl. & Hewits. Gen. Diurn. Lepid. p. 245. n. 12 (part.) (1849).

Hab. Brazil.

B.M.

2. CATAGRAMMA CODOMANNUS.

Papilio codomannus, Fabricius, Sp. Ins. ii. p. 57 (1781); Ent. Syst. iii. 1. p. 53. n. 165 (1793); Donovan, Nat. Repos. i. pl. 3. f. 1, 1 var. (1823); Mus. Banks. (type).

Catagramma codomannus, Doubl. & Hewits. Gen. Diurn. Lepid. p. 245. n. 12 (part.) (1849).

* This is not merely a sexual distinction.

† Specimens from Ega are exceptions.

Nymphalis codomanus, Godt. Enc. Méth. ix. p. 423. n. 231 (1819).
Hab. S^{ta} Lucia; Brazil (var.). B.M.

Var. *Fascia posticarum supra abbreviata*.

Hab. Ega. B.M.

11. On the Llama and Alpaca in their Summer Dress.

By JAMES MURIE, M.D., Prosector to the Society.

(Plate XLIV.)

During the summer that has just gone by, Dr. J. E. Gray called my attention to the desirableness of having a good photograph taken representing the members of the genus *Auchenia* in their shorn condition. This, however, was found a less easy task than imagined; for no sooner were the animals placed in proper grouping than some one of them would alter its position. I thus was obliged to avail myself of the assistance of my friend Mr. Ernest Griset, who was successful in delineating the accompanying group of one Llama and two Alpacas (Pl. XLIV.).

The male Llama was received, in exchange for a female one, from Her Majesty the Queen on the 28th April, 1860. The two Alpacas are male and female. The latter, a black-coloured animal, arrived in the Gardens in 1849; the former, a black-and-white male, was received, in exchange for a young one of the above female, from Titus Salt, Esq., M.P., on 13th September, 1860, this male having been bred in England by that gentleman.

Although both Llamas and Alpacas have been bred repeatedly in the Gardens in former years, yet since 1860 no offspring has been produced.

Until lately it has never been thought necessary to shear the animals of their long coats (that is, those in our Gardens), although in their native country, according to Colpaert*, on the Alpaca this operation is performed every two or three years.

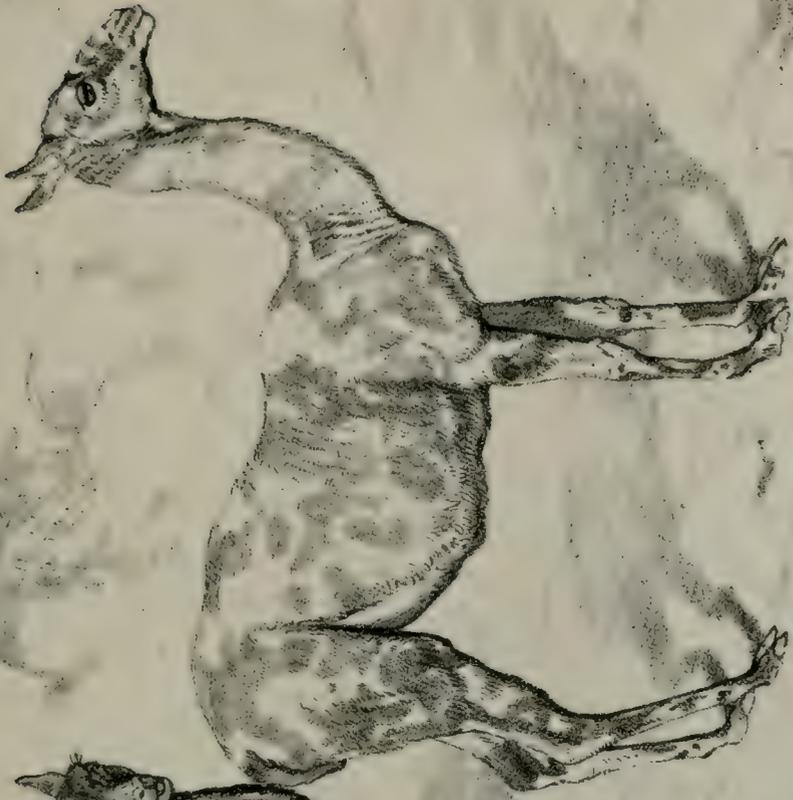
On our male Llama the fleece has always remained perfect, until the operation of shearing was performed about the end of last August. On the female Llama, which is along with this male, it was different, as during this summer the fleece became ragged and partially dropped off, which circumstance suggested the shearing of the others. This fact is significant, and at variance with the recorded observations of the late Earl of Derby in his celebrated Knowsley collection. Upon this subject he says †, "Unlike Sheep, these animals never shed their coats."

The same may be said of the Alpacas as of the male Llama, their fleeces exhibiting no signs of falling off.

* Étude sur le Pérou—"Des Bêtes à Laine des Andes," by M. Émile Colpaert, Bull. de la Soc. Imp. Zool. d'Acclimatation, ser. 2. vol. i. (1864) p. 124.

† Gleanings from the Menagerie and Aviary at Knowsley Hall, 1850, p. 54. See also Dr. Gray, Cat. Mamm. Brit. Mus. 1852, (*Ungulata*) p. 255.

LAMAS AND ALPACAS



Ernest Griseb





JULY 1. 1868



J. Smit lith.

$\frac{3}{4}$

ANTROSTOMUS ORNATUS. ♂.

M & N. Harshart imp.

F. Z. S. 1866 Pl. XLIII



58

J. Smut lith

M & N Hanhart imp

ANTROSTOMUS MACULICAUDUS

The operation of shearing was performed as ordinarily in sheep, and the quantities obtained were as follows:—From the brown-and-white male Llama about 14 lb.; from the black female Alpaca 8 lb.; and from the black-and-white male Alpaca 8½ lb. Colpaert*, one of the most recent authorities on these animals in their South American haunts, does not compare the weights and value of the fleece in the two domesticated and two wild varieties; but he says that the Chinela, a variety of Alpaca, yields the most esteemed and heaviest kind of fleece, but it is rare that it surpasses 6 or 7 lb.

With regard to the specific differences of the genus *Auchenia*, it is not my intention to speak; but I may with propriety allude to the fact of their Camel-like appearance in the disrobed condition, as compared with their more sheep-like character when enveloped in their thick and long woolly fleece.

As depicted in the plate, the Llama has more clearly a spotted appearance than when the fleece was upon it; this may partly be on account of the original intertwining of the fibres of the two different colours, and still more, no doubt, by the then accumulation of dirt and smoke which blackened the surface. The two Alpacas did not alter in colour so far as to make any marked difference in their aspect.

The neck in all three shorn animals appears to have a far greater length proportionally to the body; and the same remark applies to the hind legs, the thighs of which are seen more than usually free from the body—a character of the family *Camelidæ*. The body in contour is entirely transformed; and the rough sheep- or goat-like hairy carcass, the awkward, uncouth, disproportionate body, with its naked flanks and generally scraggy look, detract from grace in the animals, and render their appearance more remarkable than beautiful.

From their peculiar gait and slouching ungainly manner, if but a hump were present, they would at once recall to mind a tottering young camel.

12. Additional Notes on the *Caprimulgidæ*. By P. L. SCLATER, M.A., Ph.D., F.R.S., Secretary to the Society.

(Plates XLV., XLVI.)

Since I prepared the article on the American *Caprimulgidæ*, read before this Society in February last †, I have collected some further information on this subject, which I now propose to lay before the Meeting.

In the first place, as regards the general arrangement of the group,

* *Loc. cit.* p. 124.

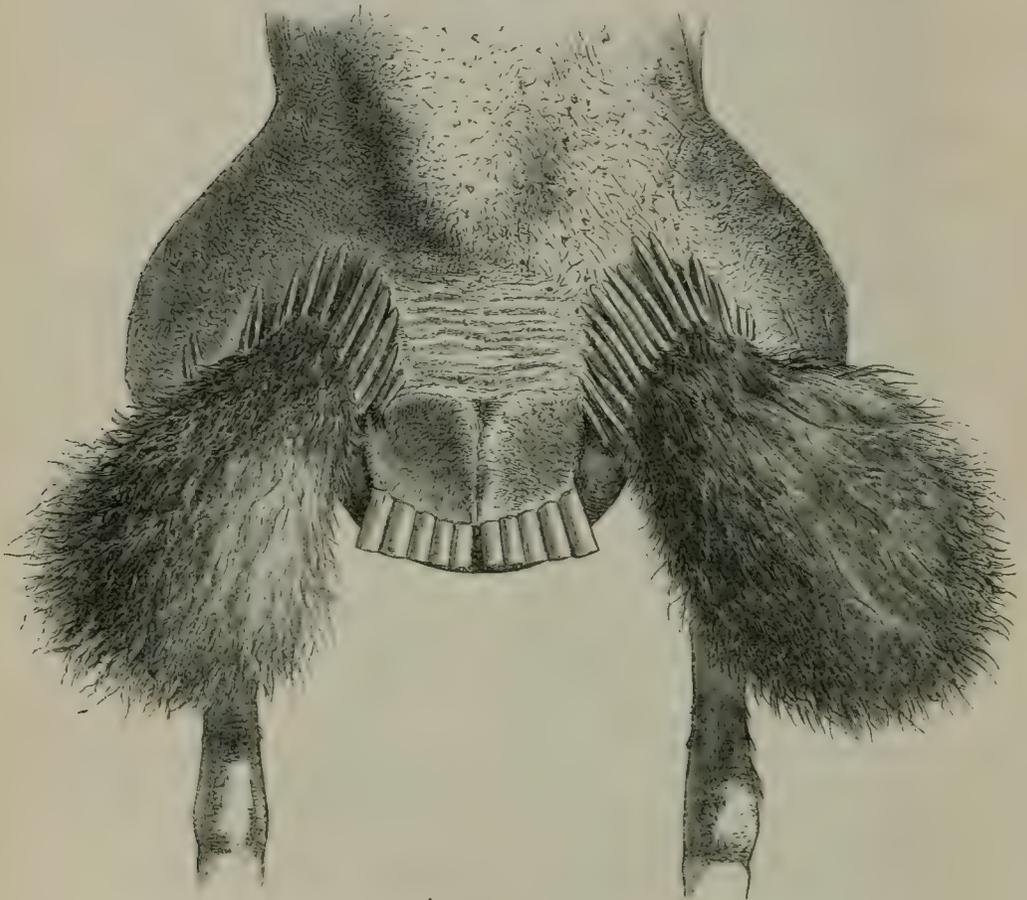
† See P. Z. S. 1866, p. 123 *et seq.* It should be remarked that in this article, in page 139 (as may be easily seen by the context), an error has occurred in the references (lines 6 and 8 from the top) to figs. 10 and 11. It is fig. 10 which represents the outer rectrix of *Stenopsis ruficervix*, and fig. 11 that of *S. bifasciata*. This error has been corrected in the separate copies.

I have been able lately to make a more accurate examination of the structure of the abnormal form *Podargus*, which has tended very much to strengthen my views as to the necessity of referring this bird and its allies to a different family from the typical *Caprimulgidæ*. A specimen of a bird of this genus (probably *Podargus cuvieri*, Vig. & Horsf.), which died in the Society's Gardens a short time since, and was examined by Dr. Murie and myself, presented the following appearances:—

No external opening to the oil-gland could be found, nor any traces of this organ, on dissection.

Two large powder-down patches were discovered, placed on each side of the rump. Each patch consists of about forty feathers,

Fig. 1.



Powder-down patches of *Podargus*. Nat. size.

placed in a line extending from above the outer end of the root of the rectrices towards the femur. A few straggling feathers of the same character border the patch externally towards the knee-joint.

Each feather consists of a horny sheath, about 0·8 inch in length, of which 0·5 is external. At the termination of the sheath the feather presents the usual decomposed appearance of powder-down patches, being divided entirely into numerous elongated minute filaments of a dark-grey colour. The entire breadth of each patch is nearly 1·5 inch, the space between the two patches across the rump measures 0·7 inch.

The rectrices are ten in number, the two medial being, as usual, rather elevated above the lateral.

The remiges are twenty-two in number, ten primaries (of which three are on the metacarpus) and twelve secondaries.

The anterior covering of the tarsus (acrotarsia) consists of about seven parallel scutes, which rather decrease in breadth from above downwards, each one barely overlapping the next succeeding one. Similar series of smaller scutes are continued along the upper surface of the digits. The tarsus is covered posteriorly with small, closely placed, hexagonal scutella, larger at the sides next to the anterior scutes.

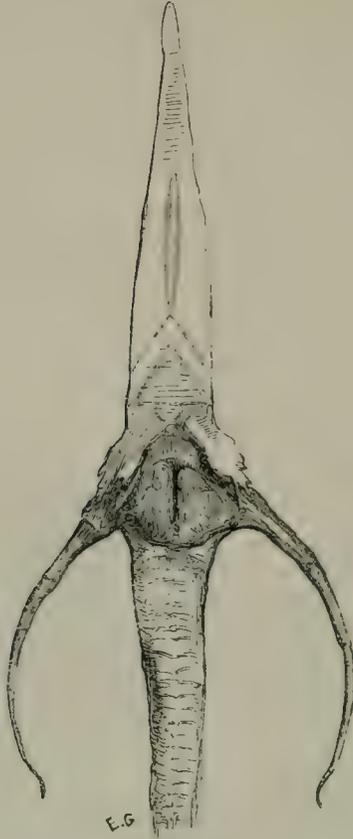
The gullet is very wide from the commencement, measuring about 3·5 inches in length, and terminating in a thicker-walled and rather widened proventriculus, which is encircled within by a series of rather large proventricular glands. Externally the proventriculus is tolerably muscular, the fibres being continuous with those of the outer layer of the gizzard. Between the proventriculus and the gizzard is a slight contraction. The gizzard itself is pyriform, with a rounded tendinous muscular centre, but little or no constriction at the pyloric end. The internal coats are thrown into elongated rugæ, composed of soft leathery membrane, which pouts up at the proventricular aperture.

The pyloric aperture is lateral, and lies 0·3 inch below the cardiac aperture. The intestinal canal is tolerably uniform in diameter throughout, and measures 25·1 inches in entire length. Three inches above the anal extremity two large cæca are given off, 3·6 inches in length, and almost as wide as the intestine. Of these the blind extremities are much widened and bulbous, the lower halves being considerably narrower—very much as in the Owls (*Strigidæ*).

The tongue of this bird consists of a flat, elongated, translucent, horny membrane, much widened at its base, gradually decreasing in width until it tapers suddenly at about one-fourth of its whole length from the anterior extremity. The slender tip is slightly crenated. The whole length from the glottis to the apex is 2·1 inches, the breadth at the root 0·4. The posterior basal fourth is much thickened and nearly opaque, being of a whitish colour. It projects angularly forward into the translucent portion, and almost forms an isosceles triangle. The posterior lateral projections are horny and translucent like the tongue itself, and present no traces of papillæ; but their free-pointed extremities present several small lateral spines.

From these notes, and from what has been stated in my former communication, it appears that *Podargus* differs from the typical *Caprimulgidæ* not only in the several important characters already noted (*ante* p. 127), but also in the entire abortion of the oil-gland

Fig. 2.

Tongue of *Podargus*. Nat. size.

and in the possession of powder-down patches—characters not yet recognized in any of the *Picariæ*, except in *Leptosoma*, where, as I have lately shown*, the latter character is present. It becomes, therefore, of great interest to know whether the other abnormal forms hitherto referred to the *Caprimulgidæ* agree with *Podargus* in these respects. As regards these I have only yet had opportunities of examining skins of *Nyctibius* and *Steatornis*. In *Nyctibius* the powder-down patches are, I think I may say, present; but whether the oil-gland is absent or not I cannot determine. I cannot discover it in my skins; but it is often very difficult to find this organ in dried skins. In *Steatornis* the oil-gland is certainly present—naked as in the typical *Caprimulgidæ*; but there appear to be no powder-down patches. I have taken steps, however, to get some specimens of *Nyctibius* in spirits, in order to be able to make a more accurate investigation on these points, and hope to be able to return to this interesting subject on a future occasion.

I now give some additional notes on various species of American

* P. Z. S. 1865, p. 682.

Caprimulgidæ, which have resulted principally from the examination of the specimens of these birds belonging to the Derby Museum at Liverpool (which have been kindly submitted to my inspection by Mr. Thomas Moore) and those belonging to Mr. Lawrence's collection (which that gentleman has most liberally sent over to me from New York), together with some valuable notes communicated to me by Herr von Pelzeln on the specimens in the Vienna collection.

Genus NYCTIBIUS.

Dr. W. Peters has most kindly sent me over the type specimen of *Nyctibius rufus* of Cabanis (*antè* p. 130), from an examination of which it is at once apparent that, as already hinted by Burmeister (*Syst. Ueb.* ii. p. 378), it is the same as Mr. Gould's *N. bracteatus*. The latter name has precedence, unless we adopt Dr. Cabanis's suggestion that the figure of the 'Pl. Enl.' 735 is intended for this species. I have also met with a skin which I believe to be referable to the same bird, in the Paris Museum, collected by MM. Castelnau and Deville at Pebas on the Upper Amazon. *N. bracteatus* is a very well-marked species, from its small size, general red colouring, and the conspicuous white spots on the scapulars, belly, and under tail-coverts. Mr. Salvin and I intend to give a figure of this handsome bird in an early number of 'Exotic Ornithology.'

Genus ANTROSTOMUS.

Antrostomus cubanensis, Lawrence, *Ann. L. N. H. New York*, vii. p. 260 (May 21, 1860), is unquestionably a different species from any given in my previous paper. It is quite distinct from *A. vociferus* (with which D'Orbigny, Lembeye, and Gundlach have united it), being considerably larger in size, and having the white terminations of the three lateral tail-feathers much narrower, as pointed out by Mr. Lawrence. The bristles which border the gape of the upper mandible are remarkably strong and long, much more so than is the case in *A. vociferus*. Mr. Lawrence has kindly lent me his typical specimen of this species, which may be placed next to *A. vociferus*.

Herr von Pelzeln has kindly sent me the following note upon the male of *Antrostomus rufus* (*antè* p. 136):—

Mas a femina statura majore, torque infragulari albido et caudæ coloribus differt. Rectrices nigro ferrugineoque fasciolatæ, extima pogonio interno, sequentes utrinque duæ utroque pogonio macula subterminali, 2-2½" longa, alba, extus et postice ferrugineo marginata.

Herr von Pelzeln considers that Buffon's wretched figure (Pl. Enl. 735) cannot possibly be intended for this species; and in some points it certainly more nearly resembles *Nyctibius rufus*, as suggested by Cabanis, *Schomb. Guian.* iii. p. 74; but the banded wings and long tarsi forbid one referring it to the latter bird. It would, however, be safer and more just to call this species *A. rutilus*, under which name it was first described by Burmeister.

Antrostomus sericeo-caudatus, *antè* p. 137, sp. 3. Of this well-
 PROC. ZOOLOG. SOC.—1866, No. XXXVIII.

marked species there is a single specimen in the Derby Museum, "purchased of Mr. Warwick" in 1849. It is in a bad state, but is immediately recognizable by the peculiar form of the white terminations of the three lateral rectrices, the inner edges of which, when the tail is partially expanded, form a line slanting inwards and downwards towards the centre of the tail. This is well shown in Mr. Cassin's figure (Journ. Acad. Phil. ii. pl. 12). The Derbyan specimen is smaller in dimensions than that described by Mr. Cassin, measuring "whole length 10·0, wing 6·6, tail 5·1," and seems to be rather darker in plumage. The skin in my collection, spoken of (*ante* p. 137) as "probably referable" to this species, belongs to another, apparently undescribed, which I propose to call

ANTROSTOMUS ORNATUS, sp. nov. (Pl. XLV.)

Nigricans rufo et fulvo mixtus, capitis striis longitudinalibus nigris: alis et cauda nigris rufo punctatis, primariis rufo obsolete transfasciatis; caudæ rectricibus tribus externis fulvo late terminatis, pari secundo et tertio ab extra macula magna ovali, pogonium interius et exterioris partem vicinam occupante, supra alba, subtus fulva, ornatis: rectricibus quatuor mediis dorso concoloribus: subtus dorso concolor, sed præcipue in pectore imo et ventre magis albicans, crissi plumis fere omnino fulvis, nigro irregulariter transvittatis: torque jugulari, plumas auriculares utrinque attingente, flaviâ. ♀ rectricibus lateralibus cum mediis concoloribus.

Long. tota 10 poll. Angl., alæ 6·5, caudæ 4·5; rostri a rictu lin. dir. 1·3, tarsi 1·2.

Hab. in Brasilia.

Besides my own female specimen, there is a pair of this species in the British Museum, from the male of which the figure (Plate XLV.) is taken. There is a similar pair in the Paris Museum.

This species is like *A. rutilus*, but is very much blacker altogether, although, had I not seen several examples of it (as above cited), I should hardly have ventured to separate them. Another point of distinction would seem to be in the large oval spots of the second and third pairs of rectrices (fig. 3, p. 587). These are pure white on the upper surface, and fulvous (like the broad margin which surrounds them) below. This does not seem to be the case in *A. rutilus*, judging from Herr von Pelzeln's description given above.

The general form of this species agrees with that of *A. rutilus*. The rictal bristles are strong and well developed, about nine in number on each side. The wings reach to about 1·2 inch from the end of the tail. The second primary is rather longer than the third and longest, the first being slightly longer than the fourth. The tarsi are feathered above, about three parts of the way down, and naked altogether below.

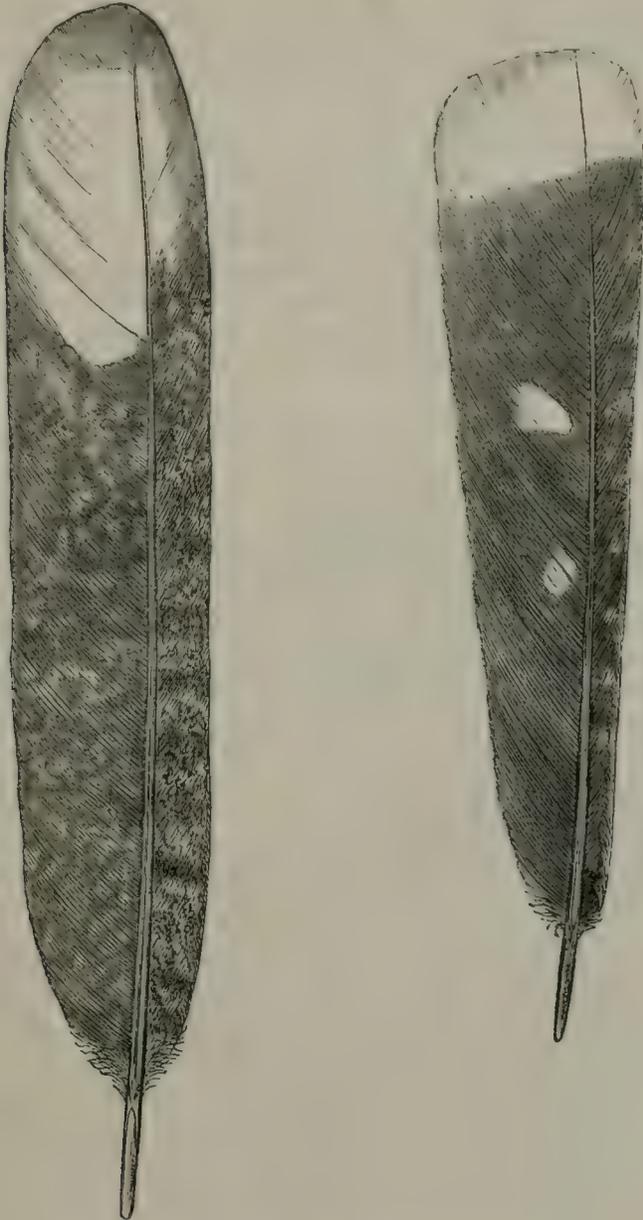
ANTROSTOMUS MACULICAUDUS. (Pl. XLVI.)

Stenopsis maculicaudus, Lawrence, Ann. Lyc. N. Y. vii. p. 459.

Mr. Lawrence has kindly sent me the typical specimen of this bird also, which I had not previously seen. It is a very distinct species,

Fig. 3.

Fig. 4.

Fig. 3. Second lateral rectrix of *Antrostomus ornatus*.4. Outer rectrix of *Antrostomus maculicaudus*.

easily recognizable by the small white spots on the inner web of the four lateral rectrices (see fig. 4), whence Mr. Lawrence has derived its name. A skin in the Derby Museum ("no. 192, purchased of Cuming, September 7th, 1846") seems referable to a younger stage of the same species, being chiefly distinguishable by the narrowness

of the terminal white tail-markings, and the presence of several indistinct rufous bands across the rectrices, which, however, are clearly signs of immaturity. There are also five rufous spots on the inner web of the outer primary, instead of two as in Mr. Lawrence's example; but these may likewise disappear with age. In the British Museum is a skin which I refer to the female of this same species. In this the terminal white tail-bar is altogether absent. Mr. Lawrence's example of this species is stated to have been obtained at Para by Mr. v. Schulte Buckow. Those in the British Museum and in the Derby Museum are both *probably* from Bolivia. In this species, as already noted by Mr. Lawrence, the first primary is as long as, or in fact rather longer than, the second. In every other American *Antrostomus* and *Stenopsis* in my collection the first primary is shorter than the second*.

Genus STENOPSIS.

Stenopsis cayanensis, p. 140.

I have now undoubted Bogota skins of this species, and have also seen a specimen in the Paris Museum collected in Martinique by Rousseau; so that these two localities may be added to the list given (*antè*, p. 140).

I have already expressed my doubt (*l. c.*) whether Azara's *Ibiyau alas y cola blancas* has not been wrongly referred to this species. These doubts have been solved for me by Herr von Pelzeln, who has kindly furnished me with the following notes on the Paraguayan species:—

STENOPSIS CANDICANS, Pelzeln.

Ibiyau alas y cola blancas, Azara, Pax. no. 314; *undè*

Caprimulgus leucurus, Vieill. Nouv. Dict. x. 246.

C. candicans, Natt. in Mus. Vindob. (sp. 530).

S. corpore supra, tectricibus alarum superioribus minoribus et mediis albescenti-griseis, hinc illinc ochraceo lavatis, minutissime nigro marmoratis; capite stria nigrescente longitudinali et scapularibus striis nigris et maculis ferrugineis ornatissimis: alarum tectricibus majoribus et remigibus secundariis (exceptis tribus ultimis et aliquorum marginibus) albis: primariis ad basin albis, dein nigris, tertio longissimo: stria a mandibulæ basi ad aures ducta albida; loribus, regione auriculari, gula, colli lateribus et pectore castaneis, nigro undulatis; ultimis striis longitudinalibus ochraceis insignitis; gastræo reliquo, tectricibus alarum inferioribus et caudæ truncatæ rectricibus laterilibus albis; his passim ochraceo marginatis.

Long. tota $8\frac{1}{2}$ " , alæ $5\frac{3}{4}$ " , caudæ 4" .

* Since this paper was read, I have received from Prof. Nation, of Lima, a skin of what I believe to be *Capr. æquicaudatus*, Peale. It proves to be quite distinct from *Antrostomus parvulus*, Gould, as I had anticipated (*antè*, p. 138). I shall point out the difference in a communication which I am preparing on Prof. Nation's collection.

Hab. in Paraguay (*Azara*); Brasil. merid. *Irisanga* (*Natterer*).

“Like *S. cayennensis* (to which it has been united by most authors), but larger, tail truncate, and coloration notably different. The broad rounded primaries, dark brown below, the truncate tail, and the colours of the neck and breast remind one of *Heleothreptus anomalus*.

“The peculiar coloration of this bird might lead one to suspect its being an albinoid variety; but, on the other hand, the regularity of the markings, and its perfect agreement with *Azara*’s description, together with the circumstance that the last-named naturalist observed several individuals, seem to indicate that we have in this case the normal coloration of the species.”

Herr von Pelzeln has also kindly furnished me with descriptions of two additional species in the Vienna Collection, which he refers to the same genus, namely:—

STENOPSIS LANGSDORFI, Pelzeln.

S. corpore supra albescente griseo, plus minusve ochraceo tincto, punctis et fasciis nigris minutis marmorato, pilei plumis mediis fasciam longitudinalem formantibus et scapularibus centro nigris, interdum ochraceo transverse fasciatis, renigum secundo longissimo, primo 2^{'''}, tertio 1^{'''}, quarto 6^{'''} brevior; omnibus brunneo-nigris, tota longitudine fasciis ochraceis 5–6 ornatis; mento et stria utrinque ad aures ducta albidis, lateribus colli, gula et pectore castaneis nigro undulatis, ultimis passim striis albidis obsoletis; gastræo reliquo pallide ochraceo, plumis abdominis superioris fasciis brunneis interruptis 7–9, rectricibus duabus mediis dorso concoloribus, ad scapum fasciis transversis brevibus brunneis 7, versus basin obsoletis; lateralibus pallide ochraceis, fasciis 10–11, interstitiis brunneo marmoratis, rectricibus omnibus ejusdem longitudinis; rostro pallide corneo, apice nigrescente; pedibus pallidis.

Long. tota (specim. exsiccati) 7½^{'''}, alæ 5^{'''} 9^{'''}, caudæ 4^{'''}, rostri a naribus 2½^{'''}.

Hab. in Brasilia orient. Cuyaba (*Natt.*, sp. no. 1150).

“Of this species *Natterer* only obtained a single example, from Herr *Langsdorf* in Cuyaba. In many respects it comes near the foregoing species, but differs in its narrower, more pointed, and entirely banded wings (of which the second primary is the longest), in the ochre yellow of the underside, and the banded tail. Yet such are the variations of sex and age in the *Caprimulgidæ*, that I consider it very possible that it may turn out that this is only the young female of *Stenopsis candicans*.”

STENOPSIS PLATURA, Pelzeln.

Caprimulgus platurus, *Natt.* MS. (sp. no. 421).

S. fronte et linea utrinque superciliari ferrugineis, notæo virescente nigro; capite ferrugineo, reliquis partibus ferrugineo vel griseo punctulatis vel fasciolatis, torque nuchali ferruginea, scapularibus et alarum tectricibus majoribus macula magna

ochracea, remige secundo longissimo, tertio 2''' , quarto 10''' , primo in ala dextra (speciminis unici haud adulti) 15''' , in ala sinistra 19''' brevior: primariis brunneis, in primis ad vel ultra medium, in reliquis tota longitudine ferrugineo fasciatis, secundariis ejusdem coloris margine postico lato pallide ferrugineo: gula pallide ferruginea; gastræo reliquo ochraceo plumis plus minusve brunneo transverse irregulariter fasciatis; caudæ (incompletæ) reatricibus 1'' latis, griseis, brunneo marmoratis, margine laterali ferrugineo tinctis, fasciis transversalibus brunneis irregularibus, in mediis 7, in lateralibus 9-13, reatricibus externis 6''' brevioribus quam mediæ.

Long. $8\frac{1}{4}''$, alæ $5\frac{1}{4}''$, caudæ 4'', rostri a naribus 3'''.

Hab. in Brasilia merid. *Ypanema (Natt.)*.

"This species is near to *S. ruficervix*, but seems to differ in its smaller size, in the presence of grey markings on the upper surface, and in the want of a definite wing-spot and of the white tail-bands, which are also less marked in the female of *S. ruficervix*."

13. On the Occurrence of *Æstrus tarandi*, Linn., in a Reindeer in the Society's Gardens. By JAMES MURIE, M.D., F.G.S., Prosector to the Society.

The disease commonly called "Bots" is one of frequent occurrence among horses in this country. But the disease or larva producing it is by no means confined to the horse, being found in a number of animals, particularly the Ruminantia, and even in Man himself.

A Dipterous insect, prejudicial to cattle, was known to the ancients; Aristotle, in his 'History of Animals,' and Virgil, in his 'Georgics,' have both alluded to it. In later times, when a true system of classification was adopted, Linnæus accorded a place in his 'System' to the genus *Æstrus*; and that great naturalist himself described more than a century ago the insect, the manner of oviposition, and the larva infesting the Reindeer in Lapland, in several papers communicated to the Swedish Academy, the Upsala Society, &c.

Among our own countrymen, Mr. Bracy Clark* has specially written articles devoted to the consideration of the habits and specific classification of this same genus *Æstrus*. But by far the most complete account of the group is that of Friedrich Brauer†. The observations of these authors, as well as a host of European and American writers, concur in showing that the Ox, Sheep, Goat, Deer, and others among the Ruminantia, the Horse, Ass, and Rhinoceros among Perissodactyla, the Rabbit, Hare, and Squirrel, Dormouse, &c., among Rodentia, the Dog, Badger, Hyæna, and Jaguar among Carnivora, the *Didelphys* among Marsupialia, and some of

* Trans. Linn. Soc. vol. iii. p. 289, vol. xv. p. 402, vol. xix. p. 81.

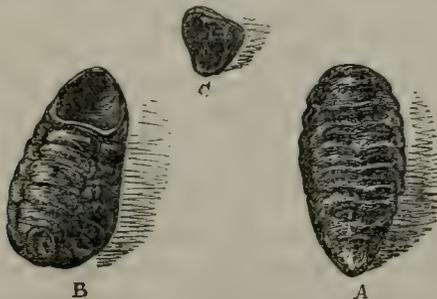
† 'Monographie der Æstriden,' Vienna, 1863, which work contains a full list of the literature on the subject.

the Platyrhine *Simia* among *Quadrumana* are each and all, under given circumstances, liable to be attacked by different species of *Æstrus*, which deposit their eggs upon the hairs, or even within the skin of the body.

In Man a number of well-authenticated cases have from time to time occurred, proving that the human body in certain warm countries occasionally furnishes a nidus for some species of this or the allied genus *Cuterebus*. The term *Æstrus hominis* has by some been applied to this parasite; but Goudot*, a French writer, considers that the cases of its being found in Man are merely chance instances of the eggs being deposited in the human skin by the species encountered in different animals.

My present note, however, is chiefly intended to call attention to the fact of two larvæ being detected in the skins of a Reindeer in this country, and its being an example of one of the many means by which species of insects are carried to distant countries.

Two male Reindeers were kindly presented to our Society by H. H. Elder, Esq., on the 1st of June last. They were imported direct from Russia, but possibly may first have come from Lapland. Our Superintendent, Mr. Bartlett, whose powers of acute observation on live animals are well known, detected an unusual appearance on the skin of one of these Reindeer, and, examining it more carefully, found several nodulous excrescences, from which he obtained the two pupæ of which the cases are figured below. Desirous of knowing more respecting them, and rightly judging them to be the result of a diseased condition, he brought them to me. Having before seen



Pupa-case of *Æstrus* from the Reindeer in Gardens, 1866. Nat. size.
 A. Dorsal surface. B. Ventral surface with lid removed, where insect escaped.
 C. Triangular operculum.

pupæ and larvæ of an analogous kind in domestic animals, I knew at once their true nature, and suggested a further search, both for the purpose of ridding the creatures of a painful nuisance, and at the same time of prosecuting the study of the disease. Mr. Bartlett, however, failed in obtaining more specimens, although he noticed the animal's coat to be much pit-marked, apparently where other pupæ had lain buried.

I had the two pupæ in my possession above a week, believing the

* Ann. des Sci. Nat. 1845, t. 3-4, p. 227.

enclosed insects dead or abortive, when, to my surprise, near mid-day of the 6th of July last two perfect insects came forth nearly simultaneously.

One of them, however, appeared stronger than the other, and, its wings drying quicker, it prepared to fly off, and only was prevented by the glass cover on the dish; the other soon after rallied, but did not attain such a complete condition as the first, the wings remaining slightly crumpled and less unfolded. I watched their movements for a considerable time, and then killed and pinned them out on cork for further reference.

I had intended to take them to the British Museum for identification, and to have them figured, and so laid them aside. Next morning, however, I was horrified to find that a mouse had gained access to the glass case in which they were placed, and broken fragments of legs and antennæ were all that remained of the two interesting specimens. My examination of the insects, however, easily permitted my recognizing in preserved specimens and figures that they were no other than the true *Æstrus tarandi*. The pupa-case in the above is uncommonly like that of the *Æstrus bovis* of Clark, as may be seen on comparison with his plate in the 'Linnean Transactions;' but he himself specially calls attention to *Æstrus tarandi* being larger, and with a longer, narrower, tapering abdomen.

Linnaeus's own account of the manner in which the Reindeer are attacked, unfortunately, I have been unable to refer to; but Mr. Clark quotes passages of his travels in Lapland, where he says the Reindeer crowded in multitudes round the hut at night in an excited condition, owing to fear of these insects. On another occasion, when travelling on a journey, the Reindeer in the team, on the fly alighting on it, suddenly stood still, apparently paralyzed with fear.

Another curious point connected with the insects brought forth in the Gardens was, that the moment of their escape from the pupa-case vast numbers of minute white-coloured parasites scampered everywhere over their bodies, and issued in troops out of the case itself. It would seem, therefore, that these *Acari* infest the insect even before it is hatched. In the present instance there could be no doubt regarding their not being conveyed thither by external agency at the time, as the pupa-cases were in a perfectly clean gallipot covered with glass, and laid apart from every foreign substance likely to contain such creatures.

14. Account of a Case of Malformation in the Generative Organs of a Cow. By JAMES MURIE, M.D., F.G.S., Prosector to the Society.

Mr. G. Latimer, of Porto Rico, C.M.Z.S., kindly forwarded to us, in September 1865, a young Cow, which presented some peculiarities worthy of being recorded. No history of the animal was furnished by the donor, further than that the specimen was supposed

to be a curious example of an hermaphrodite. Although interesting physiologically as a specimen exhibiting deviation from the normal type in the sexual organs, yet the animal did not possess such other points of general or public interest as to entitle it to a permanent place in the Society's collection.

On anatomical investigation of the dead body it was found to afford indications of belonging either to the spurious kind of female hermaphroditism, or to be in some degree an example of what has been termed transverse hermaphroditism*,—that is, a malformation of the generative system wherein the internal organs belong to one sex and the external to another—or (as has been ingeniously suggested†) that, supposing a transverse line were drawn between the external and the internal parts, assuming these to be superimposed the one over the other, there would exist a different sex in the upper and lower segments.

Instances of transverse hermaphroditism in the lower mammalia are, comparatively speaking, not of unfrequent occurrence; but the present one, if strictly coming under that denomination, is rendered interesting by possessing, in some respects, a structural condition allying it to the rare division of transverse hermaphroditism in which the external organs are of the male type, the internal of the female‡. It presents a kind of intermediate stage or grade of what is known as the Free Martin§—that variety of sexual malformation in twin cattle, one of which bears external resemblances to a female, or has superadded individual male organs, but even when purely feminine in structure is often barren.

To convey an idea of the bodily appearance of this animal sent to the Gardens, I shall jot down a few points appertaining thereto; for in cases of genital malformation it is desirable to observe how far the outward character agrees with, or deviates from, the true sexual organization.

In size it was about equal to an Alderney Cow. There was nothing remarkable in colour, which was as follows:—Head blackish brown; muzzle and tips of ears nearly black; back and well down the sides lightish brown, shading below and on the outer aspect of the legs to a more blackish brown, becoming entirely black below the hocks; each hind leg just above the hoof marked by a broad circle of white hairs; axillary and inguinal regions whitish; tail dark brown, ending in a tuft of strong black hairs.

The horns were short, gently tapering to the points, and having an outward and forward spread. Ears finely formed, not long, but conspicuously directed upwards and slightly forwards.

Dr. Crisp, who examined the living animal along with me, considered at first sight that it bore resemblances fully as much to the

* Gurlt, Lehrbuch der pathol. Anat. der Haus-Säugethiere, (1832) vol. ii. p. 185.

† See Prof. Simpson's article, "Hermaphroditism," in the 'Cyclop. of Anat. and Physiol.' vol. ii. p. 685.

‡ Var. *a.* Hermaph. transv. masculinus, of Gurlt, *loc. cit.* p. 186.

§ Hunter, Phil. Trans. 1779; and Palmer's Edit. of Hunter's Works, 1837 vol. iv. p. 34.

male as the female sex; I was inclined rather to regard it as a heifer. On more careful scrutiny, however, we at length agreed that its general physical appearance approached nearest to that of a castrated animal—chiefly for the reason that the head had a slight masculine tendency, the shoulders and neck being also somewhat heavier than is usually met with in a young female, although, upon the whole, the proportions of body and limbs might perhaps be deemed too delicate for a male.

Sexual distinction, so far as the external genital organs were concerned, was in favour of its being in reality a male; for there was an absence of vaginal opening in the usual situation; and when micturition took place, the urine escaped from an abdominal urethral-like orifice, marked, as in a bull, by a prominently hanging fold of skin on which were developed numerous long and strong hairs.

Upon examination after death, none of the viscera were found to exhibit anything abnormal* in their formation, with the exception of the genito-urinary organs.

In proceeding to describe the condition of these malformed parts, it will be convenient to commence with the external organs, continuing from without inwards. The accompanying figure (p. 595) illustrates the peculiar anatomical points described in detail. It is reduced from a photograph of the parts, exhibited as a dissected preparation.

The *anus* and *rectum* were natural in position and structure (see figure, letters *A.* and *R.*). Below the former the skin seemed rather bare of hair, more full and lax than usual in a male animal, but with no trace of a vulva at this part, the distance between the anus and the genito-urinary (abdominal) outlet (*U. g. o.*) measuring $19\frac{1}{2}$ inches. Along this space there was a prominent perineal raphe having a dark line on its summit, and with short hairs on either side parted outwards. This raphe ended nearly 2 inches behind the genital orifice, in a very slightly raised glandular or rough patch almost as large as a shilling.

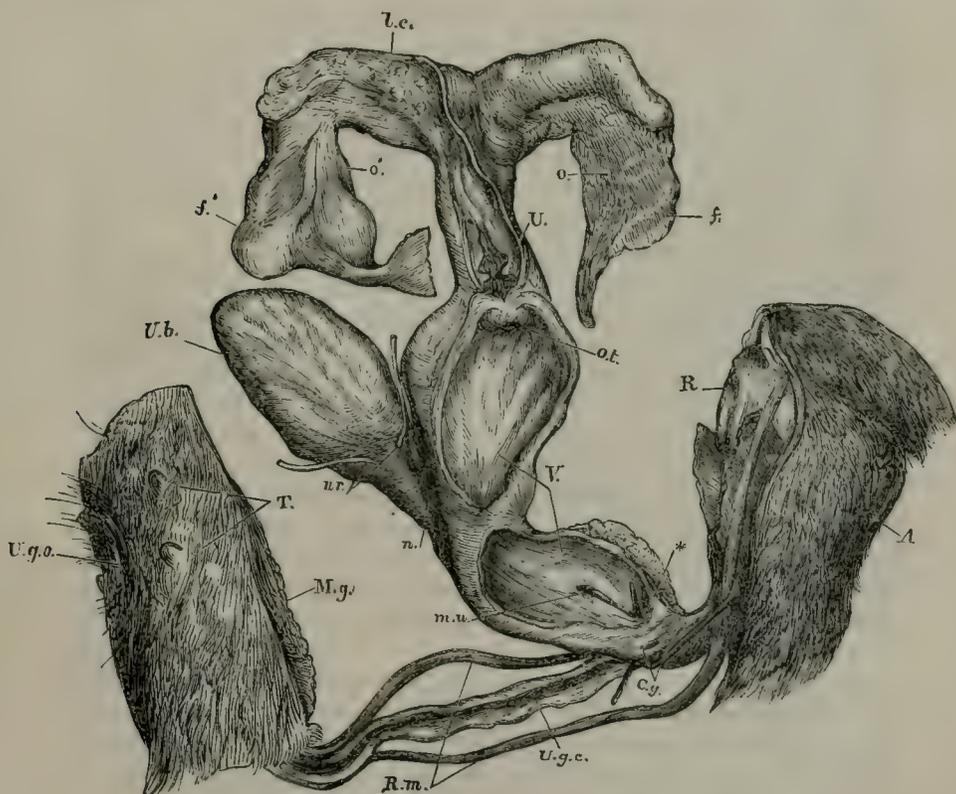
Four teats were present (*T.*), and two rather imperfectly developed *mammary glands* (*M. g.*); these were placed apparently slightly in advance of their usual situation in a Cow. The glandular texture of the latter was so incorporated with fat and resembled the surrounding adipose tissue so much in colour and consistence as to be with difficulty distinguishable from it. In dimensions the mammæ were each about 5 inches long and $1\frac{1}{2}$ to 2 inches broad, but thin in proportion.

The *umbilicus* was placed at a distance of $13\frac{1}{2}$ inches forwards from the genital opening, its cicatrix was half an inch in length.

The *urino-genital outlet* (*U. g. o.*) opened between the atrophied udders. It was a widish semilunar cleft fully 2 inches long, and

* The pathological condition is not here referred to; the organs, however, seemed all healthy, the only notable exception being an enlarged state of the solitary glands of the intestine, which Dr. Crisp believed to be diseased, but which I was inclined to attach no importance to, rather considering them to exhibit an enlarged but healthy functional condition.

partially divided anteriorly by a dependent fold of skin, which at its posterior end had the long pencil of hairs upon it, as already mentioned, simulating in appearance the prepuce of a male, though more truly representing a clitoris. At the bottom of this genital cleft, its posterior convex end, there was a narrow slit-like aperture, fully three-quarters of an inch long, which led into a thick-walled membranous or fibro-elastic tube (the common *urethro-vaginal canal* or passage, *U. g. c.*), which, when dissected free from the surrounding tissues, looked uncommonly like a long narrow penis. This proceeded upwards and backwards towards the pubic arch, where it communicated by a constricted opening with the true vagina. The tube close to the abdominal outlet was $1\frac{1}{2}$ inch in diameter, but immediately beyond and for the remainder of its length it was considerably narrower; but just before joining the vagina it had a second dilatation.



Malformed parts displayed as an anatomical preparation.

A. Anus, and *R.* Rectum. *U. g. o.* Urino-genital outlet. *T.* Teats. *M. g.* Mammary gland. *U. g. c.* Urino-genital canal. *R. m.* Retractor muscles. *V.* Vagina. *U.* Uterus. *l. c.* Left cornu, cut open to show the cotyledons. *O. t.* Os tincae. *o. o.* Position of ovaries. *f. f.* indicate position of fimbriated extremities of Fallopian tubes. *U. b.* Urinary bladder; *n.* neck; *ur.* ureters; *m. u.* meatus urinarius. *C. g.* Cowper's glands. * points to the *cul de sac* and a style passed through the opening between the vagina and urino-genital canal.

The structures forming this long urethra were an inner mucous lining, surrounded by elastic fibrous tissue, but no true and continuous corpus cavernosum or spongiosum. Nevertheless at the vaginal end there was a space, of about an inch in extent, where the fibrous tissue was in open network, the meshes closely resembling the peculiar cellulovascular structure of erectile tissue belonging to the corpus cavernosum and clitoris.

As if further supporting the similitude of a penis, this urethral canal possessed two long cord-like *retractor muscles* (*R. m.*) (*erectores clitoridis?*), which were closely applied to either side of its outer walls. These muscles arose from the tissues between the tail and rectum, and, running parallel with the tube, were inserted on the right and left sides of the vulva.

The *vagina* (*V.*) was considerably dilated, and measured $10\frac{1}{2}$ inches from the os uteri to its abrupt termination in a *cul de sac* near the rectum. This *cul de sac* was firmly attached by strong fibrous substance to the deep fascia of the perineum. The mucous membrane and walls of the vagina were normal-looking and with the usual numerous longitudinally parallel plications. On its inferior or abdominal wall, $1\frac{1}{2}$ inch from the terminal blind sac, was a slit-shaped opening, the meatus urinarius (*m. u.*). Posterior to this was a second orifice, namely that which led into the long fibro-membranous tube already spoken of, the common urino-genital canal.

The *uterus* (*U.*) and appendages, as a whole, appeared completely developed, and the former of regular dimensions. Each *cornu*, as well as the body and neck of the uterus, when cut open also showed nothing abnormal; the former had small cotyledonal elevations, the latter the usual longitudinal and transverse rugæ. The *os tinæ* (*o. t.*) was well formed. The dimensions of the uterus were as follows:—From the os tinæ to the divarication of the cornua $2''\cdot7$, each cornua (following the curve) about 7 inches in length.

The *ovaries*, right and left (*o. o'*), were contained in the folds of the broad ligament; but neither of these bodies were of large size. A section of the right one disclosed two corpora lutea, of a reddish colour and of a dense homogeneous texture. The larger one of these corpora lutea equalled a canary-seed in size, and projected slightly upon the surface of the ovary.

The *Fallopian* tubes terminated in delicate but well-formed fimbriated extremities (*f. f'*), but were not pervious for their entire length. This was ascertained by first trying to pass a very delicate silver wire along the canal from the end next the uterus, but which would not enter beyond a third of the way. Afterwards a thin-coloured injection was forced in from the opening at the fimbriated extremity; but this ran in only as far as a third of the distance from that side, while a fluid introduced from the cornual or uterine end did not pass any further than the wire—thus proving that the middle third of the tube was in a closed condition.

The *urinary bladder* (*U. b.*) had its usual relative position with respect to the uterus and other viscera. In its contracted state it measured from the fundus to the neck about 7 inches. The neck (*n.*),

which was wide, had a length of $4\frac{1}{2}$ inches; its orifice penetrated the walls of the vagina by the longitudinal fissure of the meatus urinarius (*m. u.*), previously described.

The representatives of Cowper's glands (*C. g.*), or those of Bartholinus, were two somewhat flattened oval glandular bodies, each about 1 inch long and $\frac{6}{10}$ of an inch broad, which were placed on either side of the outer walls of the vagina, at the *cul de sac*, nearly opposite where the urino-genital canal was given off; and these opened by minute pin-hole-sized orifices or slits into the vagina.

There was no trace of testicles.

If we sum up the results of the anatomical examination, we find that, of female organs, there were present:—Diminutive ovaries; impervious Fallopian tubes, and a normal uterus, connected with a vagina which ended anomalously in a *cul de sac* within the pelvic region, a natural vulva being thus wanting, whilst the neck of the bladder opened into the vagina above the blind sac.

On the contrary, simulating male organs were:—The long urino-genital canal, derived from the lower wall of the vagina and terminating between the udders, which tube, with its very rudimentary corpus cavernosum and two long retractor muscles, bore tolerable resemblance to an imperfect penis.

In this manner, by balancing as it were the several organs, it would appear that the animal was essentially a female, and in such respects might come under Professor Simpson's* definition of "spurious female hermaphroditic malformations." Nevertheless, combining as it did some outward characters of male conformation, and also the tendency in development of the urino-genital canal to form, not merely a preternaturally enlarged normally placed clitoris, but rather, in the advanced position, &c., of the genitals, an essentially male type of intromittent organ, it might on such grounds be considered, if not a perfect example of, at least a curious approximation to, the above author's subdivision of "True transverse hermaphroditism"—"the external sexual organs male, internal female." But, under whichever of the above heads of teratological classification in strictness it ought to be included, the outer genital apparatus blended together conditions appertaining to the masculine and feminine types.

By way of contrast, and the better to exemplify by comparison, I shall briefly allude to two animals dissected by John Hunter, which are among those which go under the name of "Free Martin."

The first specimen, of which the preserved parts form Preparation no. 240, 'Catalogue of Monsters, Royal Coll. of Surg. Museum,' Hunter records† the living animal as having "more of the characters of an ox or spayed heifer than either bull or cow." According to his description and my examination of the preparation, the vagina is placed naturally, but terminates blindly at a short distance from the outer opening. An organ, supposed by him to be a uterus, divides into two horns with bodies more like testicles than ovaries. Vesi-

* Todd's Cyclopædia, vol. ii. p. 685.

† Animal Economy, p. 62, pls. 8, 10; also Museum Drawings.

culæ seminales coexist, but, according to Hunter, no vasa deferentia*.

Prof. Simpson † has placed this case of Hunter's "Free Martin" under his division of "Transverse hermaphroditism with the external organs of the female type," while M. Isidore Geoffroy Saint-Hilaire ‡ has regarded it as belonging to his "*Hermaphroditismes neutres*."

Without deciding which of these two authors' views is the more applicable one, it is sufficient for my purpose to remark that the fact of the creatures possessing testicles and vesiculæ seminales, and only a very doubtful and imperfectly pronounced uterus, with naturally formed outward female genital organs, completely differentiates it from our Porto Rico animal.

In the second Hunterian specimen, now forming no. 242 in the above 'Catalogue' of the College, it appears that the animal had an Ox-like aspect, with the outward genital conformation of a Cow, the vulva being placed lower down than usual, but not so entirely abdominal as in the animal forwarded by Mr. Latimer. From examination of the Museum preparation, the distance between the anus and vaginal aperture is nearly as much as 12 inches, in this respect bearing resemblance to our case; but the perineal raphe is by no means so well marked.

The vulva also, and the clitoris in its peaked prominent form, more nearly agree with what is the normal condition in Cows; but, as in the Society's specimen, there are long and projecting hairs at the genital outlet. The uterus, however, is very defective in structure. Testicles are present, and a true penis. This latter occupies its usual abdominal situation as in Bulls; but it is of small calibre, distinct, and tortuous, although not perfectly developed, so far as an outer passage is concerned.

The presence of a male abdominal organ approximates it to our specimen; but the line of demarcation is clear; for, besides this small organ, there is a natural vagina, along with other true male structures wanting in that which I have described.

The two instances cited above, taken along with that forming the subject of the present paper, afford remarkably good illustrations of abnormalities wherein the type of sexuality sways from male organs internally and female externally to very nearly female organs internally and male externally, which curious anomaly has its antecedents in the evolution of the organism *in utero*.

In reasoning as to the probable origin of hermaphroditism, most

* Gurlt, as quoted by Simpson (*loc. cit.* p. 702), expresses an opinion that the deferent vessels are what Hunter has mistaken for the uterine horns. The present bottled condition of the specimen renders it difficult to redetermine this point.

† *Op. cit.* p. 702.

‡ *Histoire des Anomalies*, tome i. p. 289. In comparing as above the Society's animal with Simpson's classification (a modification of Gurlt's), rather than adopting the celebrated French anatomist's divisions, I have been guided solely by the facility of its comprehension, preferring not to enter into a discussion regarding the significance of the term *neuter* as applied by Geoffroy to cases exhibiting doubtful sex.

modern anatomists refer them with justice to defects in the development of the embryo*, assuming that the organs undergo a certain transformation from a simple common type into one or other of the sexes—although there are not wanting those † who have entertained the view that the hermaphroditic or bisexual condition of the embryo is the original one. Without entering into the latter hypothesis, ably opposed by erudite authority ‡, we shall merely consider how far the present example of malformation agrees with or bears out the history of embryonic development.

In the description of the dissection of the parts of generation it was shown that the bladder entered into the vagina, and that from these a common urino-genital canal continued onwards to the external abdominal walls, this being the main point of resemblance to male sexual organization. It is interesting therefore to find that this precisely corresponds to a certain stage in foetal formation.

The researches of many distinguished embryologists so far concur as to demonstrate that, after the intestine has been occluded from the umbilical vesicle with a partial dilatation of the urachus ultimately forming the urinary bladder, there still remains a common outward passage between the urinary and internal generative parts, the *urino-genital sinus*. Afterwards in the female this sinus becomes divided, and forms the narrow neck of the bladder and widish vagina, while in the male the *meatus urinarius* continues the principal canal.

The external organs of generation, however, are of later development, and in both sexes at first identical, even in ruminants, where, as Johannes Müller § remarks, he had hoped to find an early difference, seeing that the sheath of the penis in the male adult opens close to the umbilicus.

According to the same talented observer, the embryos of sheep have a proportionally long clitoris or penis. In the female this shortens; in the male it lengthens. In the latter, at a later period, by an agglutination of the sheath, it is attached at the same time to the abdominal walls, ultimately opening a short distance behind the navel. The perineal cleft, from its open condition, closes, leaving traces of its separation in the raphe. Later investigators, Kölliker || among others, in the main substantiate these earlier observations of Müller.

Having thus succinctly glanced at the course of development of such of the urinary and genital apparatus more immediately concerning those parts implicated in the structure of the malformation in question, it remains but to consider how such history applies to its abnormal condition.

This brings us to conclude that in the earliest stage of the animal's

* See the excellent article by Bischoff in Wagner's 'Handwörterbuch der Physiologie,' 1842, vol. i. p. 860.

† Dr. Knox, in Brewster's 'Edinb. Journal of Science,' vol. ii. p. 322, and paper reprinted from the 'London Medical Gazette' (1843), "Hermaphroditism: a memoir read to the Royal Society of Edinburgh in 1827 and 1828."

‡ Prof. Simpson, in the 'Cyclop. of Anat. and Physiol.' vol. ii. p. 728.

§ Bildungsgeschichte der Genitalien aus anatomischen Untersuchungen am Embryonen des Menschen und der Thiere (Dusseldorf, 1830).

|| Entwicklung des Menschen und der höheren Thiere.

intra-uterine formation it would seem as if the parts had been evolved in a normal manner, and that only at the period when the external genitals came to be developed did a departure from the female structure take place. Instead of the clitoris remaining in size and position comparatively stationary, it increased as would a male organ, but without becoming fully developed into a true penis; while the primary common genital cleft uniting, produced the lengthened perineal raphe.

If this view be the correct one, it adds one more instance to support the opinion which some hold, that between the development of the internal and external genitalia there is a certain amount of independence; for in the above example the inner organs would have been necessarily more or less completely formed before deviation from female sexual character occurred.

Dr. A. Günther read a memoir on the Fishes of the States of Central America, founded upon specimens collected in the fresh and marine waters of various parts of that country by Messrs. Salvin and Godman and Capt. J. M. Dow. The specimens collected, together with a few previously known from the same region, but not contained in this collection, were referred to nearly 300 species.

Dr. Günther called particular attention to the fact that no less than 48 of the marine species, out of a total of 158, from the seas on both sides of the Isthmus of Panama were found to be identical, and stated that this was to be explained only by assuming that, at a former period, one or more open channels existed between the Atlantic and Pacific. He added that, although a long time must have elapsed since this communication was stopped, the specimens examined from opposite coasts of the isthmus were absolutely identical, and that there was no indication that any of these forms had undergone modification or degenerated into a climatic or local variety.

After having defined the zoological characters of Central America, as expressed in its fish-fauna, and subdivided it into six provinces, he proceeded to give full descriptions of the new forms collected by the gentlemen mentioned. Diagnoses of a part of these had been already given in the 'Proceedings' of the Society, 1864, p. 144. The following had not been mentioned before:—

PLECTROPOMA MULTIGUTTATUM.

D. $\frac{11}{20}$. A. $\frac{3}{9}$. L. lat. 75.

Allied to *P. monacanthus*. Præoperculum with two spinous teeth below the angle.

Panama.

CORVINA CHRYSOLEUCA.

D. 10 | $\frac{1}{22-23}$. A. $\frac{2}{9}$. L. lat. 55.

Allied to *C. ronchus*. Second dorsal spine the strongest, third the

longest, as long as the postorbital portion of head. Second anal spine very strong, not much shorter than the third dorsal spine.

Panama.

CORVINA VERMICULARIS.

D. $10\frac{1}{25}$. A. $\frac{2}{8}$.

Interorbital space only one-fourth wider than the orbit, its width being one-fourth of the length of the head. Second dorsal spine scarcely stronger than, and but half as long as, the third, the length of which is nearly equal to that of the postorbital portion of the head and of the second anal spine.

Panama.

OTOLITHUS SQUAMIPINNIS.

D. $8\frac{1}{21-22}$. A. $\frac{2}{10}$. L. lat. 85.

Spinous dorsal fin longer than high, with feeble spines. Coloration uniform.

Panama.

CARANX CANINUS.

D. $8\frac{1}{20}$. A. $2\frac{1}{17}$. L. lat. 24.

Upper teeth in a villiform band, with an outer series of stronger ones; lower teeth in a single series, those in front canine-like; teeth on the vomer, palatines, and tongue. Lateral line slightly bent, the width of the arch being contained once and one-third in the length of the straight portion. Dorsal spines stout and short.

Panama.

HEROS NIGROFASCIATUS.

D. $\frac{18}{8}$. A. $\frac{10}{7}$.

Lower lip interrupted in the middle.

Lakes of Amatitlan and Atitlan.

HEROS MULTISPINOSUS.

D. $\frac{18}{9}$. A. $\frac{11}{7}$.

Lower lip interrupted in the middle. Three series of scales on the cheek.

Lake of Managua.

HEROS LONGIMANUS.

D. $\frac{16}{10}$. A. $\frac{6}{8}$.

Lower lip interrupted in the middle. Pectoral extending nearly to the end of the anal. A large black spot in the middle of the side.

Lake of Nicaragua.

HEROS ERYTHRÆUS.

D. $\frac{17}{12}$. A. $\frac{7}{8}$. L. lat. 31. L. transv. $\frac{6\frac{1}{2}}{14}$.

Lips thick, continuous. The length of the eighth dorsal spine is less than one-third of that of the head. The depth of the free portion of the tail is conspicuously more than its length.

Lake of Managua.

HEROS LOBOCHILUS.

D. $\frac{17}{11-12}$. A. $\frac{7}{8-9}$. L. lat. 32. L. transv. 6/14.

Lips enlarged into lobes. The length of the eighth dorsal spine is more than one-third of that of the head. The depth of the free portion of the tail is scarcely more than its length. Greenish, with blackish cross bands.

Lake of Managua.

HEROS TRIMACULATUS.

D. $\frac{17}{11}$. A. $\frac{6-8}{9}$.

Allied to *H. salvini*. Fold of the lower lip continuous. Three black spots along the side of the body.

Chiapam and Huamuchal.

HEROS MOTAGUENSIS.

D. $\frac{18}{10}$. A. $\frac{7}{8-9}$.

Closely allied to *H. friedrichsthalii*. Fold of the lower lip continuous. Præorbital with the antero-inferior margin but slightly concave, as wide as the orbit. A black interrupted band runs from the eye to a spot situated above the end of the lateral line.

Rio Motagua.

HEROS MANAGUENSIS.

D. $\frac{18}{10}$. A. $\frac{7}{8}$.

Allied to *H. friedrichsthalii*. Fold of the lower lip continuous. Præorbital narrow, scarcely more than half as wide as the orbit. The length of the twelfth dorsal spine contained thrice and two-thirds in that of the head. A series of quadrangular spots runs from the eye to a spot situated above the end of the lateral line.

Lake of Managua.

HEROS OBLONGUS.

D. $\frac{18}{12-13}$. A. $\frac{6}{8-9}$.

Allied to *H. microphthalmus*. Fold of the lower lip continuous; five series of scales on the cheek. The height of body is one-third of the total length (without caudal), the length of the twelfth dorsal spine less than one-third of that of the head. Coloration as in *H. microphthalmus*.

Rio Motagua.

NEETROPLUS, g. n.

Differing from *Ieros* in having a front series of flat incisor-like teeth.

NEETROPLUS NEMATOPUS.

D. $\frac{19}{10}$. A. $\frac{8}{7}$.

From Lake Managua.

PIMELODUS MANAGUENSIS.

D. 1/6. A. 14-15. P. 1/9.

Adipose fin rather more than one-third of the total length (without caudal); maxillary barbels extending nearly to the base of the dorsal fin. Dorsal spine very feeble; anal rays not nearly extending to the end of the adipose fin, if laid backwards.

Lake Managua.

CHÆTOSTOMUS ASPIDOLEPIS.

L. lat. 25.

Diameter of the orbit one-third of the width of the interorbital space. Interoperculum with very few short spines. Seven scutes between the two dorsal fins, twelve between anal and caudal.

Veragua.

PRISTIGASTER MACROPS.

D. 13. A. 61. L. lat. 53.

Greatest depth of the body one-third of the total length (without caudal). Eye one-third of the length of the head. Origin of dorsal midway between caudal and scapula.

Panama.

PRISTIGASTER ARGENTEUS.

D. 11. A. 56. L. lat. 51.

Greatest depth of the body two-sevenths of the total length. Eye two-sevenths of the length of the head. Origin of dorsal much nearer to caudal than to scapula.

Panama.

MELETTA PETENENSIS.

D. 14-15. A. 20-23. L. lat. 40.

Distinguished from *M. thrissa* by its larger head, the length of which is two-sevenths of the total (without caudal).

Lake Peten.

MELETTA LIBERTATIS.

D. 17. A. 19. L. lat. 48.

The length of the head is contained thrice and two-thirds in the

total (without caudal). Origin of the dorsal fin much nearer to the snout than to the caudal. No humeral spot.

Libertad.

ENGRAULIS MYSTICETUS.

D. 17. A. 20. L. lat. 42.

The length of the head is contained twice and four-fifths in the total (without caudal).

Panama.

RHINOBTATES LEUCORHYNCHUS.

Anterior nasal valve not prolonged to the inner angle of nostril. Disk longer than broad; prænasal part of snout not so long as broad at the base, but longer than the distance between the front extremities of the nostrils. A series of very small tubercles along the middle of the back. Nostrils longer than the space between their posterior extremities, but shorter than the mouth.

Panama.

This memoir will be published entire in the Society's 'Transactions.'

APPENDIX.

LIST OF ADDITIONS TO THE SOCIETY'S MENAGERIE
DURING THE YEAR

1866.

- Jan. 1. 1 Texan Squirrel. *Sciurus* —? Purchased.
 1 Bonnet-Monkey. *Macacus radiatus* (Shaw). Deposited.
 1 Malayan Pied Hornbill. *Buceros convexus*, Temm. Purchased.
 2 Grey-headed Porphyrios. *Porphyrio poliocephala* (Lath.).
 Purchased.
 2 Indian Tree-Ducks. *Dendrocygna arcuata* (Cuv.). Purchased.
 1 Wood Fruit-eating Pigeon. *Carpophaga sylvatica* (Tick.).
 Purchased.
 2. 1 Common Squirrel. *Sciurus vulgaris*, Linn. Presented by
 Edward Boyle, Esq.
 3. 1 Marimonda Spider Monkey. *Ateles belzebuth* (Briss.). Pur-
 chased.
 5. 1 Chinese Magpie. *Pica sericea*, Gould. Purchased.
 6. 1 ♂ Hybrid Pheasant. *Euplocamus* —? Purchased.
 1 Green Monkey. *Cercopithecus callitrichus*, Is. Geoff. Presented
 by — Hall, Esq.
 15. 1 Black Bear. *Ursus americanus*, Pall. Presented by — Keyes,
 Esq.
 2 Green Monkeys (from St. Kitt's, W. I.). *Cercopithecus calli-
 trichus*, Is. Geoff. Presented by J. D. Cameron, Esq., St.
 Thomas's, W. I.
 1 Green Monkey (from St. Kitt's, W. I.). *Cercopithecus calli-
 trichus*, Is. Geoff. Purchased.
 1 Common Hobby. *Hypotriorchis subbuteo* (Linn.). Purchased.
 18. 1 Vociferous Sea-Eagle. *Haliaeetus vocifer* (Daud.). Presented
 by Edward Hooper, Esq., of Natal.
 1 Green Monkey. *Cercopithecus callitrichus*, Is. Geoff. Presented
 by Lieut. R. B. Wilkinson, R.N.
 19. 3 Sandwich-Island Geese. *Chloëphaga sandvicensis* (Vig.). De-
 posited.
 20. 1 Griffon Vulture. *Gyps fulvus* (Gm.). Presented by Robert
 H. Holdsworth, Esq.

- Jan. 23. 1 Spotted Cavy. *Calogenys paca* (Linn.). Deposited.
 1 Macaque Monkey. *Macacus cynomolgus* (Linn.). Presented by J. W. Pyne, Esq.
 1 Grey Ichneumon. *Herpestes griseus* (Geoff.). Presented by H. Simkins, Esq.
25. 1 Sea-bear (from Cape Horn). *Otario hookeri*, Gray. Purchased.
29. 1 Bless-bok Antelope. *Damalis albifrons* (Burch.). Born.
 1 Ring-necked Parrakeet. *Palaeornis torquatus* (Linn.). Deposited.
 1 Wandering Tree-Pie. *Dendrocitta vagabunda* (Lath.). Purchased.
 1 Indian Drongo. *Chibia hottentotta* (Linn.). Purchased.
30. 1 Blue-rumped Parrakeet. *Psittinus malaccensis* (Lath.). Purchased.
 1 Cereopsis Goose. *Cereopsis novæ-hollandiæ*, Lath. Returned.
31. 1 Cashmere-shawl Goat. *Capra hircus*, Linn., var. Born.
- Feb. 1. 2 Turquoise Parrakeets. *Euphema pulchella* (Shaw). Deposited.
 1 Crested Ground-Parrakeet. *Calopsitta novæ-hollandiæ* (Gm.). Deposited.
 1 Orange-cheeked Waxbill. *Estrellda melypoda* (Vieill.). Deposited.
 300 Salmon-ova. *Salmo salar*, Linn. Presented by Frank T. Buckland, Esq., F.Z.S.
2. 1 Raven. *Corvus corax*, Linn. Presented by The Right Honourable The Speaker of the House of Commons.
3. 1 Bonnet-Monkey. *Macacus radiatus* (Shaw). Presented by S. Yorke Martin, Esq.
5. 1 Great Kangaroo. *Macropus giganteus*, Shaw. Presented by F. C. Capel, Esq.
7. 1 Brown Bear. *Ursus arctos*, Linn. Received in exchange.
 1 Bonnet-Monkey. *Macacus radiatus* (Shaw). Presented by Ed. Marsden, Esq.
8. 1 Moor Monkey. *Semnopithecus maurus* (Schreb.). Received in exchange.
 1 Suricate. *Suricata zenik* (Gm.). Purchased.
9. 1 Cashmere-shawl Goat. *Capra hircus*, Linn., var. Born.
10. 1 Chimpanzee. *Troglodytes niger*, Linn. Purchased.
 1 ♀ Formosan Deer. *Cervus taëvanus*, Blyth. Purchased.
 1 Diard's Cat. *Felis diardi*, Griff. Purchased.
 1 Swinhoe's Pheasant, ♂. *Euplocamus swinhoii*, Gould. Purchased.
12. 1 Grand Galago. *Galago crassicaudata* (Geoff.). Deposited.
13. 1 Short-headed Antelope. *Cephalophus breviceps*, Gray. Purchased.
16. 3 Rabbit-eared Perameles. *Perameles lagotis*, Reid. Purchased.
 1 ♂ Pudu Deer. *Cervus pudu* (Mol.). Presented by Charles Bath, Esq.
21. 1 Bornean Ape. *Macacus inornatus*, Gray. Purchased.
22. 1 ♀ Eland. *Oreas canna* (Pall.). Born.
23. 1 ♂ Hog Deer. *Cervus porcinus*, Zimm. Born.
 1 Macaque Monkey. *Macacus cynomolgus* (Linn.). Presented by D. M. Smith, Esq., H.M.S. 'Conqueror.'
 1 Vulpine Phalanger. *Phalangista vulpina* (Shaw). Presented by James R. Christie, Esq.

- Feb. 24. 1 Paradise Mynah. *Acridotheres tristis* (Linn.). Presented by the Rev. Dan. Greatorex.
 1 Capuchin Monkey. *Cebus albifrons*, Geoff. Purchased.
27. 1 Lizard (from Australia). Purchased.
28. 1 ♂ Eland. *Oreas canna* (Pall.). Born.
- Mar. 1. 1 Black Bear. *Ursus americanus*, Pall. Deposited.
 2. 5 Sly Siluri. *Silurus glanis*, Linn. Received.
 3. 1 Sparrow Hawk. *Accipiter fringillarius*, Ray. Presented by William H. Allies, Esq.
 5. 1 Common Hare. *Lepus timidus*, Linn. Presented by George Selwyn Morris, Esq.
 7. 1 Golden Agouti. *Dasyprocta aguti* (Linn.). Born.
 1 Sociable Vulture. *Vultur auricularis*, Daud. Deposited.
 9. 3 Common Carp. *Cyprinus carpio*, Linn. Presented by John Henry Gurney, Esq., F.Z.S.
 10. 1 Red-shouldered Starling. *Agelaius phoeniceus* (Linn.). Presented by A. Dixon, Esq.
 1 Cuvier's Podargus. *Podargus cuvieri*, Vig. et Horsf. Presented by Dr. Mueller, C.M.Z.S.
 1 Roseate Cockatoo. *Cacatua roseicapilla*, Vieill. Deposited.
 12. 2 Black Swans. *Cygnus atratus*, Lath. Received.
 16. 1 Red-bellied Monkey. *Cercopithecus erythrogaster*, Gray. Purchased.
 1 Variegated Touracou. *Schizorhis africana* (Lath.). Purchased.
 21. 1 Ganga Cockatoo. *Callocephalon galeatum* (Lath.). Purchased.
 22. 1 Brown Coati. *Nasua fusca*, Desm. Presented by J. Baron, Esq.
 24. 1 Golden-naped Amazon. *Chrysotis auripalliat*a (Less.). Presented by Lady Ousley.
 1 Bonnet-Monkey. *Macacus radiatus* (Shaw). Presented by Miss Rosalie Harraden.
 28. 1 pair of Beautiful Parrakeets. *Psephotus pulcherrimus*, Gould. Purchased.
 1 Marmoset Monkey. *Hapale jacchus* (Linn.). Presented by Miss Warren.
 1 Entellus Monkey. *Semnopithecus entellus* (Linn.). Purchased.
 31. 1 Manatee (arrived dead). *Manatus americanus*, Cuv. Presented by George Latimer, Esq.
 2 ♀ Aoudads. *Ovis tragelaphus*, Desm. Born.
 1 Pig-tailed Monkey. *Macacus nemestrinus* (Linn.). Presented by S. Youlton, Esq.
 2 West-Indian Doves. *Zenaida amabilis*, Bonap. Presented by Capt. Sawyer, of the R.M.S. 'Tasmania.'
 2 pairs of White-crowned Pigeons. *Columba leucocephala*, Linn. Presented by John A. Palm, Esq., R.M.S. 'Tasmania.'
 1 pair of West-Indian Doves. *Zenaida amabilis*, Bonap. Presented by John A. Palm, Esq., R.M.S. 'Tasmania.'
 1 Black-faced Spider Monkey. *Ateles ater*, F. Cuv. Purchased.
- April 3. 1 Hybrid Ibex. *Capra ibex*, Linn. Born.
 4. 1 Australian Bustard. *Otis australis*, Gray. Purchased.
 1 Malee Bird. *Leipoa ocellata*, Gould. Purchased.
 1 Grey Crow. *Strepera anaphonensis* (Temm.). Purchased.
 1 Cardinal Grosbeak. *Cardinalis virginianus* (Briss.). Purchased.

- April 5. 1 Common Curlew. *Numenius arquatus*, Linn. Received in exchange.
6. 9 Golden-eyes. *Clangula glaucion* (Linn.). Received in exchange.
7. A collection of Clams. *Mya arenaria*. Presented by A. Arce-deckne, Esq., F.Z.S.
9. 1 Smooth Snake. *Coronella lavis*, Lacép. Presented by the Rev. C. Wolley.
10. 10 Sand-Lizards. *Lacerta agilis*, Linn. Presented by the Rev. C. Wolley.
10. 1 Crested Curassow. *Crax alector*, Linn. Presented by Mrs. Beaumont.
11. 1 Slender-billed Cockatoo. *Licmetis tenuirostris* (Wagl.). Received in exchange.
12. 2 Indian Porcupines. *Hystrix leucura*, Sykes. Born.
- 4 St. Helena Seed-eaters. *Crithagra butyracea* (Linn.). Purchased.
13. 1 Gannet. *Sula bassana*, Linn. Deposited.
- 1 Lesser Sulphur-crested Cockatoo. *Cacatua sulphurea* (Gm.). Deposited.
16. 3 Porpoises. *Phocæna communis*, Less. Purchased.
17. 2 African Sheep. *Ovis aries*, Linn., var. Presented by Her Majesty the Queen.
- 1 Common Otter. *Lutra vulgaris*, Linn. Presented by the Hon. Rowland Hill, M.P.
- 2 Bernicle Geese. *Bernicla leucopsis*, Bechst. Presented by W. C. Hewitson; Esq., F.Z.S.
- 4 Brent Geese. *Bernicla brenta*, Steph. Presented by W. C. Hewitson, Esq., F.Z.S.
18. 1 Grote's Porcupine. *Hystrix grotei*, J. E. Gray. Presented by A. Grote, Esq., C.M.Z.S.
19. 1 Viscacha. *Lagostomus trichodactylus*, Brookes. Presented by W. Bramley Moore, Esq.
- 1 Kagu. *Rhinocetus jubatus*, Verr. et Des Murs. Presented by the Acclimatization Society of Sydney.
- 1 Australian Bustard. *Otis australis*, Gray. Presented by the Acclimatization Society of Sydney.
- 1 Straw-necked Ibis. *Geronticus spinicollis* (Jameson). Presented by the Acclimatization Society of Sydney.
- 1 pair of Bower-Birds. *Ptilonorhynchus holosericeus*, Kuhl. Presented by the Acclimatization Society of Sydney.
- 1 Common Wombat. *Phascalomys wombat*, Pér. et Les. Deposited.
- 1 pair of Brush-Turkeys. *Talegalla lathamii*, Gray. Deposited.
- 4 Black-backed Porphyrios. *Porphyrio melanotus*, Temm. Deposited.
- 1 Vulpine Phalanger. *Phalangista vulpina* (Shaw). Deposited.
- 1 Straw-necked Ibis. *Geronticus spinicollis* (Jameson). Purchased.
- 1 Pectoral Rail. *Rallus pectoralis*, Cuv. Purchased.
- 1 Nankeen Night-Heron. *Nycticorax caledonicus* (Gm.). Purchased.
- 1 Little Whimbrel. *Numenius minutus*, Gould. Purchased.
- 1 Wattled Peewit. *Lobivanellus lobatus* (Lath.). Purchased.
- 2 Wattled Fruit-Pigeons. *Carpophaga* —? Purchased.

- Apr. 19. 1 Fiji Shining Parrakeet. *Pyrrhulopsis splendens*, Cass. Presented by Charles Moore, Esq.
 1 Great Cyclodus Lizard. *Cyclodus gigas* (Bodd.).
 15 Australian Geckos. *Euprepes (Hinalia) australis*, Gray.
21. 3 Trumpeter Swans. *Cygnus buccinator*, Rich. Received in exchange.
24. 1 Napu Musk Deer. *Tragulus javanicus* (Pall.). Presented by James A. Gardner, Esq.
25. 2 Palm-Squirrels. *Sciurus palmarum*, Linn. Presented by D. H. Macfarlane, Esq.
26. 2 Augur Buzzards. *Buteo augur*, Rüpp. Purchased.
30. 1 Barthélemy's Eagle. *Aquila barthelemii*, Jaubert. Purchased.
 1 ♂ Crowned Eagle. *Spizaetus coronatus* (Linn.). Purchased.
 1 Pel's Owl. *Scotopelia peli* (Temm.). Purchased.
 1 Oystercatcher. *Hematopus ostralegus*, Linn. Deposited.
 1 Grey Plover. *Squatarola cinerea* (Ray). Deposited.
 1 Brown-headed Gull. *Larus ridibundus*, Linn. Deposited.
 1 Pine-Marten. *Mustela martes*, Linn. Deposited.
 1 Sun-Bittern. *Eurypyga helias* (Pall.). Presented by James L. Inman, Esq., Ass. Purs. R.M.S. 'Shannon.'
- May 1. 1 Entellus Monkey. *Semnopithecus entellus* (Linn.). Deposited.
3. 1 Great Kangaroo. *Macropus giganteus* (Shaw). Born.
 1 Gray's Jerboa Kangaroo. *Bettongia grayi* (Gould). Born.
 2 Wanderoo Monkeys. *Macacus silenus* (Linn.). Presented by Col. Denison, F.Z.S.
 1 Ocelot. *Felis pardalis*, Linn.— Presented by Dr. A. A. Blandy.
4. 1 Black-necked Swan. *Cygnus nigricollis* (Gm.). Hatched.
6. 1 pair of Wart-Hogs. *Phacochoerus æthiopicus* (Pall.). Presented by H.R.H. the Duke of Edinburgh.
7. 1 ♂ Cashmere-shawl Goat. *Capra hircus*, Linn., var. Born.
 1 Marimonda Spider Monkey. *Ateles belzebuth* (Briss.). Deposited.
8. 2 Ruddy-headed Geese. *Chloëphaga rubidiceps*, Sclater. Hatched.
 3 Variegated Sheldrakes. *Tadorna variegata* (Gm.). Hatched.
 4 Dusky Ducks. *Anas obscura*, Gm. Hatched.
 12 Axolotls. *Siredon mexicanus* (Shaw). Purchased.
9. 1 Bower-Bird. *Ptilonorhynchus holosericeus*, Kuhl. Purchased.
 1 White-winged Chough. *Corcorax leucoptera* (Temm.). Purchased.
- 2 African Civet Cats. *Viverra civetta* (Schreb.). Presented by John Fleming, Esq.
- 1 New-Zealand Hawk. *Hieracidea novæ-zealandiæ* (Gm.). Presented by the Acclimatization Society of Canterbury, N. Z.
 1 Iguana. *Iguana* —?
10. 1 Grey Parrot. *Psittacus erithacus*, Linn. Deposited.
 1 Macaque Monkey. *Macacus cynomolgus* (Linn.). Presented by the Rev. F. Gerald Vesey.
- 2 Hooper Swans. *Cygnus ferus*, Leach. Purchased.
 1 Burchell's Bustard. *Otis kori*, Burch. Purchased.
 1 Green-winged Trumpeter. *Psophia viridis*, Spix. Purchased.
 4 Common Scoters. *Edemia nigra* (Linn.). Purchased.
 1 ♀ Black Francolin. *Francolinus vulgaris*, Steph. Purchased.
11. 4 Tiara'd Guinea-fowls. *Numida tiarata*, Bonap. Presented by Mrs. Moon of Mauritius.

- May 11. 1 Greater Vasa Parrakeet. *Coracopsis vasa* (Linn.). Presented by Mrs. Moon of Mauritius.
 2 Painted Doves. *Turtur picturatus* (Temm.). Presented by Mrs. Moon of Mauritius.
12. 1 Common Otter. *Lutra vulgaris*, Linn. Presented by M. Ware, Esq.
13. 1 Suricate. *Suricata zenik* (Gm.). Presented by the Lord Bishop of Graham's Town.
15. White-headed Saki. *Pithecia leucocephala* (Audeb.). Presented by W. H. Barton, Esq., R.M.S. 'Wye.'
16. 2 Irish Hares. *Lepus variabilis*, Pall. Purchased.
18. 1 Sun-Bittern. *Eurypyga helias* (Pall.). Hatched.
 1 Crested Pigeon. *Ocyphaps lophotes* (Temm.). Purchased.
 2 Banded Grass-Finches. *Poëphila cincta*, Gould. Purchased.
 1 Red-backed Pelican. *Pelecanus rufescens*, Lath. Purchased.
 3 Brown Capuchin Monkeys. *Cebus apella* (Briss.). Purchased.
 1 Diana Monkey. *Cercopithecus diana* (Linn.). Purchased.
 1 Prehensile-tailed Porcupine. *Cercolabes prehensilis* (Linn.). Purchased.
22. 1 Naked-throated Cotinga. *Chasmorhynchus nudicollis* (Vieill.). Purchased.
 2 Black-necked Grackles. *Gracupica nigricollis*, Paykull. Purchased.
 2 Rosy-faced Parrakeets. *Agapornis roseicollis* (Vieill.). Purchased.
 2 Doves (African). *Turtur* —? Purchased.
 1 White-tailed Gnu. *Catoblepas gnu* (Gm.). Deposited.
 1 Gazelle. *Gazella dorcas* (Linn.). Deposited.
 1 Sykes's Monkey. *Cercopithecus albogularis*, Sykes. Deposited.
24. 1 Blaubok Antelope. *Cephalophus pygmaeus* (Linn.). Presented by H.R.H. the Duke of Edinburgh.
 1 Jackal Buzzard. *Buteo jacob*, Daud. Presented by G. W. Baker, Esq.
 1 Malbrouck Monkey. *Cercopithecus cynosurus* (Scop.). Presented by W. W. Vine, Esq., R.N.
25. 1 Nicobar Pigeon. *Calenas nicobarica* (Linn.). Hatched.
 1 ♀ Red Kangaroo. *Macropus rufus*, Desm. Purchased.
 2 Brush-tailed Kangaroos. *Petrogale penicillata*, Gray. Purchased.
26. 2 Maholi Galagos. *Galago maholi*, A. Smith. Deposited.
27. 1 Peacock Pheasant. *Polyplectron chinquis*, Temm. Hatched.
28. 1 Cornish Chough. *Fregilus graculus*, Cuv. Recovered.
 1 Peregrine Falcon. *Falco peregrinus*, Linn. Presented by Capt. C. Griffith, Bengal Army.
29. 1 Bronze-winged Pigeon. *Phaps chalcoptera* (Lath.). Hatched.
 A series of Terrapins. *Emys terrapen*, Schöpf; *Emys picta*, Schw.; *Emys rubriventris*, LeConte. Presented by the Smithsonian Institution, Washington, U.S.A.
30. 1 Macaque Monkey. *Macacus cynomolgus* (Linn.). Presented by Miss E. Hand.
 2 White-crested Guans. *Penelope pipile* (Jacq.). Presented by — Barker, Esq.
31. 1 ♂ Sambur Deer. *Cervus aristotelis*, Cuv. Born.
 1 Chinchilla. *Chinchilla lanigera*, Benn. Born.

- June 1. 1 Bonnet-Monkey. *Macacus radiatus* (Shaw). Presented by J. L. Gray, Esq.
- 2 ♂ Reindeer. *Cervus tarandus*, Linn. Presented by H. H. Elder, Esq.
- 1 Chinese Lark. *Melanocorypha mongolica* (Gm.). Presented by C. Rivington, Esq., Hong Kong.
2. 1 Vervet Monkey. *Cercopithecus lalandii*, Is. Geoff. Deposited.
3. 1 Japanese Deer. *Cervus sika*, Temm. Born.
4. 2 Pileated Night-Herons. *Nycticorax pileatus* (Bodd.). Purchased.
- 1 Green-headed Tanager. *Calliste tricolor* (Gm.). Purchased.
- 2 Pied Wagtails. *Motacilla yarrellii*, Gould. Purchased.
5. 5 Lineated Pheasants. *Euplocamus lineatus* (Lath.). Hatched.
- 3 Purple Pheasants. *Euplocamus horsfieldii*, Gray. Hatched.
- 4 Ruddy-headed Geese. *Chloiphaga rubidiceps*, Selater. Hatched.
6. 3 Kingfishers. *Alcedo ispida*, Linn. Presented by the Rev. J. Climenson.
- 1 Curl Bunting. *Emberiza cirius*, Linn. Purchased.
- 1 ♂ Brush-Turkey. *Talegalla lathamii*, Gray. Deposited.
- 1 ♂ Swinhoe's Pheasant. *Euplocamus swinhoei*, Gould. Deposited.
7. 2 Macaque Monkeys. *Macacus cynomolgus* (Linn.). Presented by Messrs. George and White.
- 2 Kingfishers. *Alcedo ispida*, Linn. Presented by Mrs. Falkner.
- 2 Brown Coatis. *Nasua fusca*, Desm. Presented by Capt. F. W. Johnson, R.N.
- 1 Paradise Grackle. *Acridotheres tristis* (Linn.). Deposited.
9. 30 Eider Duck-eggs. *Somateria mollissima*, Leach. Presented by Capt. Salvin.
- 2 Leopards. *Felis leopardus*, Linn. Born.
11. 9 Impeyan Pheasants. *Lophophorus impeyanus* (Lath.). Hatched.
- 6 Cheer Pheasants. *Phasianus wallichii*, Hardw. Hatched.
- 1 Moloch Lizard. *Moloch horridus*. Presented by S. S. Travers, Esq.
- 1 Black-faced Spider Monkey. *Ateles ater*, F. Cuv. Purchased.
- 1 Capuchin Monkey. *Cebus capucinus*, Geoff. Purchased.
- 1 White Ibis, young. *Ibis alba*, Linn. Purchased.
- 2 Iceland Falcons. *Falco islandicus*, Brünn. Deposited.
- 2 Pinche Monkeys. *Hapale ædipus* (Linn.). Purchased.
12. 4 Little Guans. *Ortalida katruca* (Bodd.). Presented by Capt. Sawyer.
13. 1 Goliath Heron. *Ardea goliath*, Temm. Purchased.
- 1 ♂ Chimpanzee. *Troglodytes niger*, Geoff. Deposited.
- 1 White-nosed Monkey. *Cercopithecus petaurista* (Shreb.). Deposited.
- 1 Crested Guinea-fowl. *Numida cristata*, Pall. Purchased.
- 1 Ground-Rat. *Aulacodus swindernianus*, Temm. Purchased.
14. 1 Indian Grackle. *Gracula intermedia*, Hay. Purchased.
15. 2 Water-Tortoises. *Emys* — ? Presented by Frederick Bond, Esq., F.Z.S.
- 5 Black-backed Porphyrios. *Porphyrio melanotus*, Temm. Presented by Dr. Mueller, C.M.Z.S.
- 17 Australian Waxbills. *Estrellda temporalis* (Lath.). Presented by Dr. Mueller, C.M.Z.S.
- 1 Bearded Lizard. *Amphibolurus barbatus*, Kaup.
16. 1 Harlequin Bronze-wing Pigeon. *Phaps histrionica*, Gould. Hatched.

- June 18. 14 Summer-Ducks. *Aix sponsa* (Linn.). Hatched.
 2 African Rams. *Ovis aries*, Linn., var. Presented by Capt. Glover, R.N.
 2 Marabou Storks. *Leptoptilus crumeniferus* (Cuv.). Presented by Capt. Glover, R.N.
19. 1 Water-Tortoise. *Emys* —? Presented by James Hayne, Esq.
 1 Night-Heron. *Nycticorax europæus*, Steph. Presented by Henry Peters, Esq.
20. 1 Black Kite. *Milvus niger*, Briss. Hatched.
 2 Vinaceous Turtledoves. *Turtur vinaceus* (Gm.). Hatched.
21. 1 Virginian Opossum. *Didelphys virginianus* (Shaw). Presented by R. T. Hadow, Esq.
 1 Ursine Dasyure. *Dasyurus ursinus* (Harr.). Purchased.
 1 Bennett's Wallaby. *Halmaturus bennettii*, Waterh. Purchased.
22. 1 Common Cassowary. *Casuarus galeatus* (Vieill.). Hatched.
 1 Californian Vulture. *Cathartes californianus* (Shaw). Presented by Colbert A. Canfield, M.D., of Monterey, California.
 2 Red-footed Squirrels. *Xerus erythropus* (Geoff.). Purchased.
 1 White-throated Sapajou. *Cebus hypoleucus*, Geoff. Purchased.
 1 Capuchin Monkey. *Cebus capucinus*, Geoff. Purchased.
23. 1 Hawfinch. *Coccothraustes vulgaris* (Briss.). Purchased.
 1 Crossbill. *Loxia curvirostra*, Linn. Purchased.
25. 1 Bennett's Wallaby. *Halmaturus bennettii*, Waterh. Born.
 5 Black-backed Kaleeges. *Euplocamus melanotus* (Blyth). Hatched.
 5 White-crested Kaleeges. *Euplocamus albo-cristatus* (Vig.). Hatched.
26. 4 Little Bitterns. *Ardetta minuta* (Linn.). Presented by Henry Peters, Esq.
 1 Levaillant's Parrot. *Pæocephalus levaillantii* (Lath.). Deposited.
27. 1 Brown Howler. *Mycetes ursinus* (Humb.). Purchased.
 2 Kinkajous. *Cercoleptes caudivolvulus* (Pall.). Purchased.
 1 Derbyan Screamer. *Chauna derbiana*, Gray. Purchased.
28. 1 Short-headed Phalanger. *Belideus breviceps* (Waterh.). Born.
 1 White Stork. *Ciconia alba*, Linn. Presented by F. M. Hayward, Esq.
 1 Common Teal. *Querquedula crecca* (Linn.). Presented by F. M. Hayward, Esq.
30. 2 Weka Rails. *Ocydromus australis* (Sparrrn.). Presented by Dr. F. Mueller, C.M.Z.S.
 2 Black-backed Porphyrios. *Porphyrio melanotus*, Temm. Presented by Dr. F. Mueller, C.M.Z.S.
- July 2. 2 Goshawks. *Astur palumbarius* (Gm.). Deposited.
 3. 1 Common Boa. *Boa constrictor*, Linn. Presented by Commander R. M. Bloomfield, R.W.I.M.S. 'Tamar.'
 4. 2 Cocks of the Rock. *Rupicola crocea*, Vieill. Presented by J. Lucie Smith, Esq.
 5. 3 Common Trumpeters. *Psophia crepitans*, Linn. Presented by J. Lucie Smith, Esq.
 1 Kinkajou. *Cercoleptes caudivolvulus* (Pall.). Presented by J. Lucie Smith, Esq.
 1 Military Maccaw. *Ara militaris* (Gm.). Purchased.
 9 American Goldfinches. *Chrysomitris tristis* (Linn.). Purchased.

- July 5. 1 Green Fruit-Pigeon. *Ptilonopus* —? Purchased.
 6. 1 Hog Deer. *Cervus porcinus*, Zimm. Deposited.
 7. 5 Mandarin Ducks. *Aix galericulata* (Linn.). Hatched.
 7 Bahama Ducks. *Pecilonetta bahamensis* (Linn.). Hatched.
 8. 1 Japanese Deer. *Cervus sika*, Temm. Born.
 9. 2 Naked-footed Owls. *Athene noctua* (Retz.). Purchased.
 10. 10 Great Cyclodus Lizards. *Cyclodus gigas* (Bodd.). Born.
 1 Bronze-winged Pigeon. *Phaps chalcoptera* (Lath.). Hatched.
 1 Sun-Bittern. *Eurypyga helias* (Pall.). Hatched.
 2 Acouchys. *Dasyprocta leporina* (Linn.). Presented by Sir
 W. W. Holmes, George Town, British Guiana.
 2 Rufous Tinamous. *Rhynchotus rufescens* (Temm.). Presented
 by Edward Collier, Esq.
 12. 1 Red-and-Blue Maccauw. *Ara macao* (Linn.). Deposited.
 13. 1 Grey Ocelot. *Felis grisea* (Gray). Presented by G. S. Günther,
 Esq.
 1 Black-faced Spider Monkey. *Ateles paniscus* (Linn.). Pur-
 chased.
 1 Red-handed Tamarin. *Hapale midas* (Linn.). Purchased.
 1 Guiana Tree-Porcupine. *Cercolabes insidiosus*, Licht. Pur-
 chased.
 2 Spotted Cavies. *Caclogenys paca* (Linn.). Presented by W.
 H. Barton, Esq., R.M.S. 'Wye.'
 1 American Heron. *Ardea* —? Presented by W. H. Barton,
 Esq., R.M.S. 'Wye.'
 1 Common Trumpeter. *Psophia crepitans*, Linn. Purchased.
 1 Turtle. Purchased.
 2 ♂ Pallas's Eared Pheasants. *Crossoptilon auratum*, Pall. Pre-
 sented by Dudley E. Saurin, Esq.
 1 Poë Bird. *Prothemadera novæ-seelandiæ* (Gm.). Pur-
 chased.
 16. 2 Impeyan Pheasants. *Lophophorus impeyanus* (Lath.). Hatched.
 6 Flamingos. *Phanicopterus antiquorum*, Linn. Purchased.
 1 Gray's Jerboa Kangaroo. *Bettongia grayi*, Gould. Presented
 by Robert Daubeny, Esq.
 3 Peregrine Falcons. *Falco peregrinus*, Linn. Presented by
 Lord F. Conyngham.
 17. 1 Vulpine Phalanger. *Phalangista vulpina* (Shaw). Born.
 1 Gray's Jerboa Kangaroo. *Bettongia grayi*, Gould. Born.
 2 Crocodiles. *Crocodylus* —? Purchased.
 1 Citron-crested Cockatoo. *Cacatua citrino-cristata*, Fraser.
 Deposited.
 1 Yak. *Bos grunniens*, Linn. Deposited.
 18. 1 Lesser White-nosed Monkey. *Cercopithecus petaurista* (Schreb.).
 Purchased.
 1 Diana Monkey. *Cercopithecus diana* (Linn.). Purchased.
 2 Capuchins. *Cebus capucinus*, Geoff. Purchased.
 20. 1 Gray's Jerboa Kangaroo. *Bettongia grayi*, Gould. Pur-
 chased.
 6 Australian Wild Ducks. *Anas superciliosus*, Gm. Presented
 by the Acclimatization Society of Melbourne.
 2 White-eyebrowed Wood-Swallows. *Artamus superciliosus*,
 Gould. Presented by the Acclimatization Society of Mel-
 bourne.
 1 Straw-necked Ibis. *Geronticus spinicollis* (Jameson). Pre-
 sented by the Acclimatization Society of Melbourne.

- July 20. 1 Australian Monitor. *Monitor gouldii*, Schleg. Presented by the Acclimatization Society of Melbourne.
21. 1 Diamond Snake. *Morelia spilotes* (Lacép.). Presented by G. Krefft, Esq., C.M.Z.S., Curator of the Sydney Museum.
22. 8 Snakes (Malta). Presented by Major-Gen. Hinde, C.B.
8 Skinks (Malta). Presented by Major-Gen. Hinde, C.B.
23. 1 Sooty Monkey. *Cercocebus fuliginosus*, Geoff. Deposited.
8 Peregrine Falcons. *Falco peregrinus*, Linn. Deposited.
24. 1 Macaque Monkey. *Macacus cynomolgus* (Linn.). Presented by Frederick Fox, Esq.
3 Andaman Pigs. *Sus andamensis*, Blyth. Presented by A. Grote, Esq., C.M.Z.S.
5 Indian Geckos. *Gecko verus*, Merr. Presented by Capt. Frain.
25. 1 Hooded Crow. *Corvus cornix*, Linn. Presented by Henry Thurnall, Esq.
6 Crossbills. *Loxia curvirostra*, Linn. Purchased.
2 Hawfinches. *Coccothraustes vulgaris* (Briss.). Purchased.
1 Serin Finch. *Fringilla serinus*, Linn. British-caught. Purchased.
4 Virginian Colins. *Ortyx virginianus* (Linn.). Deposited.
26. 6 Peregrine Falcons. *Falco peregrinus*, Linn. Deposited.
1 Derbyan Wallaby. *Halmaturus derbyanus*, Gray. Presented by Dr. Mueller, C.M.Z.S.
2 Hairy Armadillos. *Dasyppus villosus*, Gray. Purchased.
27. 2 Vervet Monkeys. *Cercopithecus lalandii*, Is. Geoff. Presented by — Brewer, Esq.
1 Hobby. *Hypotriorchis subbuteo* (Linn.). Presented by J. E. Harting, Esq., F.Z.S.
2 Kestrels. *Tinnunculus alaudarius*, Briss. Presented by J. E. Harting, Esq., F.Z.S.
30. 2 Hobbies. *Hypotriorchis subbuteo* (Linn.). Deposited.
1 Lanner Falcon. *Falco lanarius*, Schleg. Deposited.
1 Black Rat. *Mus rattus*, Linn. Presented by W. M. Allfrey, Esq.
31. 1 Cashmere-shawl Goat. *Capra hircus*, Linn., var. Born.
1 Nicobar Pigeon. *Calœnas nicobarica* (Linn.). Hatched.
- Aug. 1. 1 ♂ Persian Deer. *Cervus wallichii*, Cuv. Born.
1 White-crowned Pigeon. *Columba leucocephala*, Linn. Hatched.
1 Crested Pigeon. *Ocyphaps lophotes* (Temm.). Hatched.
1 Vinaceous Turtledove. *Turtur vinaceus* (Gm.). Hatched.
2 Crocodiles. *Crocodylus* —? Received in exchange.
3. 1 Macaque Monkey. *Macacus cynomolgus* (Linn.). Presented by W. B. Tegetmeier, Esq.
2 Rock-Pigeons. *Columba livia*, Linn. Presented by W. B. Tegetmeier, Esq.
1 ♀ West-African Ratel. *Mellivora leuconota*, Sclater. Received in exchange.
1 Black Rat. *Mus rattus*, Linn. Presented by Thomas Smith, Esq.
7 Bar-tailed Pheasants, 3 ♂, 4 ♀. *Phasianus reevesii*, Gray. Deposited.
2 Temminck's Tragopans. *Cerionis temminckii* (Gray). Deposited.
2 Brown Cranes. *Grus canadensis* (Linn.). Purchased.
3 Ruddy Flamingos. *Phœnicopterus ruber*, Linn. Purchased.

- Aug. 3. 1 Golden-winged Woodpecker. *Colaptes auratus* (Linn.). Purchased.
 2 Marmosets. *Hapale jacchus* (Linn.). Presented by C. A. Saunders, Esq.
7. 1 ♀ Cashmere-shawl Goat. *Capra hircus*, Linn., var. Born.
 1 Common Fox. *Canis vulpes*, Linn. Presented by John Billing, Esq.
 1 Swinhoe's Pheasant. *Euplocamus swinhoii*, Gould. Purchased.
 2 Green-headed Tanagers. *Calliste tricolor* (Gm.). Purchased.
 2 Black-backed Tanagers. *Pipridea melanota*, Vieill. Purchased.
 1 Black-throated Tanager. *Euphonia nigricollis* (Vieill.). Purchased.
 1 Guit-guit. *Dacnis cayana* (Linn.). Purchased.
8. 1 White-throated Sapajou. *Cebus hypoleucus*, Geoff. Presented by Dr. Ed. B. Bogg, R.N., C.M.Z.S., H.M.S. 'Devastation.'
10. 1 White-necked Stork. *Ciconia leucocephala* (Gm.). Presented by Mrs. D. Campbell.
 1 Chilian Parrakeet. *Conurus smaragdinus* (Gm.). Presented by T. O. Simpson, Esq., R.N.
11. 1 Patas Monkey. *Cercopithecus ruber* (Gm.). Purchased.
 1 Lesser White-nosed Monkey. *Cercopithecus petaurista* (Schreb.). Purchased.
 2 Moustache-Monkeys. *Cercopithecus cephus*, Erxl. Purchased.
13. 1 Black-faced Spider Monkey. *Ateles ater*, F. Cuv. Purchased.
 1 Ocelot. *Felis pardalis*, Linn. Purchased.
 1 Spotted Cavy. *Cælogenyx paca* (Linn.). Purchased.
 2 White Ibises. *Ibis alba*, Linn. Purchased.
 2 Hoopoes. *Upupa epops*, Linn. Purchased.
 2 Red-breasted Mergansers: *Mergus serrator* (Linn.). Purchased.
 1 Kaleege. *Euplocamus cuvieri* (?). Purchased.
 2 Young Long-eared Owls. *Otus vulgaris* (Linn.). Presented by William Burnley, Esq.
14. 1 Agouti. *Dasyprocta* —? Purchased.
 2 Black-headed Parrots. *Caica melanocephala* (Linn.). Purchased.
15. 1 Sun-Bittern. *Eurypyga helias* (Pall.). Hatched.
 1 Silky Monkey. *Hapale rosalia* (Linn.). Deposited.
17. 1 Philantomba Antelope. *Cephalophus maxwellii* (H. Smith). Presented by Commander St. Clair, R.N., H.M.S. 'Sparrow.'
 3 Golden Eagles. *Aquila chrysaetos* (Linn.). Presented by Capt. David Herd, H.B.C.S., C.M.Z.S.
 1 Indian Python. *Python molurus* (Linn.). Presented by Capt. A. Hanley, 52nd Regiment.
 1 ♀ Chimpanzee. *Troglodytes niger*, Geoff. Deposited.
 1 Indian Python. *Python molurus* (Linn.). Received.
 1 Globose Curassow. *Crax globicera* (Linn.). Received.
20. 1 Moloch Lizard. *Moloch horridus*. Purchased.
 8 Ocellated Frogs. *Cystignathus ocellatus*. Purchased.
 1 Globose Curassow. *Crax globicera* (Linn.). Presented by Commander Glynn, R.N.
21. 1 Secretary Falcon. *Serpentarius reptilivorus*, Daud. Received.
22. 1 Wood-Owl. *Syrnium aluco* (Linn.). Presented by the Rev. John Light.
 1 Grey-cheeked Monkey. *Cercocebus albigena* (Gray). Purchased.

- Aug. 22. 1 Brazilian Tree-Porcupine. *Cercolabes prehensilis* (Linn.). Received.
23. 1 Military Maccaw. *Ara militaris* (Linn.). Purchased.
 1 Grison. *Grisonia vittata* (Schreb.). Purchased.
 4 Swinhoe's Pheasants, 3 ♂, 1 ♀. *Euplocamus swinhoei*, Gould. Deposited.
24. 1 Land-Tortoise. *Testudo* —? Purchased.
25. 2 Markhoor Goats, ♂ ♀. *Capra megaceros*, Hutt. Presented by Major F. R. Pollock, Commander, 'Dera Ismail Khan.'
28. 2 Capuchin Monkeys. *Cebus capucinus*, Geoff. Purchased.
30. 1 Huanaco. *Auchenia huanaco* (Mol.). Presented by Commander Pinkerton, S.S. 'Thames.'
- 1 Angola Vulture. *Gypohierax angolensis* (Gm.). Presented by John Montague Grant, Esq.
- 1 pair of Ground-Hornbills. *Bucorvus abyssinicus* (Gm.). Purchased.
- 9 Tanagers. *Ramphocelus brasiliensis*; *Tanagra cyanoptera*; *T. ornata*, Sparm. Purchased.
- 3 White-necked Crows. *Corvus scapulatus*, Daud. Purchased.
31. 1 Brown Coati. *Nasua fusca*, Desm. Deposited.
- Sept. 1. 1 Squirrel Monkey. *Callithrix sciureus* (Linn.). Purchased.
 1 Negro Tamarin. *Hapale ursula* (Geoff.). Purchased.
3. 2 Jays. *Garrulus glandarius*, Linn. Presented.
4. 1 pair of Orang-outangs. *Simia satyrus*, Linn. Purchased.
 1 Blue-cheeked Barbet. *Megalama asiatica* (Lath.). Purchased.
 4 Yellow-bellied Leiothrix. *Leiothrix luteus* (Scop.). Purchased.
5. 1 Brush-Turkey. *Talegalla lathami*, Gray. Hatched.
6. 1 Naked-throated Cotinga. *Chasmorhynchus nudicollis* (Vieill.). Purchased.
7. 1 Brush-Turkey. *Talegalla lathami*, Gray. Hatched.
10. 1 ♂ Canadian Beaver. *Castor canadensis*, Kuhl. Received in exchange.
 1 Lanner Falcon. *Falco lanarius*, Schleg. Purchased.
 2 Red-footed Falcons. *Falco vespertinus*, Linn. Purchased.
11. 1 Brush-Turkey. *Talegalla lathami*, Gray. Hatched.
12. 1 pair Pine-Grosbeaks. *Corythus enucleator* (Linn.). Presented by Robert Collett, Esq.
13. 1 Common Tern. *Sterna hirundo*, Linn. Purchased.
14. 1 ♂ Giraffe. *Camelopardalis giraffa*, Gm. Born.
 1 Blue-and-Yellow Maccaw. *Ara ararauna* (Linn.). Deposited.
15. 2 ♂ Nylghaies. *Portax picta* (Pall.). Born.
18. 1 Pigeon-Hawk. *Hypotriorchis columbarius* (Linn.). Purchased.
21. 2 Conures. Presented by Mrs. C. Vinall.
24. 6 Spotted Salamanders. *Salamandra maculosa* (Linn.). Purchased.
 6 Fire-bellied Toads. *Bombinator igneus*. Purchased.
 3 Fat Dormice. *Myoxus glis*, Schreb. Purchased.
 2 Garden Dormice. *Myoxus nitela*, Schreb. Purchased.
26. 1 ♂ Axis Deer. *Cervus axis*, Erxl. Presented by A. Houlder, Esq.
28. 1 ♂ Chimpanzee. *Troglodytes niger*, Geoff. Presented by J. Snowdon Henry, Esq.
 2 Marmoset Monkeys. *Hapale jacchus* (Linn.). Presented by J. Snowdon Henry, Esq.

- Sept. 28. 1 Patagonian Cavy. *Dolichotis patachonicus* (Shaw). Presented by Joseph O'Guin, Esq.
 1 Hyrax. *Hyrax capensis*, Schreb. Purchased.
29. 2 Crested Pigeons. *Ocyphaps lophotes* (Temm.). Hatched.
 1 Vinaceous Turtledove. *Turtur vinaceus* (Gm.). Hatched.
 1 Bonnet-Monkey. *Macacus radiatus* (Shaw). Presented by J. M. Marr, Esq.
 1 Capuchin Monkey. *Cebus capucinus*, Geoff. Deposited.
30. 1 Brush-Turkey. *Talegalla lathamii*, Gray. Hatched.
 1 Green Monkey. *Cercopithecus callitrichus*, Is. Geoff. Presented by John Willmott, Esq.
- Oct. 1. 1 Musquash. *Fiber zibethicus* (Linn.). Presented by A. Downs, Esq., C.M.Z.S.
 2. 1 ♀ Impeyan Pheasant. *Lophophorus impeyanus* (Lath.). Deposited.
 3. 1 Grey Ichneumon. *Herpestes griseus* (Geoff.). Presented by W. Penfold, Esq.
 4. 2 Mexican Deer. *Cervus mexicanus*, H. Smith. Born.
 5. 2 Marmoset Monkeys. *Hapale jacchus* (Linn.). Presented by H. G. Coleman, Esq.
 6. 2 Bronze-winged Pigeons. *Phaps chalcoptera* (Lath.). Hatched.
 7. 2 Nylghaies. *Portax picta* (Pall.). Born.
 2 Dusky Ducks. *Anas obscura*, Gm. Presented by A. Downs, Esq., C.M.Z.S.
 1 Alligator Terrapin. *Chelydra serpentina* (Linn.). Presented by A. Downs, Esq., C.M.Z.S.
 1 Painted Terrapin. *Emys picta*, Schw. Presented by A. Downs, Esq., C.M.Z.S.
8. 2 Pied Wagtails. *Motacilla yarrellii*, Gould. Purchased.
 1 Wood-Lark. *Alauda arborea*, Linn. Purchased.
 1 Richard's Pipit. *Anthus richardi*, Vieill. Purchased.
10. 2 Fennec Foxes. *Canis cerdo*, Linn. Purchased.
 1 Cariama. *Cariama cristata*, Linn. Purchased.
 3 Grey Wagtails. *Motacilla boarula*, Penn. Purchased.
 1 Macaque Monkey. *Macacus cynomolgus* (Linn.). Presented by John Hosking, Esq., Jun.
15. 2 Wattled Cranes. *Grus carunculata* (Gm.). Received in exchange:
 1 West-Indian Iguana. *Iguana* —? Presented by P. Henderson, Esq., of the W.I.M.S.S. 'Tyne.'
 1 Golden Agouti. *Dasyprocta aguti* (Linn.). Presented by T. C. K. Cleve, Esq.
 1 Jacket-Monkey. *Pithecia satanas* (Hoffm.). Purchased.
 2 Black-faced Spider Monkeys. *Ateles ater*, F. Cuv. Purchased.
 2 Ocelots. *Felis pardalis*, Linn. Purchased.
 1 Scarlet Ibis. *Ibis rubra*, Linn. Purchased.
 1 Sulphur-breasted Toucan. *Ramphastos carinatus*, Sw. Purchased.
 2 Common Boas. *Boa constrictor*, Linn. Purchased.
 2 Arctic Foxes. *Canis lagopus*, Linn. Deposited.
 4 White-crowned Pigeons. *Columba leucocephala*, Linn. Presented by Dr. Huggins, C.M.Z.S.
17. 2 Vinaceous Turtledoves. *Turtur vinaceus* (Gm.). Hatched.
 1 Capuchin Monkey. *Cebus capucinus*, Geoff. Purchased.
18. 1 Vervet Monkey. *Cercopithecus lalandii*, Is. Geoff. Purchased.

- Oct. 19. 1 Toque Monkey. *Macacus pileatus* (Shaw). Presented by Mrs. John Williams.
 2 Young Leopard Tortoises. *Testudo pardalis*, Bell. Presented by Sir William Williams, Bart.
20. 1 Macaque Monkey. *Macacus cynomolgus* (Linn.). Purchased.
 1 Silky Cow-bird. *Molothrus sericeus* (Licht.). Purchased.
 1 pair of Globose Curassows. *Crax globicera*, Linn. Deposited.
22. 1 Cuckoo. *Cuculus glandarius*, Linn. Presented by E. C. Hampton, Esq.
 1 Eyed Lizard. *Lacerta ocellata*, Daud. Presented by J. Braxton Hicks, Esq., M.D.
 1 Pied Wagtail. *Motacilla yarrellii*, Gould. Purchased.
 1 Lapland Bunting. *Centrophanes lapponica*. Purchased.
24. 1 ♀ Eland. *Oreas canna* (Pall.). Presented by Lord Egerton of Tatton.
 1 Brush-tailed Rock-Kangaroo. *Petrogale penicillata*, Gray. Presented by H. Chandler, Esq.
 1 Macaque Monkey. *Macacus cynomolgus* (Linn.). Presented by T. N. Price, Esq.
 1 Formosan Bear. *Ursus tibetanus*, F. Cuv. Purchased.
25. 3 Pigs (domestic variety of the Formosan savages). Purchased.
 1 Two-banded Lizard. *Psammosaurus bivittatus*, Wagl. Presented by P. F. Debary, Esq., F.Z.S.
 2 Vervet Monkeys. *Cercopithecus lalandii*, Is. Geoff. Deposited.
27. 1 Spotted Crane. *Porzana maruetta*. Presented by William Thompson, Esq.
 3 Swinhoe's Pheasants, 1 ♂, 2 ♀. *Euplocamus swinhoii*, Gould. Deposited.
29. 2 Little Bustards. *Tetrax campestris*, Leach. Deposited.
 1 Iguana. *Iguana* — ? Presented by Edward Greey, Esq., F.Z.S.
30. 6 Mealy Redpolls. *Ægiothus canescens*, Gould. Purchased.
 1 Balearic Crowned Crane. *Belearica paronina*, Briss. Purchased.
- Nov. 1. 1 Bonnet-Monkey. *Macacus radiatus* (Shaw). Presented by the Earl of Hartington.
 2. 2 ♀ Swinhoe's Pheasants. *Euplocamus swinhoii*, Gould. Purchased.
 3. 1 Vervet Monkey. *Cercopithecus lalandii*, Is. Geoff. Presented by the Rev. W. H. Drewett.
 2 Eider Ducks. *Somateria mollissima*, Leach. Purchased.
 2 Glossy Ibises. *Ibis falcinellus*, Linn. Purchased:
4. 1 Ocelot. *Felis pardalis*, Linn. Presented by Hugh Wilson, Esq.
 7. 1 Squirrel Monkey. *Callithrix sciureus* (Linn.). Deposited.
8. 2 Wild Turkeys. *Meleagris gallopavo*, Linn. Presented by E. K. Karlake, Esq., F.Z.S.
 1 Young Black Bear. *Ursus americanus*, Pall. Presented by Capt. Herd, H.B.C.S., C.M.Z.S.
10. 1 Hog Deer. *Cervus porcinus*, Zimm. Born.
 1 pair of Saigas. *Saiga tatarica* (Pall.). Purchased.
 2 ♀ Pallas's Eared Pheasants. *Crossoptilon auritum* (Pall.). Purchased.
 1 pair of Siamese Pheasants. *Euplocamus prelatius* (Bonap.). Purchased.
 1 pair of Triangular-spotted Pigeons. *Columba guinea*, Linn. Purchased.

- Nov. 10. 4 American Colins. *Ortyx virginianus*. - Purchased.
 1 Madagascar Porphyrio. *Porphyrio madagascariensis* (Gm.).
 Purchased.
 2 Alpine Marmots. *Arctomys marmotta* (Linn.) Purchased.
12. 1 Common Kite. *Milvus regalis*, Briss. Presented by Howard
 Saunders, Esq., F.Z.S.
 1 Small Hill-Mynah. *Gracula religiosa*, Linn. Presented by
 George Graham, Esq.
14. 1 Musquash. *Fiber zibethicus* (Linn.). Presented by Capt. Herd,
 H.B.C.S., C.M.Z.S.
17. 1 Common Boa. *Boa constrictor*, Linn. Presented by Lieut. C.
 Balfour, R.N., H.M.S. 'Buzzard.'
21. 1 Marmoset Monkey. *Hapale jacchus* (Linn.). Deposited.
24. 2 Polar Bears. *Thalassarctos maritimus* (Linn.). Born.
27. 1 Bonnet-Monkey. *Macacus radiatus* (Shaw). Presented by
 Mrs. Pigot.
 1 Common Kestrel. *Tinnunculus alaudarius*, Briss. Presented
 by A. Burman, Esq.
28. 1 Talapoin Monkey. *Cercopithecus talapoin*, Erxl. Presented
 by Lieut. W. B. Bridges, R.N.
 2 pairs of Bronze-spotted Doves. *Chalcopelia chalcospilos* (Wagl.).
 Presented by the Hon. Lady Cust.
 1 pair of Bronze-spotted Doves. *Chalcopelia chalcospilos* (Wagl.).
 Deposited.
- Dec. 1. 1 Kinkajou. *Cercoleptes caudivolvulus* (Pall.). Presented by
 Major Thompson, 26th Regiment.
5. 1 Golden Plover. *Charadrius pluvialis*, Linn. Presented by F.
 Cresswell, Esq.
 1 Peewit. *Vanellus cristatus*, Meyer. Presented by F. Cress-
 well, Esq.
 1 Turnstone. *Streptilas interpres*, Flem. Presented by F. Cress-
 well, Esq.
 9 Knots. *Calidris canutus*, Briss. Presented by F. Cresswell,
 Esq.
 4 Dunlins. *Tringa variabilis*, Meyer. Presented by F. Cress-
 well, Esq.
6. 1 Golden Agouti. *Dasyprocta aguti* (Linn.). Born.
 1 Peregrine Falcon. *Falco peregrinus*, Linn. Presented by Mrs.
 Charles Cox.
8. 1 Bonnet-Monkey. *Macacus radiatus* (Shaw). Presented by
 the Rev. W. J. Richardson.
11. 1 Water-Musk. *Hyomoschus aquaticus* (Ogilby). Purchased.
 1 White-crested Bittern. *Tigrisoma leucolophum*, Jard. Pur-
 chased.
 1 Ring-necked Parrakeet. *Palaeornis torquata* (Linn.). Pre-
 sented by Mrs. Verzey.
13. 1 Virginian Eagle Owl. *Bubo virginianus* (Gm.). Presented by
 E. Dumaresq, Esq.
 1 Mangabey Monkey. *Cercocebus aethiops* (Kuhl). Purchased.
 1 Red-footed Squirrel. *Xerus erythropus*, Geoff. Purchased.
 2 Violaceous Plantain-Cutters. *Musophaga violacea*, Isert. Pur-
 chased.
 1 Thick-billed Touracou. *Corythair macrorhyncha*, Fraser. Pur-
 chased.
 3 Common Bluebirds. *Sialia wilsoni*, Swains. Purchased.

- Dec. 13. 3 Black-crested Cardinals. *Gubernatrix cristatella* (Vieill.).
Purchased.
1 Capuchin Monkey. *Cebus capucinus*, Geoff. Deposited.
17. 1 Pig-tailed Monkey. *Macacus nemestrinus* (Linn.). Purchased.
21. 1 White-backed Piping Crow. *Gymnorhina leuconota*, Gould.
Presented by C. C. Fuller, Esq.
22. 1 Chacma Baboon. *Cynocephalus porcarius* (Bodd.). Presented
by Major Lenon, 67th Regiment.
1 Cheetah. *Felis jubata*, Schreb. Purchased.
24. 1 Common Magpie. *Pica caudata*, Flem. Presented by the
Rev. Thomas Gregory.
29. 150 Bull-Trout ova. *Salmo ferox* (?). Presented by Frank
Trevelyan Buckland, Esq., F.Z.S.
31. 3 Green-winged Doves. *Chalcophaps indica* (Linn.). Received.

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THE END.

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